

TA 5972-REG: Promotion of Renewable Energy, Energy Efficiency and Greenhouse Gas Abatement (PREGA)

Summaries of Project Pre-Feasibility Studies

Draft as of 12 August 2004

Country	Project Title and Location	Features of Project	Estimated Cost, \$ Million
Bangladesh	Dhaka City Solid Waste to Electric Project <i>Dhaka City</i>	Preparation of 50 landfill gas digesters with 8,500 cu.m. capacity & a generator with projected generation of 20MW. Utilization of 5,000 tons of wastes daily. GHG emissions reduction is envisaged to be 1,130,538 tons CO ₂ eq/yr.	26.65
	Cogeneration in Sugar Industries <i>15 sugar mills in Bangladesh</i>	Consists of 2 bagasse-fired boilers rated at 55 tons/hr to produce high-pressure steam of at least 45 kg/cc & 400degC. Production of 39.6 GWh of electricity/yr. Net annual GHG emissions reduction from 15 sugar mills is estimated at 155,800 tons.	6.40
	Fuel Switching from Oil to Gas for Power Generation <i>Monno Ceramics Industries, Ltd Savar, Dhaka City</i>	Fuel switching from oil to gas for power generation of 3.467.5 MWh/yr. Net annual GHG emissions reduction - 2,198 tons.	0.56
	Solar-Wind-Diesel Hybrid for Power Generation in Small Towns and Villages <i>Charfasson</i>	Setting up of a 75 kW solar-wind diesel system with likely production of 0.657 GWh (Gross) of electricity annually. Net GHG emissions reduction - expected to be 637 tons CO ₂ /yr.	0.21
Cambodia	C-2 Power Plant Rehabilitation <i>Southern part of Phnom Penh</i>	Rehabilitation of Power Plant#2 operated by Electricite du Cambodge. Existing equipment to be replaced by a new and more energy efficient power plant with installed capacity of 18 MW. Net GHG emissions reduction is expected to be 175 kT CO ₂ for a crediting period from 2005 to 2014 (10 yrs).	16.80
China, P.R. of	Dabancheng No. 1 Wind Farm Technical Improvement & Capacity Expansion CDM Project <i>Dabancheng, Urumchi, Xijiang</i>	Expansion of an existing 12.1 MW wind farm to a 22.8 MW using 38 systems of 600kW wind turbines. Project will provide 5.86 M kWh electricity into the grid, can save 31,589 tons of raw coal and reduce 5.9 tons in CO ₂ emissions.	19.70
	Kiln Fuel Substitution Project from Coal Gas to Natural Gas <i>Xi'an City, Shaanxi Province</i>	Retrofitting of coal gas-fired kilns into natural gas kilns to shorten calcining period of products and improve quality of porcelain insulators, thus reducing cost and increasing production level. Net GHG emissions reduction - estimated to be 98,342 tons CO ₂ eq/yr.	4.94

	Renovation Project of Blower Motor of the #7 Boiler (Mudanjiang 2nd Power Plant) <i>Mudanjiang City, Heilongjiang Prov.</i>	Application of frequency converter to automatically regulate output load of the blower's electro-motor, reducing its electricity consumption and improving its generation efficiency. Expected to generate annual electricity saving of 6.34 M Kwh. Annual coal consumption reduction is about 3,467 tons, which is equivalent to 6,850 tons of CO ₂ reduction.	
	Calcium Carbide Furnace Waste Heat Recovery Project (Mudanjiang Shunda Calcium Carbide Co. Ltd) <i>Mudanjiang City, Heilongjiang Prov.</i>	Recovery of the waste heat of calcium carbide furnaces to replace a coal-fired heat supply boiler (4 tons steam generation per hour). Projected CO ₂ emissions reduction amounts to 5,852 tons per yr.	0.60
	Fuel Switching from Coal to Natural Gas for Residential Space Heating <i>Xi'an City, Shaanxi Province</i>	Construction of natural gas network connecting each household and installing individual space heating boiler to solve the heating problems in staff quarters/apartments. Annual GHG emissions reductions are 3,816 tons CO ₂ , 60 tons of dust and 40 tons of SO ₂ .	0.47
Indonesia	Development of Micro-hydro Power Generation Utilizing Irrigation Channel of Wangan Aji <i>Garung, Wonosobo, Central Java</i>	Utilizing irrigation channel for electricity generation of about 970,000 kWh to be sold to a state-owned electricity company (PLN) using PSK Tersebar facility.	0.19
	Utilization of Biogas Generated from the Anaerobic Treatment of Palm Oil Mills Effluent as indigenous energy source for rural energy supply and electrification <i>Sanggau, West Kalimantan</i>	Development of a more efficient palm oil mills effluent treatment plant using an anaerobic fixed bed reactor and sludge separation. The produced methane (CH ₄) gas will be used to generate electricity to supply the power needs of the palm oil mill factory. Annual CH ₄ gas recovery is expected to be 3,256 tons.	2.37
	Utilization of Municipal Solid Waste for Electricity Generation <i>Cilincing, East Jakarta</i>	Anaerobic treatment of municipal solid waste to produce CH ₄ and gasification of other organics to become synthetic gases, which will be used to generate 18 MW electric power.	29.77
	Integrated REGA Technology Utilization for Eco-Tourism Park Development in Baron Village <i>Gunung Kidul, Yogyakarta</i>	Development of a renewable energy park by exploiting wave and wind energy sources with annual generation of electricity to be approximately 18,000MWh. Annual GHG emissions reduction is 13,320 tons of CO ₂ equivalent.	5.12
	Utilization of Wood Wastes Generate from Sawmills operated by Smallholders Distributed	Conversion of wood wastes from sawmills into useful electricity. The wood gasification and biomass cogeneration plant will potentially deliver	2.35

