Annex to Initial Response by the Project Proponent
to the Request for Review of Project 1020
Dan Chang Bio-Energy Cogeneration Project (DCBC)

Reference is made to the request for review by members of the Executive Board regarding Dan Chang Bio-Energy Cogeneration Project. The project proponent, Dan Chang Bio-Energy Co., Ltd. would like to submit additional information the Initial Response submitted earlier, as follows:

Reference to Table 2 – Table 6

The references provided to Table 2 – Table 6 were linked to the general homepage. The exact references are shown in the table below.

Table 2	http://www.thaibma.or.th >price&yield >yieldcurve > government; as of 28 December 2001
Table 3	http://pages.stern.nyu.edu/~adamodar/pc/datasets/histretSP.xls
Table 4	http://pages.stern.nyu.edu/~adamodar/pc/archives/ctryprem02.xls
Table 5	http://pages.stern.nyu.edu/~adamodar/pc/archives/emergcompfirm02.xls
Table 6	http://www.bot.or.th/bothomepage/databank/Financial_Institutions/interestrate/interest_range_t.asp; as of 28 December 2001

4. **The IRR without CDM revenues is quoted as being 8.93% on page 14 of the PDD and 9.2% on page 15.**

Based on the COGEN calculation of project IRR of 8.93%, the sensitivity analysis of the project IRR due to the changes in the bagasse prices (the primary fuel), the wood bark prices (secondary fuel) and the investment cost is provided below.

Bagasse Price (Baht/tonne)	200	225	**250**	275	300
Project IRR	11.08%	10.03%	**8.93%**	7.76%	6.51%

Wood Bark Price (Baht/tonne)	560	630	**700**	770	840
Project IRR	9.05%	8.99%	**8.93%**	8.87%	8.80%

Investment Cost (US$)	36,950	39,002	**41,055**	43,108	45,161
Project IRR	10.85%	9.85%	**8.93%**	8.05%	7.23%

The calculation that supports the sensitivity analysis is provided as follows.

COMPANY NAME:	**Dan Chang Bioenergy Co., Ltd.**
Project:	**Dan Chang Bioenergy Cogeneration Plant**
Configuration:	**100 tph and 120 tph biomass-fired boilers**
	37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Condition:	**Sugar Mill to provide bagasse + raw water + land lease**
	Sugar Mill to get steam and electricity
Case:	**sensitivity Bagasse Price 200 Baht/tonne**
Date:	10/22/01

ASSUMPTIONS AND RESULTS

MILL DATA		
Mill Capacity (input) (tcy)		2,250,000
Type of Residue Produced		bagasse
Residue/Mill Input Ratio		27.00%
Total Bagasse Production (tpy)		607,500
Bagasse Required for Existing Equipment (tpy)		303,068
Available Bagasse (tpy)		304,432
Fuel Required from Other Sources (tpy):		
Rice husk		199,390
Wood bark		10,000
Cane leaves		10,000
Mill Heat Requirement (ton-steam/hr)		
Crushing:	@ 31 bar	44.6
	@ 17 bar	145.0
	@ 8 bar	10.0
	@ 2.5 bar	460.0
Cane-waiting:	@ 31 bar	0.0
	@ 17 bar	0.0
	@ 8 bar	10.0
	@ 2.5 bar	220.3
Remelting:	@ 31 bar	0.0
	@ 17 bar	0.0
	@ 8 bar	10.0
	@2.5 bar	158.3
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - milling		189.6
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - cane-waiting		0.0
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - remelting		0.0
Mill Power Requirement (kW)		
Crushing		21,000
Cane-waiting		12,500
Remelting 1		8,600
Remelting 2		8,600
Off-milling/off-remelting		1,000
Crushing Duration (hr/yr)		1,956
Cane-waiting Duration (hr/yr)		600
Remelting 1 Duration (hr/yr)		1,116
Remelting Duration 2 (hr/yr)		3,528
Pure Power Generation (hr/yr)		720

ENERGY PLANT DATA	
Fuel Data:	
Bagasse	
Moisture Content (wet basis)	50.00%
Lower Heating Value (LHV)(MJ/kg)	7.32
Rice husk	
Moisture Content (wet basis)	12.00%
Lower Heating Value (LHV)(MJ/kg)	11.70
Wood bark	
Moisture Content (wet basis)	32.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Cane leaves	
Moisture Content (wet basis)	24.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Plant Performance:	
Plant Total Operation (hr/yr)	7,920
Parasitic Load (crushing)	1,950
Parasitic Load (cane waiting)	1,800
Parasitic Load (remelting)	1,950
Parasitic Load (pure power generation)	1,800
Transmission Loss	1.00%
Overall Grid Off-take in a Year (year 1-5)	84.05%
Overall Grid Off-take in a Year (year 6-10)	86.67%
Overall Grid Off-take in a Year (year 11-21)	88.85%
Crushing:	
Plant Capacity (kW)	**48,300**
Load Factor	100.00%
Power Generation (kWh/yr)	94,474,800
Mill Power Requirements (kWh/yr)	41,076,000
Grid Export/Excess Power (kWh/yr) - yr 1 -5	40,979,075
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	42,255,871
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	43,319,868
Cane-waiting:	
Plant Capacity (kW)	**39,500**
Load Factor	100.00%
Power Generation (kWh/yr)	23,700,000
Mill Power Requirements (kWh/yr)	7,500,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	12,538,928
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	12,929,606
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	13,255,172
Remelting 1:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	40,079,837
Mill Power Requirements (kWh/yr)	9,601,298
Grid Export/Excess Power (kWh/yr) - yr 1 - 5	23,506,342
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	24,238,735
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	24,849,063
Remelting 2:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	126,639,763
Mill Power Requirements (kWh/yr)	30,337,102
Grid Export/Excess Power (kWh/yr) - yr 1 -5	74,272,695
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	76,586,830
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	78,515,275
Pure Power Generation:	
Plant Capacity (kW)	**28,000**
Load Factor	100.00%
Power Generation (kWh/yr)	20,160,000
Mill Power Requirements (kWh/yr)	720,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	15,116,472
Grid Export/Excess Power (kWh/yr) - yr 6- 10	15,587,460
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	15,979,950
Annual Shutdown/Maintenance:	
Back-up Power Requirements (MW)	1.00
Total Number Days for Annual Maintenance	30

GENERAL DATA	
Plant Life (years)	21
PPA with EGAT (years)	21
Depreciation Policy	straight line
Corporate Tax Rate:	
Year 1-8	0.00%
Year 9-13	15.00%
Year 14 onwards	30.00%

TARIFF	Baht	US$
Energy Payment (Baht/kWh) - EGAT	1.4900	0.0331
Power Capacity Payment (Baht/kW-mo)	458.9474	10.1988
Levelised Electricity Selling Rate (Baht/kWh) - EGAT (RM2+PP)	2.1274	0.0473
Electricity Purchase Price from EGAT (Baht/kWh) - Peak	2.6950	0.0599
Electricity Purchase Price from EGAT (Baht/kWh) - Off-Peak	1.1914	0.0265
Power Demand Charge (Baht/kW-mo)	132.9300	2.9540
Back-up Power Charge for Cogeneration (Baht-kW-mo)	29.4400	0.6542
Service Charge (Baht/mo)	228.1700	5.0704
Levelised Electricity Selling Rate (Baht/kWh) - Sugar Mill (C+CW+RM1	1.7000	0.0378
Steam Selling Rate (Baht/ton) - Sugar Mill (C+CW+RM1)	34.4895	0.7664
Steam Selling Rate (Baht/ton) - Sugar Mill (RM 2)	65.0000	1.4444
Fuel Cost:		
Bagasse (Baht/ton)	200.0000	4.4444
Rice husk (Baht/ton)	700.0000	15.5556
Wood bark (Baht/ton)	700.0000	15.5556
Cane leaves (Baht/ton)	700.0000	15.5556
Natural gas (Baht/million BTU)	151.4518	3.3656
Raw Water (Baht/cu.m.)	6.5000	0.1444
NEPO Incentive (Baht/kWh)	0.1450	0.0032

OPERATING COSTS		1,000 Baht	1,000 US$
Administration		12,000	267
O&M, % of EPC cost (Yr 1-5)	3.50%	40,437	899
O&M, % of EPC cost (Yr 6-10)	4.00%	46,213	1,027
O&M, % of EPC cost (Yr 11 onwards)	4.50%	51,990	1,155
Fuel (bagasse)		121,500	2,700
Fuel (other biomass)		153,573	3,413
Raw Water (C+CW+RM1)		2,429	54
Raw Water (RM2+PP)		1,281	28
Land Lease (C+CW+RM1)		7,651	170
Land Lease (RM2+PP)		10,599	236
Purchase from EGAT		1,642	36
Insurance, % of EPC Cost	1.50%	18,477	411

