

A photograph of an industrial facility, likely a bio-energy plant, featuring two tall, silver, spiral-patterned smokestacks emitting thick white smoke. The facility includes various pipes, scaffolding, and buildings. A red digital timestamp '22 8:48' is visible in the bottom right corner of the image.

CDM Support to Clean Technology:

Experience of Dan Chang and Phu Khieo Bio-Energy

- Biomass power plant cogeneration and sell to the grid

TYPE OF PROJECT



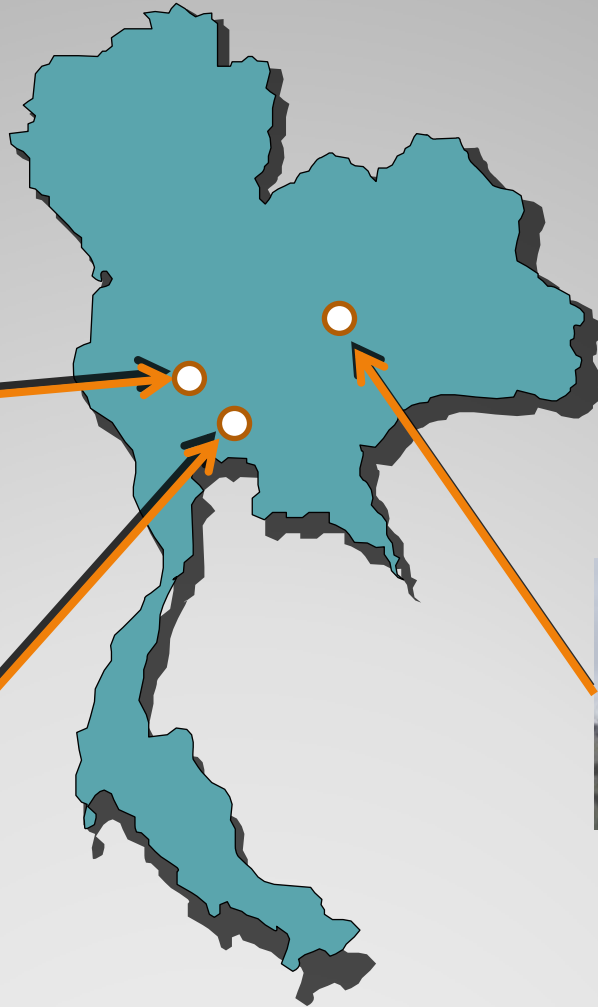
- Low pressure and low efficiency boilers
- Low efficiency electricity generators using back-pressure turbine
- Bagasse as primary fuel
- Excess bagasse left unutilised
- Electricity generation during milling and remelting season only
- 6MW SPP non-firm contract with EGAT

Old Power Plant

- 2 new high efficiency and high pressure boilers
- 41MW high efficiency generators (dual casing turbine) using extraction-condensing turbine
- Bagasse as primary fuel (excess bagasse utilised)
- cane leaves, wood bark and rice husk as supplementary fuel
- Electricity generation all year round
- 28 (DCBC) and 29 (PKBC) MW FIRM-contract with EGAT

Project Activities

Dan Chang
Supanburi



Phu Khieo
Chaiyapoom



Head Office
Bangkok

PROJECT LOCATION

- State of art technology high pressure boilers and double casing turbine.
- New cogeneration technology plant for sugar industry in Thailand.



TECHNOLOGY

- **ECONOMIC**

- Replace fossil fuel use
- Increase employment
- Increase community income

- **SOCIAL**

- 3 Parties (Government, Community and Plant representative) participation.
- Technology transfer
- Education subsidy

ECONOMIC & SOCIAL BENEFITS

- **Environmental**

- Maximize agriculture waste utilization
- Irrigation from treated waste water (zero discharge)
- Soil Improvement
- Dust protection
- Emission reduction of GHGs
- Continuous monitoring



ENVIRONMENT BENEFITS

YEAR	DCBC	PKBC
Nov'04 – Dec'06	201,898	222,198
2007	93,184	102,553
2008	93,184	102,553
2009	93,184	102,553
2010	93,184	102,553
2011	93,184	102,553
2012	93,184	102,553
TOTAL	761,002	837,516

**ESTIMATED TIME OF EMISSION
REDUCTION (tCO₂e)**



Environmental Sustainability



Environmental Sustainability



Social Sustainability



Social Sustainability



Economic Sustainability



Economic Sustainability

	Dan Chang	Phu Khieo
Project Investment	US\$46.7 million	US\$49.0 million
Expected annual CERs	93,184	102,553
Crediting period	10 years	10 years
IRR w/o CERs	7.93%	7.66%
IRR w/ CERs	~10%	~10%

CDM Financial Support

- Renewable energy award winner biomass cogeneration project Thailand – June 2005



AWARD WINNING

- Renewable energy award winner biomass cogeneration project ASEAN– June 2005



AWARD WINNING

- Environmental and Community management award winner – May 2006



AWARD WINNING

- Environmental Impact Assessment (EIA) award – March 2007



AWARD WINNING



**Thank you for your
attention**

Dan Chang Bio-energy
Phu Khieo Bio-energy

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