	<i>Central Java Province</i>	about 23,000 MWh/yr electricity from 100,000 cu.m./yr of wastes generated in Central Java.	
Nepal	Trolley Bus Development in <i>Ring Road of the Kathmandu Valley</i>	Replacement of some of the diesel vehicles operating in the Ring Road with trolley buses, which will use hydroelectricity. GHG emissions reduction - 131,490 tons CO ₂ eq (2005 - 2025).	15.08
Philippines	Cogeneration in the Food Processing Industry <i>Bo. Ugong, Pasig City</i>	Construction & installation of a cogeneration plant at Ajinomoto Philippines Corp. to replace existing conventional boilers & drastically reduce the electricity supplied from the national grid. The plant which will still be running on bunker fuel oil will supply 6.5MW of electricity & 50 tons/hr of process steam. Net GHG emissions reduction - 76,263 tons CO ₂ equivalent/yr.	5.58
	Waste Heat Recovery from Flue Gases of Diesel Generating Sets <i>Sto. Tomas, Batangas</i>	Construction & installation of a waste heat recovery system to provide a total of 4.8MW for the additional energy requirement of Mariwasa Siam Ceramics' expansion. Net GHG emisissions reduction - 163,736 tons CO ₂ equivalent for the ten-year crediting period.	1.50
	Boiler Efficiency Improvements in Industries	Upgrading/improving the existing boilers of 480 companies representing 10% of the total food, textile & pulp & apper industries through the use of technological improvements to increae thermal efficiency & save energy, tehreby reducing CO2 emissions and benefitting the local environment. The total avoided CO2 emisions from efficiency improvements of 480 boilers is 1.224 million tons during a 10-yr crediting period.	51.95
	Alternative Fuels for Cement Kilns <i>Solid Cement Corp.- Antipolo, Rizal</i> <i>Apo Cement Corp. - Naga, Cebu</i>	Utilizationof alternative fules to provide up to 50 per cent of the fule requirements of the kilns, in terms of the thermal equivalent of coal, the primary fuel.Rice hulls and others (waste oils, rubber tires, industrial wastes & agricultural wastes) will be used. Total avoide CO2 emissions during the life (15 yrs) of the project is 583,735 tons.	
Sri Lanka	1 MW Biomass Power Project <i>Kadjuwatta Village, Dehiattakandiya</i> <i>(border of Ampara & Polonnaruwa Districts)</i>	Consists of a biomass-opearted steam boiler generating high-pressure steam at superheated temperature and a steam trubine driven electricity generator. Net GHG emissions reduction - about 6,020 tons CO ₂ /yr.	0.96
Uzbekistan	Construction of Two Small Hydroelectric Power Stations in	Construction of 2 small hydroelectric power plants (Bagishamal HPP-3 and HPP PK-102) with total	

	<i>Samarkand Region</i>	installed capacity of 11 MW and total annual electric generation of 61.2 million kWh. Total estimated CO ₂ emissions avoided is estimated to be 40,200 tons/yr.	
Viet Nam	Wind Power Supply to <i>Ly Son Island, Quang Ngai Prov.</i>	Installation of 6 wind generators with capacity of 250 kW each making a total of 1,500 kW capacity. Calculated GHG emissions reduced over 25 year project lifetime: P CO ₂ - 97,097 tons, SO ₂ - 1,188 tons and No _x - 102.5 tons.	2.53
	Geothermal Power Plant <i>Mo Duc District, Quang Ngai Province</i>	Development of a geothermal power plant with capacity of 21 MW to generate electricity for the project area and sell surplus electricity to the grid. Estimated total emissions reduction from 2006 to 2010 will be 198,110 tons of CO ₂ equiv.	38.84
	Boiler Replacement	Replacement of old coal-fired boilers with new coal-fired boilers.	
	Nam Soi SHPP <i>Song Ma District, Son La Province</i>	The small hydropower plant is intended to supply electricity to local area and be connected to the national power grid. Amount of CO ₂ emissions that can be reduced during the project lifetime of 25 yrs is 215,905 tons.	1682.00
	Rice Husk Power Plant <i>An Giang Province, Mekong River Delta River</i>	Installation of a rice husk-fired power plant with capacity of 500kW to produce energy for use of rice mill and sell excess electricity to the grid.	0.94