USES OF FUNDS	1,000 Baht	1,000 US$
Investment Costs		
Development Costs	99,000	2,200
Equipment Costs (main equipment)	1,078,830	23,974
Equipment Costs (BOP)	76,500	1,700
Grid Connection	76,500	1,700
Engineering and Civil Works	135,000	3,000
Import Duty, @ 5.00% of Foreign EPC Cost	32,355	719
Erection, Installation, Training, Handling & Land Transportation	36,000	800
Construction time insurance,1.50 % Equip. Cost	16,200	360
Transferred equipment from sugar mill (old)	297,108	6,602
SUB-TOTAL	1,847,493	41,055
Contingency 5.00% of sub-total	92,375	2,053
Total Investment Costs	1,939,867	43,108
Financing Costs during Construction		
Interest Costs	154,125	3,425
Other Financing Expenses	10,395	231
Total Financing Costs during Construction	164,520	3,656
TOTAL USES OF FUNDS (Project Cost)	**2,104,387**	**46,764**

SOURCES OF FUNDS	1,000 Baht	1,000 US$
Equity 1 28.57% of investment cost	554,220	12,316
Equity 2		
Grant		
Loan*	1,550,167	34,448
TOTAL SOURCES OF FUNDS	**2,104,387**	**46,764**
*Loan		
Amount	1,550,167	34,448
Grace Period		2
Maturity		9
Base Interest Rate		9.00%
Lender's Margin		1.00%
All-in Interest Rate		10.00%
Financing Fees		0.75%

ECONOMIC DATA	
Currency Exchange Rate (Baht/US$)	45.00
Average Inflation Rate (Thai CPI)	5.00%
Crude Oil Price Growth Rate	1.00%
Discount Rate	10.00%

PROJECT PERFORMANCE		
Nominal Pre-Tax Project IRR (total project)		**11.08%**
NPV-CF before Interest & Tax (total project) (in 1000 Baht)		**3,064**
Nominal Post-Tax Project IRR (total project)		**10.29%**
NPV - Post-Tax (total project) (in 1000 Baht)		**764**
Pay-back Period (yrs)		**7.96**
Equity IRR		9.11%
Annual Debt Service Coverage Ratios		
	Minimum	**Average**
Pre-Tax Cash Flow Coverage		
of Interest	**1.49**	**2.30**
of Debt Service	**0.86**	**0.90**
After-Tax Cash Flow Coverage		
of Interest	**0.89**	**1.43**
of Debt Service	**0.51**	**0.56**

(Note: all figures in Baht 1000 unless otherwise stated)

Legend: C-crushing; CW-cane waiting; RM1-remelting 1; RM2-remelting 2; PP-pure power generation

COMPANY NAME:	**Dan Chang Bioenergy Co., Ltd.**
Project:	**Dan Chang Bioenergy Cogeneration Plant**
Configuration:	**100 tph and 120 tph biomass-fired boilers**
	37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Option 1:	**Sugar Mill to provide bagasse + raw water + land lease**
	Sugar Mill to get steam and electricity
Case:	**sensitivity Bagasse Price 200 Baht/tonne**
Date:	10/22/01

CASH FLOW STATEMENT

IndexationYear		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
Operating Year		***-1***	***0***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***
Revenues																								
Energy payment - EGAT				5,510	5,675	5,846	6,021	6,202	6,587	6,784	6,988	7,198	7,413	7,828	8,063	8,305	8,554	8,811	9,075	9,347	9,628	9,916	10,214	10,520
Capacity payment - EGAT				2,357	2,428	2,501	2,576	2,653	2,818	2,902	2,989	3,079	3,172	3,349	3,449	3,553	3,659	3,769	3,882	3,999	4,119	4,242	4,370	4,501
Electricity sales- Sugar Mill (C+CW+RM1)				2,198	2,264	2,332	2,402	2,474	2,548	2,624	2,703	2,784	2,868	2,954	3,042	3,134	3,228	3,324	3,424	3,527	3,633	3,742	3,854	3,969
Electricity sales- Sugar Mill (RM2+PG)				1,468	1,512	1,558	1,604	1,653	1,702	1,753	1,806	1,860	1,916	1,973	2,032	2,093	2,156	2,221	2,288	2,356	2,427	2,500	2,575	2,652
Steam sales (C+CW+RM1)				955	983	1,013	1,043	1,074	1,107	1,140	1,174	1,209	1,245	1,283	1,321	1,361	1,402	1,444	1,487	1,532	1,578	1,625	1,674	1,724
Steam sales (RM2)				858	883	910	937	965	994	1,024	1,055	1,086	1,119	1,152	1,187	1,223	1,259	1,297	1,336	1,376	1,417	1,460	1,504	1,549
NEPO incentive																								
Total revenues				13,346	13,746	14,158	14,583	15,021	15,755	16,228	16,715	17,216	17,733	18,539	19,095	19,668	20,258	20,866	21,492	22,137	22,801	23,485	24,189	24,915
Operating Expenses																								
Administration				267	280	294	309	324	340	357	375	394	414	434	456	479	503	528	554	582	611	642	674	708
O&M				899	944	991	1,040	1,092	1,311	1,376	1,445	1,517	1,593	1,882	1,976	2,075	2,179	2,287	2,402	2,522	2,648	2,780	2,919	3,065
Fuel (bagasse)				2,700	2,781	2,864	2,950	3,039	3,130	3,224	3,321	3,420	3,523	3,629	3,737	3,850	3,965	4,084	4,207	4,333	4,463	4,597	4,734	4,877
Fuel (other biomass)				3,413	3,583	3,763	3,951	4,148	4,356	4,573	4,802	5,042	5,294	5,559	5,837	6,129	6,435	6,757	7,095	7,450	7,822	8,213	8,624	9,055
Land lease				406	418	430	443	456	470	484	499	514	529	545	561	578	596	613	632	651	670	690	711	732
Raw Water				82	85	87	90	93	96	98	101	104	108	111	114	118	121	125	128	132	136	140	145	149
Purchase from EGAT				36	38	40	42	44	47	49	51	54	57	59	62	66	69	72	76	80	84	88	92	97
Insurance				411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411
Total operating expenses				8,213	8,539	8,880	9,236	9,608	10,160	10,573	11,005	11,456	11,928	12,630	13,155	13,704	14,278	14,877	15,504	16,160	16,845	17,561	18,310	19,093
Cash Flow from Operations				5,132	5,206	5,278	5,347	5,413	5,596	5,655	5,710	5,760	5,805	5,910	5,940	5,964	5,981	5,989	5,988	5,977	5,956	5,924	5,879	5,822
Less Depreciation				(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)
Operating Profit (Loss) Before Interest & Tax				3,080	3,154	3,225	3,294	3,360	3,543	3,602	3,657	3,707	3,752	3,857	3,888	3,912	3,928	3,936	3,935	3,924	3,903	3,871	3,827	3,769
Less Corporate Tax				0	0	0	0	0	0	0	0	(474)	(563)	(579)	(583)	(587)	(1,178)	(1,181)	(1,180)	(1,177)	(1,171)	(1,161)	(1,148)	(1,131)
Income After Tax				3,080	3,154	**3,225**	3,294	3,360	3,543	3,602	3,657	3,233	3,189	3,278	3,305	3,325	2,750	2,755	2,754	2,747	2,732	2,710	2,679	2,638
Add Depreciation				2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053
Operating Cash Flow				**5,132**	**5,206**	**5,278**	**5,347**	**5,413**	**5,596**	**5,655**	**5,710**	**5,285**	**5,242**	**5,331**	**5,357**	**5,378**	**4,802**	**4,808**	**4,807**	**4,800**	**4,785**	**4,763**	**4,731**	**4,691**
Capital Expenditure		(14,226)	(28,882)																					
Salvage Value																								
Net Cash Flow Before Interest & Debt Service		**(14,226)**	**(28,882)**	**5,132**	**5,206**	**5,278**	**5,347**	**5,413**	**5,596**	**5,655**	**5,710**	**5,285**	**5,242**	**5,331**	**5,357**	**5,378**	**4,802**	**4,808**	**4,807**	**4,800**	**4,785**	**4,763**	**4,731**	**4,691**
CUM. NET CASHFLOW BEFORE INT. & DEBT SERVICE		**(14,226)**	**(43,108)**	**(37,976)**	**(32,769)**	**(27,491)**	**(22,144)**	**(16,731)**	**(11,136)**	**(5,481)**	**229**	**5,514**	**10,756**	**16,087**	**21,445**	**26,822**	**31,625**	**36,432**	**41,240**	**46,040**	**50,825**	**55,587**	**60,319**	**65,010**
Net Present Value (Post-Tax) - total project @	10.00%	**764**																						
Nominal Post -Tax IRR (project)		**10.29%**																						
Less Interest Expense				(3,445)	(3,191)	(2,912)	(2,605)	(2,267)	(1,896)	(1,488)	(1,038)	(544)	0	0	0	0	0	0	0	0	0	0	0	0
Less Debt Repayments				(2,537)	(2,790)	(3,069)	(3,376)	(3,714)	(4,085)	(4,494)	(4,943)	(5,438)	0	0	0	0	0	0	0	0	0	0	0	0
Net Financing Cash Flow				(849)	(775)	(703)	(635)	(569)	(386)	(327)	(272)	(696)	5,242	5,331	5,357	5,378	4,802	4,808	4,807	4,800	4,785	4,763	4,731	4,691
CUM. NET FINANCING CASH FLOW				(849)	(1,624)	(2,328)	(2,962)	(3,531)	(3,917)	(4,243)	(4,515)	(5,212)	30	5,361	10,719	16,096	20,899	25,707	30,514	35,314	40,099	44,861	49,593	54,284
Equity Cash Flow		(4,064)	(8,252)	(849)	(775)	(703)	(635)	(569)	(386)	(327)	(272)	(696)	5,242	5,331	5,357	5,378	4,802	4,808	4,807	4,800	4,785	4,763	4,731	4,691
Equity IRR (Post-Tax)		**9.11%**																						
Net Present Value (NPV total project @)	10.00%	**3,064**																						
Cash Flow Before Interest and Tax		(14,226)	(28,882)	5,132	5,206	5,278	5,347	5,413	5,596	5,655	5,710	5,760	5,805	5,910	5,940	5,964	5,981	5,989	5,988	5,977	5,956	5,924	5,879	5,822
Pre-Tax Project IRR (total)		**11.08%**																						

DEBT SERVICE																								
Overall interest rate		10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
Debt at beginning of year		0	11,154	34,448	31,911	29,121	26,051	22,675	18,961	14,875	10,381	5,438	0	0	0	0	0	0	0	0	0	0	0	0
Debt Drawdown		10,161	20,631																					
Interest During Construction		762	2,663																					
Other Financing Expenses		231																						
Repayment of Principal				(2,537)	(2,790)	(3,069)	(3,376)	(3,714)	(4,085)	(4,494)	(4,943)	(5,438)	0	0	0	0	0	0	0	0	0	0	0	0
Debt at the end of the year		**11,154**	**34,448**	**31,911**	**29,121**	**26,051**	**22,675**	**18,961**	**14,875**	**10,381**	**5,438**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Interest expense				(3,445)	(3,191)	(2,912)	(2,605)	(2,267)	(1,896)	(1,488)	(1,038)	(544)	0	0	0	0	0	0	0	0	0	0	0	0
Total Debt service		**0**	**0**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

DEBT SERVICE COVERAGE RATIOS																					
Pre-Tax Cash Flow Coverage																					
of Interest	1.49	1.63	1.81	2.05	2.39	2.95	3.80	5.50	10.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service	0.86	0.87	0.88	0.89	0.90	0.94	0.95	0.95	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
After-Tax Cash Flow Coverage																					
of Interest	0.89	0.99	1.11	1.26	1.48	1.87	2.42	3.52	5.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service	0.51	0.53	0.54	0.55	0.56	0.59	0.60	0.61	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

COMPANY NAME:	**Dan Chang Bioenergy Co., Ltd.**
Project:	**Dan Chang Bioenergy Cogeneration Plant**
Configuration:	**100 tph and 120 tph biomass-fired boilers**
	37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Condition:	**Sugar Mill to provide bagasse + raw water + land lease**
	Sugar Mill to get steam and electricity
Case:	**sensitivity Bagasse Price 225 Baht/tonne**
Date:	10/22/01

ASSUMPTIONS AND RESULTS

MILL DATA	
Mill Capacity (input) (tcy)	2,250,000
Type of Residue Produced	bagasse
Residue/Mill Input Ratio	27.00%
Total Bagasse Production (tpy)	607,500
Bagasse Required for Existing Equipment (tpy)	303,068
Available Bagasse (tpy)	304,432
Fuel Required from Other Sources (tpy):	
Rice husk	199,390
Wood bark	10,000
Cane leaves	10,000
Mill Heat Requirement (ton-steam/hr)	
Crushing: @ 31 bar	44.6
@ 17 bar	145.0
@ 8 bar	10.0
@ 2.5 bar	460.0
Cane-waiting: @ 31 bar	0.0
@ 17 bar	0.0
@ 8 bar	10.0
@ 2.5 bar	220.3
Remelting: @ 31 bar	0.0
@ 17 bar	0.0
@ 8 bar	10.0
@2.5 bar	158.3
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - milling	189.6
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - cane-waiting	0.0
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - remelting	0.0
Mill Power Requirement (kW)	
Crushing	21,000
Cane-waiting	12,500
Remelting 1	8,600
Remelting 2	8,600
Off-milling/off-remelting	1,000
Crushing Duration (hr/yr)	1,956
Cane-waiting Duration (hr/yr)	600
Remelting 1 Duration (hr/yr)	1,116
Remelting Duration 2 (hr/yr)	3,528
Pure Power Generation (hr/yr)	720

ENERGY PLANT DATA	
Fuel Data:	
Bagasse	
Moisture Content (wet basis)	50.00%
Lower Heating Value (LHV)(MJ/kg)	7.32
Rice husk	
Moisture Content (wet basis)	12.00%
Lower Heating Value (LHV)(MJ/kg)	11.70
Wood bark	
Moisture Content (wet basis)	32.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Cane leaves	
Moisture Content (wet basis)	24.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Plant Performance:	
Plant Total Operation (hr/yr)	7,920
Parasitic Load (crushing)	1,950
Parasitic Load (cane waiting)	1,800
Parasitic Load (remelting)	1,950
Parasitic Load (pure power generation)	1,800
Transmission Loss	1.00%
Overall Grid Off-take in a Year (year 1-5)	84.05%
Overall Grid Off-take in a Year (year 6-10)	86.67%
Overall Grid Off-take in a Year (year 11-21)	88.85%
Crushing:	
Plant Capacity (kW)	**48,300**
Load Factor	100.00%
Power Generation (kWh/yr)	94,474,800
Mill Power Requirements (kWh/yr)	41,076,000
Grid Export/Excess Power (kWh/yr) - yr 1 -5	40,979,075
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	42,255,871
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	43,319,868
Cane-waiting:	
Plant Capacity (kW)	**39,500**
Load Factor	100.00%
Power Generation (kWh/yr)	23,700,000
Mill Power Requirements (kWh/yr)	7,500,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	12,538,928
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	12,929,606
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	13,255,172
Remelting 1:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	40,079,837
Mill Power Requirements (kWh/yr)	9,601,298
Grid Export/Excess Power (kWh/yr) - yr 1 - 5	23,506,342
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	24,238,735
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	24,849,063
Remelting 2:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	126,639,763
Mill Power Requirements (kWh/yr)	30,337,102
Grid Export/Excess Power (kWh/yr) - yr 1 -5	74,272,695
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	76,586,830
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	78,515,275
Pure Power Generation:	
Plant Capacity (kW)	**28,000**
Load Factor	100.00%
Power Generation (kWh/yr)	20,160,000
Mill Power Requirements (kWh/yr)	720,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	15,116,472
Grid Export/Excess Power (kWh/yr) - yr 6- 10	15,587,460
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	15,979,950
Annual Shutdown/Maintenance:	
Back-up Power Requirements (MW)	1.00
Total Number Days for Annual Maintenance	30

GENERAL DATA	
Plant Life (years)	21
PPA with EGAT (years)	21
Depreciation Policy	straight line
Corporate Tax Rate:	
Year 1-8	0.00%
Year 9-13	15.00%
Year 14 onwards	30.00%

TARIFF	Baht	US$
Energy Payment (Baht/kWh) - EGAT	1.4900	0.0331
Power Capacity Payment (Baht/kW-mo)	458.9474	10.1988
Levelised Electricity Selling Rate (Baht/kWh) - EGAT (RM2+PP)	2.1274	0.0473
Electricity Purchase Price from EGAT (Baht/kWh) - Peak	2.6950	0.0599
Electricity Purchase Price from EGAT (Baht/kWh) - Off-Peak	1.1914	0.0265
Power Demand Charge (Baht/kW-mo)	132.9300	2.9540
Back-up Power Charge for Cogeneration (Baht-kW-mo)	29.4400	0.6542
Service Charge (Baht/mo)	228.1700	5.0704
Levelised Electricity Selling Rate (Baht/kWh) - Sugar Mill (C+CW+RM1	1.7000	0.0378
Steam Selling Rate (Baht/ton) - Sugar Mill (C+CW+RM1)	34.4895	0.7664
Steam Selling Rate (Baht/ton) - Sugar Mill (RM 2)	65.0000	1.4444
Fuel Cost:		
Bagasse (Baht/ton)	225.0000	5.0000
Rice husk (Baht/ton)	700.0000	15.5556
Wood bark (Baht/ton)	700.0000	15.5556
Cane leaves (Baht/ton)	700.0000	15.5556
Natural gas (Baht/million BTU)	151.4518	3.3656
Raw Water (Baht/cu.m.)	6.5000	0.1444
NEPO Incentive (Baht/kWh)	0.1450	0.0032

OPERATING COSTS		1,000 Baht	1,000 US$
Administration		12,000	267
O&M, % of EPC cost (Yr 1-5)	3.50%	40,437	899
O&M, % of EPC cost (Yr 6-10)	4.00%	46,213	1,027
O&M, % of EPC cost (Yr 11 onwards)	4.50%	51,990	1,155
Fuel (bagasse)		136,688	3,038
Fuel (other biomass)		153,573	3,413
Raw Water (C+CW+RM1)		2,429	54
Raw Water (RM2+PP)		1,281	28
Land Lease (C+CW+RM1)		7,651	170
Land Lease (RM2+PP)		10,599	236
Purchase from EGAT		1,642	36
Insurance, % of EPC Cost	1.50%	18,477	411

USES OF FUNDS	1,000 Baht	1,000 US$
Investment Costs		
Development Costs	99,000	2,200
Equipment Costs (main equipment)	1,078,830	23,974
Equipment Costs (BOP)	76,500	1,700
Grid Connection	76,500	1,700
Engineering and Civil Works	135,000	3,000
Import Duty, @ 5.00% of Foreign EPC Cost	32,355	719
Erection, Installation, Training, Handling & Land Transportation	36,000	800
Construction time insurance,1.50 % Equip. Cost	16,200	360
Transferred equipment from sugar mill (old)	297,108	6,602
SUB-TOTAL	1,847,493	41,055
Contingency 5.00% of sub-total	92,375	2,053
Total Investment Costs	1,939,867	43,108
Financing Costs during Construction		
Interest Costs	154,125	3,425
Other Financing Expenses	10,395	231
Total Financing Costs during Construction	164,520	3,656
TOTAL USES OF FUNDS (Project Cost)	**2,104,387**	**46,764**

SOURCES OF FUNDS	1,000 Baht	1,000 US$
Equity 1 28.57% of investment cost	554,220	12,316
Equity 2		
Grant		
Loan*	1,550,167	34,448
TOTAL SOURCES OF FUNDS	**2,104,387**	**46,764**
*Loan		
Amount	1,550,167	34,448
Grace Period		2
Maturity		9
Base Interest Rate		9.00%
Lender's Margin		1.00%
All-in Interest Rate		10.00%
Financing Fees		0.75%

ECONOMIC DATA	
Currency Exchange Rate (Baht/US$)	45.00
Average Inflation Rate (Thai CPI)	5.00%
Crude Oil Price Growth Rate	1.00%
Discount Rate	10.00%

PROJECT PERFORMANCE		
Nominal Pre-Tax Project IRR (total project)		**10.03%**
NPV-CF before Interest & Tax (total project) (in 1000 Baht)		**81**
Nominal Post-Tax Project IRR (total project)		**9.27%**
NPV - Post-Tax (total project) (in 1000 Baht)		**(1,912)**
Pay-back Period (yrs)		**8.56**
Equity IRR		7.43%
Annual Debt Service Coverage Ratios		
	Minimum	**Average**
Pre-Tax Cash Flow Coverage		
of Interest	**1.39**	**2.14**
of Debt Service	**0.80**	**0.84**
After-Tax Cash Flow Coverage		
of Interest	**0.80**	**1.27**
of Debt Service	**0.46**	**0.49**

(Note: all figures in Baht 1000 unless otherwise stated)

Legend: C-crushing; CW-cane waiting; RM1-remelting 1; RM2-remelting 2; PP-pure power generation

COMPANY NAME: Dan Chang Bioenergy Co., Ltd.
Project: Dan Chang Bioenergy Cogeneration Plant
Configuration: 100 tph and 120 tph biomass-fired boilers
37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Option 1: Sugar Mill to provide bagasse + raw water + land lease
Sugar Mill to get steam and electricity
Case: sensitivity Bagasse Price 225 Baht/tonne
Date: 10/22/01

CASH FLOW STATEMENT

IndexationYear		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Operating Year		*-1*	*0*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*
Revenues																								
Energy payment - EGAT				5,510	5,675	5,846	6,021	6,202	6,587	6,784	6,988	7,198	7,413	7,828	8,063	8,305	8,554	8,811	9,075	9,347	9,628	9,916	10,214	10,520
Capacity payment - EGAT				2,357	2,428	2,501	2,576	2,653	2,818	2,902	2,989	3,079	3,172	3,349	3,449	3,553	3,659	3,769	3,882	3,999	4,119	4,242	4,370	4,501
Electricity sales- Sugar Mill (C+CW+RM1)				2,198	2,264	2,332	2,402	2,474	2,548	2,624	2,703	2,784	2,868	2,954	3,042	3,134	3,228	3,324	3,424	3,527	3,633	3,742	3,854	3,969
Electricity sales- Sugar Mill (RM2+PG)				1,468	1,512	1,558	1,604	1,653	1,702	1,753	1,806	1,860	1,916	1,973	2,032	2,093	2,156	2,221	2,288	2,356	2,427	2,500	2,575	2,652
Steam sales (C+CW+RM1)				955	983	1,013	1,043	1,074	1,107	1,140	1,174	1,209	1,245	1,283	1,321	1,361	1,402	1,444	1,487	1,532	1,578	1,625	1,674	1,724
Steam sales (RM2)				858	883	910	937	965	994	1,024	1,055	1,086	1,119	1,152	1,187	1,223	1,259	1,297	1,336	1,376	1,417	1,460	1,504	1,549
NEPO incentive																								
Total revenues				13,346	13,746	14,158	14,583	15,021	15,755	16,228	16,715	17,216	17,733	18,539	19,095	19,668	20,258	20,866	21,492	22,137	22,801	23,485	24,189	24,915
Operating Expenses																								
Administration				267	280	294	309	324	340	357	375	394	414	434	456	479	503	528	554	582	611	642	674	708
O&M				899	944	991	1,040	1,092	1,311	1,376	1,445	1,517	1,593	1,882	1,976	2,075	2,179	2,287	2,402	2,522	2,648	2,780	2,919	3,065
Fuel (bagasse)				3,038	3,129	3,222	3,319	3,419	3,521	3,627	3,736	3,848	3,963	4,082	4,205	4,331	4,461	4,594	4,732	4,874	5,021	5,171	5,326	5,486
Fuel (other biomass)				3,413	3,583	3,763	3,951	4,148	4,356	4,573	4,802	5,042	5,294	5,559	5,837	6,129	6,435	6,757	7,095	7,450	7,822	8,213	8,624	9,055
Land lease				406	418	430	443	456	470	484	499	514	529	545	561	578	596	613	632	651	670	690	711	732
Raw Water				82	85	87	90	93	96	98	101	104	108	111	114	118	121	125	128	132	136	140	145	149
Purchase from EGAT				36	38	40	42	44	47	49	51	54	57	59	62	66	69	72	76	80	84	88	92	97
Insurance				411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411
Total operating expenses				8,551	8,887	9,238	9,605	9,987	10,551	10,976	11,420	11,884	12,368	13,083	13,622	14,185	14,773	15,388	16,030	16,701	17,403	18,136	18,902	19,703
Cash Flow from Operations				4,795	4,859	4,920	4,978	5,033	5,204	5,252	5,295	5,332	5,364	5,456	5,473	5,483	5,485	5,478	5,462	5,436	5,398	5,349	5,288	5,212
Less Depreciation				(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)
Operating Profit (Loss) Before Interest & Tax				2,742	2,806	2,867	2,925	2,980	3,152	3,199	3,242	3,280	3,312	3,403	3,421	3,430	3,432	3,425	3,409	3,383	3,346	3,297	3,235	3,160
Less Corporate Tax				0	0	0	0	0	0	0	0	(410)	(497)	(510)	(513)	(515)	(1,030)	(1,028)	(1,023)	(1,015)	(1,004)	(989)	(970)	(948)
Income After Tax				2,742	2,806	**2,867**	2,925	2,980	3,152	3,199	3,242	2,869	2,815	2,893	2,907	2,916	2,403	2,398	2,386	2,368	2,342	2,308	2,264	2,212
Add Depreciation				2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053
Operating Cash Flow				**4,795**	**4,859**	**4,920**	**4,978**	**5,033**	**5,204**	**5,252**	**5,295**	**4,922**	**4,868**	**4,945**	**4,960**	**4,969**	**4,455**	**4,451**	**4,439**	**4,421**	**4,395**	**4,360**	**4,317**	**4,264**
Capital Expenditure		(14,226)	(28,882)																					
Salvage Value																								
Net Cash Flow Before Interest & Debt Service		**(14,226)**	**(28,882)**	**4,795**	**4,859**	**4,920**	**4,978**	**5,033**	**5,204**	**5,252**	**5,295**	**4,922**	**4,868**	**4,945**	**4,960**	**4,969**	**4,455**	**4,451**	**4,439**	**4,421**	**4,395**	**4,360**	**4,317**	**4,264**
CUM. NET CASHFLOW BEFORE INT. & DEBT SERVICE		**(14,226)**	**(43,108)**	**(38,313)**	**(33,454)**	**(28,534)**	**(23,556)**	**(18,523)**	**(13,319)**	**(8,067)**	**(2,772)**	**2,150**	**7,017**	**11,963**	**16,923**	**21,892**	**26,347**	**30,798**	**35,237**	**39,658**	**44,052**	**48,413**	**52,730**	**56,994**
Net Present Value (Post-Tax) - total project @	10.00%	**(1,912)**																						
Nominal Post -Tax IRR (project)		**9.27%**																						
Less Interest Expense				(3,445)	(3,191)	(2,912)	(2,605)	(2,267)	(1,896)	(1,488)	(1,038)	(544)	0	0	0	0	0	0	0	0	0	0	0	0
Less Debt Repayments				(2,537)	(2,790)	(3,069)	(3,376)	(3,714)	(4,085)	(4,494)	(4,943)	(5,438)	0	0	0	0	0	0	0	0	0	0	0	0
Net Financing Cash Flow				(1,187)	(1,123)	(1,062)	(1,003)	(949)	(777)	(730)	(687)	(1,060)	4,868	4,945	4,960	4,969	4,455	4,451	4,439	4,421	4,395	4,360	4,317	4,264
CUM. NET FINANCING CASH FLOW				(1,187)	(2,309)	(3,371)	(4,374)	(5,323)	(6,100)	(6,830)	(7,517)	(8,576)	(3,708)	1,237	6,197	11,166	15,621	20,072	24,511	28,932	33,326	37,687	42,004	46,268
Equity Cash Flow		(4,064)	(8,252)	(1,187)	(1,123)	(1,062)	(1,003)	(949)	(777)	(730)	(687)	(1,060)	4,868	4,945	4,960	4,969	4,455	4,451	4,439	4,421	4,395	4,360	4,317	4,264
Equity IRR (Post-Tax)		**7.43%**																						
Net Present Value (NPV total project @)	10.00%	**81**																						
Cash Flow Before Interest and Tax		(14,226)	(28,882)	4,795	4,859	4,920	4,978	5,033	5,204	5,252	5,295	5,332	5,364	5,456	5,473	5,483	5,485	5,478	5,462	5,436	5,398	5,349	5,288	5,212
Pre-Tax Project IRR (total)		**10.03%**																						

DEBT SERVICE																								
Overall interest rate		10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
Debt at beginning of year		0	11,154	34,448	31,911	29,121	26,051	22,675	18,961	14,875	10,381	5,438	0	0	0	0	0	0	0	0	0	0	0	0
Debt Drawdown		10,161	20,631																					
Interest During Construction		762	2,663																					
Other Financing Expenses		231																						
Repayment of Principal				(2,537)	(2,790)	(3,069)	(3,376)	(3,714)	(4,085)	(4,494)	(4,943)	(5,438)	0	0	0	0	0	0	0	0	0	0	0	0
Debt at the end of the year		**11,154**	**34,448**	**31,911**	**29,121**	**26,051**	**22,675**	**18,961**	**14,875**	**10,381**	**5,438**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Interest expense				(3,445)	(3,191)	(2,912)	(2,605)	(2,267)	(1,896)	(1,488)	(1,038)	(544)	0	0	0	0	0	0	0	0	0	0	0	0
Total Debt service		**0**	**0**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

DEBT SERVICE COVERAGE RATIOS																						
Pre-Tax Cash Flow Coverage																						
of Interest		1.39	1.52	1.69	1.91	2.22	2.74	3.53	5.10	9.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service		0.80	0.81	0.82	0.83	0.84	0.87	0.88	0.89	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
After-Tax Cash Flow Coverage																						
of Interest		0.80	0.88	0.98	1.12	1.31	1.66	2.15	3.12	5.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service		0.46	0.47	0.48	0.49	0.50	0.53	0.53	0.54	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

COMPANY NAME: Dan Chang Bioenergy Co., Ltd.
Project: Dan Chang Bioenergy Cogeneration Plant
Configuration: 100 tph and 120 tph biomass-fired boilers
37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Condition: Sugar Mill to provide bagasse + raw water + land lease
Sugar Mill to get steam and electricity
Case: sensitivity Bagasse Price 275 Baht/tonne
Date: 10/22/01

ASSUMPTIONS AND RESULTS

MILL DATA		
Mill Capacity (input) (tcy)		2,250,000
Type of Residue Produced		bagasse
Residue/Mill Input Ratio		27.00%
Total Bagasse Production (tpy)		607,500
Bagasse Required for Existing Equipment (tpy)		303,068
Available Bagasse (tpy)		304,432
Fuel Required from Other Sources (tpy):		
Rice husk		199,390
Wood bark		10,000
Cane leaves		10,000
Mill Heat Requirement (ton-steam/hr)		
Crushing:	@ 31 bar	44.6
	@ 17 bar	145.0
	@ 8 bar	10.0
	@ 2.5 bar	460.0
Cane-waiting:	@ 31 bar	0.0
	@ 17 bar	0.0
	@ 8 bar	10.0
	@ 2.5 bar	220.3
Remelting:	@ 31 bar	0.0
	@ 17 bar	0.0
	@ 8 bar	10.0
	@2.5 bar	158.3
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - milling		189.6
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - cane-waiting		0.0
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - remelting		0.0
Mill Power Requirement (kW)		
Crushing		21,000
Cane-waiting		12,500
Remelting 1		8,600
Remelting 2		8,600
Off-milling/off-remelting		1,000
Crushing Duration (hr/yr)		1,956
Cane-waiting Duration (hr/yr)		600
Remelting 1 Duration (hr/yr)		1,116
Remelting Duration 2 (hr/yr)		3,528
Pure Power Generation (hr/yr)		720

ENERGY PLANT DATA	
Fuel Data:	
Bagasse	
Moisture Content (wet basis)	50.00%
Lower Heating Value (LHV)(MJ/kg)	7.32
Rice husk	
Moisture Content (wet basis)	12.00%
Lower Heating Value (LHV)(MJ/kg)	11.70
Wood bark	
Moisture Content (wet basis)	32.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Cane leaves	
Moisture Content (wet basis)	24.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Plant Performance:	
Plant Total Operation (hr/yr)	7,920
Parasitic Load (crushing)	1,950
Parasitic Load (cane waiting)	1,800
Parasitic Load (remelting)	1,950
Parasitic Load (pure power generation)	1,800
Transmission Loss	1.00%
Overall Grid Off-take in a Year (year 1-5)	84.05%
Overall Grid Off-take in a Year (year 6-10)	86.67%
Overall Grid Off-take in a Year (year 11-21)	88.85%
Crushing:	
Plant Capacity (kW)	**48,300**
Load Factor	100.00%
Power Generation (kWh/yr)	94,474,800
Mill Power Requirements (kWh/yr)	41,076,000
Grid Export/Excess Power (kWh/yr) - yr 1 -5	40,979,075
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	42,255,871
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	43,319,868
Cane-waiting:	
Plant Capacity (kW)	**39,500**
Load Factor	100.00%
Power Generation (kWh/yr)	23,700,000
Mill Power Requirements (kWh/yr)	7,500,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	12,538,928
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	12,929,606
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	13,255,172
Remelting 1:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	40,079,837
Mill Power Requirements (kWh/yr)	9,601,298
Grid Export/Excess Power (kWh/yr) - yr 1 - 5	23,506,342
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	24,238,735
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	24,849,063
Remelting 2:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	126,639,763
Mill Power Requirements (kWh/yr)	30,337,102
Grid Export/Excess Power (kWh/yr) - yr 1 -5	74,272,695
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	76,586,830
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	78,515,275
Pure Power Generation:	
Plant Capacity (kW)	**28,000**
Load Factor	100.00%
Power Generation (kWh/yr)	20,160,000
Mill Power Requirements (kWh/yr)	720,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	15,116,472
Grid Export/Excess Power (kWh/yr) - yr 6- 10	15,587,460
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	15,979,950
Annual Shutdown/Maintenance:	
Back-up Power Requirements (MW)	1.00
Total Number Days for Annual Maintenance	30

GENERAL DATA	
Plant Life (years)	21
PPA with EGAT (years)	21
Depreciation Policy	straight line
Corporate Tax Rate:	
Year 1-8	0.00%
Year 9-13	15.00%
Year 14 onwards	30.00%

TARIFF	Baht	US$
Energy Payment (Baht/kWh) - EGAT	1.4900	0.0331
Power Capacity Payment (Baht/kW-mo)	458.9474	10.1988
Levelised Electricity Selling Rate (Baht/kWh) - EGAT (RM2+PP)	2.1274	0.0473
Electricity Purchase Price from EGAT (Baht/kWh) - Peak	2.6950	0.0599
Electricity Purchase Price from EGAT (Baht/kWh) - Off-Peak	1.1914	0.0265
Power Demand Charge (Baht/kW-mo)	132.9300	2.9540
Back-up Power Charge for Cogeneration (Baht-kW-mo)	29.4400	0.6542
Service Charge (Baht/mo)	228.1700	5.0704
Levelised Electricity Selling Rate (Baht/kWh) - Sugar Mill (C+CW+RM1	1.7000	0.0378
Steam Selling Rate (Baht/ton) - Sugar Mill (C+CW+RM1)	34.4895	0.7664
Steam Selling Rate (Baht/ton) - Sugar Mill (RM 2)	65.0000	1.4444
Fuel Cost:		
Bagasse (Baht/ton)	275.0000	6.1111
Rice husk (Baht/ton)	700.0000	15.5556
Wood bark (Baht/ton)	700.0000	15.5556
Cane leaves (Baht/ton)	700.0000	15.5556
Natural gas (Baht/million BTU)	151.4518	3.3656
Raw Water (Baht/cu.m.)	6.5000	0.1444
NEPO Incentive (Baht/kWh)	0.1450	0.0032

OPERATING COSTS		1,000 Baht	1,000 US$
Administration		12,000	267
O&M, % of EPC cost (Yr 1-5)	3.50%	40,437	899
O&M, % of EPC cost (Yr 6-10)	4.00%	46,213	1,027
O&M, % of EPC cost (Yr 11 onwards)	4.50%	51,990	1,155
Fuel (bagasse)		167,063	3,713
Fuel (other biomass)		153,573	3,413
Raw Water (C+CW+RM1)		2,429	54
Raw Water (RM2+PP)		1,281	28
Land Lease (C+CW+RM1)		7,651	170
Land Lease (RM2+PP)		10,599	236
Purchase from EGAT		1,642	36
Insurance, % of EPC Cost	1.50%	18,477	411

USES OF FUNDS	1,000 Baht	1,000 US$
Investment Costs		
Development Costs	99,000	2,200
Equipment Costs (main equipment)	1,078,830	23,974
Equipment Costs (BOP)	76,500	1,700
Grid Connection	76,500	1,700
Engineering and Civil Works	135,000	3,000
Import Duty, @ 5.00% of Foreign EPC Cost	32,355	719
Erection, Installation, Training, Handling & Land Transportation	36,000	800
Construction time insurance,1.50 % Equip. Cost	16,200	360
Transferred equipment from sugar mill (old)	297,108	6,602
SUB-TOTAL	1,847,493	41,055
Contingency 5.00% of sub-total	92,375	2,053
Total Investment Costs	1,939,867	43,108
Financing Costs during Construction		
Interest Costs	154,125	3,425
Other Financing Expenses	10,395	231
Total Financing Costs during Construction	164,520	3,656
TOTAL USES OF FUNDS (Project Cost)	**2,104,387**	**46,764**

SOURCES OF FUNDS	1,000 Baht	1,000 US$
Equity 1 28.57% of investment cost	554,220	12,316
Equity 2		
Grant		
Loan*	1,550,167	34,448
TOTAL SOURCES OF FUNDS	**2,104,387**	**46,764**
*Loan		
Amount	1,550,167	34,448
Grace Period		2
Maturity		9
Base Interest Rate		9.00%
Lender's Margin		1.00%
All-in Interest Rate		10.00%
Financing Fees		0.75%

ECONOMIC DATA	
Currency Exchange Rate (Baht/US$)	45.00
Average Inflation Rate (Thai CPI)	5.00%
Crude Oil Price Growth Rate	1.00%
Discount Rate	10.00%

PROJECT PERFORMANCE		
Nominal Pre-Tax Project IRR (total project)		**7.76%**
NPV-CF before Interest & Tax (total project) (in 1000 Baht)		**(5,885)**
Nominal Post-Tax Project IRR (total project)		**7.10%**
NPV - Post-Tax (total project) (in 1000 Baht)		**(7,264)**
Pay-back Period (yrs)		**10.11**
Equity IRR		4.02%
Annual Debt Service Coverage Ratios		
	Minimum	**Average**
Pre-Tax Cash Flow Coverage		
of Interest	**1.20**	**1.83**
of Debt Service	**0.69**	**0.71**
After-Tax Cash Flow Coverage		
of Interest	**0.60**	**0.95**
of Debt Service	**0.35**	**0.37**

(Note: all figures in Baht 1000 unless otherwise stated)
Legend: C-crushing; CW-cane waiting; RM1-remelting 1; RM2-remelting 2; PP-pure power generation

COMPANY NAME: Dan Chang Bioenergy Co., Ltd.
Project: Dan Chang Bioenergy Cogeneration Plant
Configuration: 100 tph and 120 tph biomass-fired boilers
37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Option 1: Sugar Mill to provide bagasse + raw water + land lease
Sugar Mill to get steam and electricity
Case: sensitivity Bagasse Price 275 Baht/tonne
Date: 10/22/01

CASH FLOW STATEMENT

IndexationYear		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Operating Year		*-1*	*0*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*
Revenues																								
Energy payment - EGAT				5,510	5,675	5,846	6,021	6,202	6,587	6,784	6,988	7,198	7,413	7,828	8,063	8,305	8,554	8,811	9,075	9,347	9,628	9,916	10,214	10,520
Capacity payment - EGAT				2,357	2,428	2,501	2,576	2,653	2,818	2,902	2,989	3,079	3,172	3,349	3,449	3,553	3,659	3,769	3,882	3,999	4,119	4,242	4,370	4,501
Electricity sales- Sugar Mill (C+CW+RM1)				2,198	2,264	2,332	2,402	2,474	2,548	2,624	2,703	2,784	2,868	2,954	3,042	3,134	3,228	3,324	3,424	3,527	3,633	3,742	3,854	3,969
Electricity sales- Sugar Mill (RM2+PG)				1,468	1,512	1,558	1,604	1,653	1,702	1,753	1,806	1,860	1,916	1,973	2,032	2,093	2,156	2,221	2,288	2,356	2,427	2,500	2,575	2,652
Steam sales (C+CW+RM1)				955	983	1,013	1,043	1,074	1,107	1,140	1,174	1,209	1,245	1,283	1,321	1,361	1,402	1,444	1,487	1,532	1,578	1,625	1,674	1,724
Steam sales (RM2)				858	883	910	937	965	994	1,024	1,055	1,086	1,119	1,152	1,187	1,223	1,259	1,297	1,336	1,376	1,417	1,460	1,504	1,549
NEPO incentive																								
Total revenues				13,346	13,746	14,158	14,583	15,021	15,755	16,228	16,715	17,216	17,733	18,539	19,095	19,668	20,258	20,866	21,492	22,137	22,801	23,485	24,189	24,915
Operating Expenses																								
Administration				267	280	294	309	324	340	357	375	394	414	434	456	479	503	528	554	582	611	642	674	708
O&M				899	944	991	1,040	1,092	1,311	1,376	1,445	1,517	1,593	1,882	1,976	2,075	2,179	2,287	2,402	2,522	2,648	2,780	2,919	3,065
Fuel (bagasse)				3,713	3,824	3,939	4,057	4,178	4,304	4,433	4,566	4,703	4,844	4,989	5,139	5,293	5,452	5,615	5,784	5,957	6,136	6,320	6,510	6,705
Fuel (other biomass)				3,413	3,583	3,763	3,951	4,148	4,356	4,573	4,802	5,042	5,294	5,559	5,837	6,129	6,435	6,757	7,095	7,450	7,822	8,213	8,624	9,055
Land lease				406	418	430	443	456	470	484	499	514	529	545	561	578	596	613	632	651	670	690	711	732
Raw Water				82	85	87	90	93	96	98	101	104	108	111	114	118	121	125	128	132	136	140	145	149
Purchase from EGAT				36	38	40	42	44	47	49	51	54	57	59	62	66	69	72	76	80	84	88	92	97
Insurance				411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411
Total operating expenses				9,226	9,582	9,954	10,342	10,747	11,333	11,782	12,250	12,739	13,249	13,990	14,556	15,147	15,765	16,409	17,082	17,784	18,518	19,285	20,085	20,922
Cash Flow from Operations				4,120	4,164	4,204	4,241	4,273	4,422	4,446	4,464	4,477	4,484	4,549	4,539	4,521	4,494	4,457	4,410	4,352	4,283	4,200	4,104	3,993
Less Depreciation				(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)
Operating Profit (Loss) Before Interest & Tax				2,067	2,111	2,151	2,188	2,221	2,369	2,393	2,412	2,424	2,431	2,496	2,486	2,468	2,441	2,404	2,358	2,300	2,230	2,147	2,051	1,940
Less Corporate Tax				0	0	0	0	0	0	0	0	(282)	(365)	(374)	(373)	(370)	(732)	(721)	(707)	(690)	(669)	(644)	(615)	(582)
Income After Tax				2,067	2,111	**2,151**	2,188	2,221	2,369	2,393	2,412	2,142	2,066	2,122	2,113	2,098	1,709	1,683	1,650	1,610	1,561	1,503	1,436	1,358
Add Depreciation				2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053
Operating Cash Flow				**4,120**	**4,164**	**4,204**	**4,241**	**4,273**	**4,422**	**4,446**	**4,464**	**4,195**	**4,119**	**4,174**	**4,166**	**4,151**	**3,761**	**3,736**	**3,703**	**3,663**	**3,614**	**3,556**	**3,489**	**3,411**
Capital Expenditure		(14,226)	(28,882)																					
Salvage Value																								
Net Cash Flow Before Interest & Debt Service		**(14,226)**	**(28,882)**	**4,120**	**4,164**	**4,204**	**4,241**	**4,273**	**4,422**	**4,446**	**4,464**	**4,195**	**4,119**	**4,174**	**4,166**	**4,151**	**3,761**	**3,736**	**3,703**	**3,663**	**3,614**	**3,556**	**3,489**	**3,411**
CUM. NET CASHFLOW BEFORE INT. & DEBT SERVICE		**(14,226)**	**(43,108)**	**(38,988)**	**(34,825)**	**(30,621)**	**(26,380)**	**(22,107)**	**(17,685)**	**(13,239)**	**(8,775)**	**(4,579)**	**(460)**	**3,714**	**7,880**	**12,031**	**15,792**	**19,528**	**23,231**	**26,894**	**30,507**	**34,063**	**37,552**	**40,963**
Net Present Value (Post-Tax) - total project @	10.00%	**(7,264)**																						
Nominal Post -Tax IRR (project)		**7.10%**																						
Less Interest Expense				(3,445)	(3,191)	(2,912)	(2,605)	(2,267)	(1,896)	(1,488)	(1,038)	(544)	0	0	0	0	0	0	0	0	0	0	0	0
Less Debt Repayments				(2,537)	(2,790)	(3,069)	(3,376)	(3,714)	(4,085)	(4,494)	(4,943)	(5,438)	0	0	0	0	0	0	0	0	0	0	0	0
Net Financing Cash Flow				(1,862)	(1,818)	(1,778)	(1,741)	(1,708)	(1,560)	(1,536)	(1,517)	(1,786)	4,119	4,174	4,166	4,151	3,761	3,736	3,703	3,663	3,614	3,556	3,489	3,411
CUM. NET FINANCING CASH FLOW				(1,862)	(3,680)	(5,457)	(7,198)	(8,906)	(10,466)	(12,002)	(13,519)	(15,305)	(11,186)	(7,012)	(2,846)	1,305	5,066	8,802	12,505	16,168	19,781	23,337	26,826	30,237
Equity Cash Flow		(4,064)	(8,252)	(1,862)	(1,818)	(1,778)	(1,741)	(1,708)	(1,560)	(1,536)	(1,517)	(1,786)	4,119	4,174	4,166	4,151	3,761	3,736	3,703	3,663	3,614	3,556	3,489	3,411
Equity IRR (Post-Tax)		**4.02%**																						
Net Present Value (NPV total project @)	10.00%	**(5,885)**																						
Cash Flow Before Interest and Tax		(14,226)	(28,882)	4,120	4,164	4,204	4,241	4,273	4,422	4,446	4,464	4,477	4,484	4,549	4,539	4,521	4,494	4,457	4,410	4,352	4,283	4,200	4,104	3,993
Pre-Tax Project IRR (total)		**7.76%**																						

DEBT SERVICE																								
Overall interest rate		10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
Debt at beginning of year		0	11,154	34,448	31,911	29,121	26,051	22,675	18,961	14,875	10,381	5,438	0	0	0	0	0	0	0	0	0	0	0	0
Debt Drawdown		10,161	20,631																					
Interest During Construction		762	2,663																					
Other Financing Expenses		231																						
Repayment of Principal				(2,537)	(2,790)	(3,069)	(3,376)	(3,714)	(4,085)	(4,494)	(4,943)	(5,438)	0	0	0	0	0	0	0	0	0	0	0	0
Debt at the end of the year		**11,154**	**34,448**	**31,911**	**29,121**	**26,051**	**22,675**	**18,961**	**14,875**	**10,381**	**5,438**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Interest expense				(3,445)	(3,191)	(2,912)	(2,605)	(2,267)	(1,896)	(1,488)	(1,038)	(544)	0	0	0	0	0	0	0	0	0	0	0	0
Total Debt service		**0**	**0**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

DEBT SERVICE COVERAGE RATIOS																					
Pre-Tax Cash Flow Coverage																					
of Interest	1.20	1.30	1.44	1.63	1.88	2.33	2.99	4.30	8.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service	0.69	0.70	0.70	0.71	0.71	0.74	0.74	0.75	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
After-Tax Cash Flow Coverage																					
of Interest	0.60	0.66	0.74	0.84	0.98	1.25	1.61	2.32	3.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service	0.35	0.35	0.36	0.37	0.37	0.40	0.40	0.40	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

COMPANY NAME:	**Dan Chang Bioenergy Co., Ltd.**
Project:	**Dan Chang Bioenergy Cogeneration Plant**
Configuration:	**100 tph and 120 tph biomass-fired boilers**
	37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Condition:	**Sugar Mill to provide bagasse + raw water + land lease**
	Sugar Mill to get steam and electricity
Case:	**sensitivity Bagasse Price 300 Baht/tonne**
Date:	10/22/01

ASSUMPTIONS AND RESULTS

MILL DATA	
Mill Capacity (input) (tcy)	2,250,000
Type of Residue Produced	bagasse
Residue/Mill Input Ratio	27.00%
Total Bagasse Production (tpy)	607,500
Bagasse Required for Existing Equipment (tpy)	303,068
Available Bagasse (tpy)	304,432
Fuel Required from Other Sources (tpy):	
Rice husk	199,390
Wood bark	10,000
Cane leaves	10,000
Mill Heat Requirement (ton-steam/hr)	
Crushing: @ 31 bar	44.6
@ 17 bar	145.0
@ 8 bar	10.0
@ 2.5 bar	460.0
Cane-waiting: @ 31 bar	0.0
@ 17 bar	0.0
@ 8 bar	10.0
@ 2.5 bar	220.3
Remelting: @ 31 bar	0.0
@ 17 bar	0.0
@ 8 bar	10.0
@2.5 bar	158.3
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - milling	189.6
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - cane-waiting	0.0
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - remelting	0.0
Mill Power Requirement (kW)	
Crushing	21,000
Cane-waiting	12,500
Remelting 1	8,600
Remelting 2	8,600
Off-milling/off-remelting	1,000
Crushing Duration (hr/yr)	1,956
Cane-waiting Duration (hr/yr)	600
Remelting 1 Duration (hr/yr)	1,116
Remelting Duration 2 (hr/yr)	3,528
Pure Power Generation (hr/yr)	720

ENERGY PLANT DATA	
Fuel Data:	
Bagasse	
Moisture Content (wet basis)	50.00%
Lower Heating Value (LHV)(MJ/kg)	7.32
Rice husk	
Moisture Content (wet basis)	12.00%
Lower Heating Value (LHV)(MJ/kg)	11.70
Wood bark	
Moisture Content (wet basis)	32.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Cane leaves	
Moisture Content (wet basis)	24.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Plant Performance:	
Plant Total Operation (hr/yr)	7,920
Parasitic Load (crushing)	1,950
Parasitic Load (cane waiting)	1,800
Parasitic Load (remelting)	1,950
Parasitic Load (pure power generation)	1,800
Transmission Loss	1.00%
Overall Grid Off-take in a Year (year 1-5)	84.05%
Overall Grid Off-take in a Year (year 6-10)	86.67%
Overall Grid Off-take in a Year (year 11-21)	88.85%
Crushing:	
Plant Capacity (kW)	**48,300**
Load Factor	100.00%
Power Generation (kWh/yr)	94,474,800
Mill Power Requirements (kWh/yr)	41,076,000
Grid Export/Excess Power (kWh/yr) - yr 1 -5	40,979,075
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	42,255,871
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	43,319,868
Cane-waiting:	
Plant Capacity (kW)	**39,500**
Load Factor	100.00%
Power Generation (kWh/yr)	23,700,000
Mill Power Requirements (kWh/yr)	7,500,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	12,538,928
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	12,929,606
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	13,255,172
Remelting 1:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	40,079,837
Mill Power Requirements (kWh/yr)	9,601,298
Grid Export/Excess Power (kWh/yr) - yr 1 - 5	23,506,342
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	24,238,735
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	24,849,063
Remelting 2:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	126,639,763
Mill Power Requirements (kWh/yr)	30,337,102
Grid Export/Excess Power (kWh/yr) - yr 1 -5	74,272,695
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	76,586,830
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	78,515,275
Pure Power Generation:	
Plant Capacity (kW)	**28,000**
Load Factor	100.00%
Power Generation (kWh/yr)	20,160,000
Mill Power Requirements (kWh/yr)	720,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	15,116,472
Grid Export/Excess Power (kWh/yr) - yr 6- 10	15,587,460
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	15,979,950
Annual Shutdown/Maintenance:	
Back-up Power Requirements (MW)	1.00
Total Number Days for Annual Maintenance	30

GENERAL DATA	
Plant Life (years)	21
PPA with EGAT (years)	21
Depreciation Policy	straight line
Corporate Tax Rate:	
Year 1-8	0.00%
Year 9-13	15.00%
Year 14 onwards	30.00%

TARIFF	Baht	US$
Energy Payment (Baht/kWh) - EGAT	1.4900	0.0331
Power Capacity Payment (Baht/kW-mo)	458.9474	10.1988
Levelised Electricity Selling Rate (Baht/kWh) - EGAT (RM2+PP)	2.1274	0.0473
Electricity Purchase Price from EGAT (Baht/kWh) - Peak	2.6950	0.0599
Electricity Purchase Price from EGAT (Baht/kWh) - Off-Peak	1.1914	0.0265
Power Demand Charge (Baht/kW-mo)	132.9300	2.9540
Back-up Power Charge for Cogeneration (Baht-kW-mo)	29.4400	0.6542
Service Charge (Baht/mo)	228.1700	5.0704
Levelised Electricity Selling Rate (Baht/kWh) - Sugar Mill (C+CW+RM1	1.7000	0.0378
Steam Selling Rate (Baht/ton) - Sugar Mill (C+CW+RM1)	34.4895	0.7664
Steam Selling Rate (Baht/ton) - Sugar Mill (RM 2)	65.0000	1.4444
Fuel Cost:		
Bagasse (Baht/ton)	300.0000	6.6667
Rice husk (Baht/ton)	700.0000	15.5556
Wood bark (Baht/ton)	700.0000	15.5556
Cane leaves (Baht/ton)	700.0000	15.5556
Natural gas (Baht/million BTU)	151.4518	3.3656
Raw Water (Baht/cu.m.)	6.5000	0.1444
NEPO Incentive (Baht/kWh)	0.1450	0.0032

OPERATING COSTS		1,000 Baht	1,000 US$
Administration		12,000	267
O&M, % of EPC cost (Yr 1-5)	3.50%	40,437	899
O&M, % of EPC cost (Yr 6-10)	4.00%	46,213	1,027
O&M, % of EPC cost (Yr 11 onwards)	4.50%	51,990	1,155
Fuel (bagasse)		182,250	4,050
Fuel (other biomass)		153,573	3,413
Raw Water (C+CW+RM1)		2,429	54
Raw Water (RM2+PP)		1,281	28
Land Lease (C+CW+RM1)		7,651	170
Land Lease (RM2+PP)		10,599	236
Purchase from EGAT		1,642	36
Insurance, % of EPC Cost	1.50%	18,477	411

USES OF FUNDS	1,000 Baht	1,000 US$
Investment Costs		
Development Costs	99,000	2,200
Equipment Costs (main equipment)	1,078,830	23,974
Equipment Costs (BOP)	76,500	1,700
Grid Connection	76,500	1,700
Engineering and Civil Works	135,000	3,000
Import Duty, @ 5.00% of Foreign EPC Cost	32,355	719
Erection, Installation, Training, Handling & Land Transportation	36,000	800
Construction time insurance,1.50 % Equip. Cost	16,200	360
Transferred equipment from sugar mill (old)	297,108	6,602
SUB-TOTAL	1,847,493	41,055
Contingency 5.00% of sub-total	92,375	2,053
Total Investment Costs	1,939,867	43,108
Financing Costs during Construction		
Interest Costs	154,125	3,425
Other Financing Expenses	10,395	231
Total Financing Costs during Construction	164,520	3,656
TOTAL USES OF FUNDS (Project Cost)	**2,104,387**	**46,764**

SOURCES OF FUNDS	1,000 Baht	1,000 US$
Equity 1 28.57% of investment cost	554,220	12,316
Equity 2		
Grant		
Loan*	1,550,167	34,448
TOTAL SOURCES OF FUNDS	**2,104,387**	**46,764**
*Loan		
Amount	1,550,167	34,448
Grace Period		2
Maturity		9
Base Interest Rate		9.00%
Lender's Margin		1.00%
All-in Interest Rate		10.00%
Financing Fees		0.75%

ECONOMIC DATA	
Currency Exchange Rate (Baht/US$)	45.00
Average Inflation Rate (Thai CPI)	5.00%
Crude Oil Price Growth Rate	1.00%
Discount Rate	10.00%

PROJECT PERFORMANCE		
Nominal Pre-Tax Project IRR (total project)		**6.51%**
NPV-CF before Interest & Tax (total project) (in 1000 Baht)		**(8,868)**
Nominal Post-Tax Project IRR (total project)		**5.92%**
NPV - Post-Tax (total project) (in 1000 Baht)		**(9,940)**
Pay-back Period (yrs)		**11.11**
Equity IRR		2.27%
Annual Debt Service Coverage Ratios		
	Minimum	**Average**
Pre-Tax Cash Flow Coverage		
of Interest	**1.10**	**1.67**
of Debt Service	**0.63**	**0.65**
After-Tax Cash Flow Coverage		
of Interest	**0.50**	**0.79**
of Debt Service	**0.29**	**0.31**

(Note: all figures in Baht 1000 unless otherwise stated)

Legend: C-crushing; CW-cane waiting; RM1-remelting 1; RM2-remelting 2; PP-pure power generation

COMPANY NAME:	**Dan Chang Bioenergy Co., Ltd.**
Project:	**Dan Chang Bioenergy Cogeneration Plant**
Configuration:	**100 tph and 120 tph biomass-fired boilers**
	37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Option 1:	**Sugar Mill to provide bagasse + raw water + land lease**
	Sugar Mill to get steam and electricity
Case:	**sensitivity Bagasse Price 300 Baht/tonne**
Date:	10/22/01

CASH FLOW STATEMENT

IndexationYear		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
Operating Year		*-1*	*0*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*
Revenues																								
Energy payment - EGAT				5,510	5,675	5,846	6,021	6,202	6,587	6,784	6,988	7,198	7,413	7,828	8,063	8,305	8,554	8,811	9,075	9,347	9,628	9,916	10,214	10,520
Capacity payment - EGAT				2,357	2,428	2,501	2,576	2,653	2,818	2,902	2,989	3,079	3,172	3,349	3,449	3,553	3,659	3,769	3,882	3,999	4,119	4,242	4,370	4,501
Electricity sales- Sugar Mill (C+CW+RM1)				2,198	2,264	2,332	2,402	2,474	2,548	2,624	2,703	2,784	2,868	2,954	3,042	3,134	3,228	3,324	3,424	3,527	3,633	3,742	3,854	3,969
Electricity sales- Sugar Mill (RM2+PG)				1,468	1,512	1,558	1,604	1,653	1,702	1,753	1,806	1,860	1,916	1,973	2,032	2,093	2,156	2,221	2,288	2,356	2,427	2,500	2,575	2,652
Steam sales (C+CW+RM1)				955	983	1,013	1,043	1,074	1,107	1,140	1,174	1,209	1,245	1,283	1,321	1,361	1,402	1,444	1,487	1,532	1,578	1,625	1,674	1,724
Steam sales (RM2)				858	883	910	937	965	994	1,024	1,055	1,086	1,119	1,152	1,187	1,223	1,259	1,297	1,336	1,376	1,417	1,460	1,504	1,549
NEPO incentive																								
Total revenues				13,346	13,746	14,158	14,583	15,021	15,755	16,228	16,715	17,216	17,733	18,539	19,095	19,668	20,258	20,866	21,492	22,137	22,801	23,485	24,189	24,915
Operating Expenses																								
Administration				267	280	294	309	324	340	357	375	394	414	434	456	479	503	528	554	582	611	642	674	708
O&M				899	944	991	1,040	1,092	1,311	1,376	1,445	1,517	1,593	1,882	1,976	2,075	2,179	2,287	2,402	2,522	2,648	2,780	2,919	3,065
Fuel (bagasse)				4,050	4,172	4,297	4,426	4,558	4,695	4,836	4,981	5,130	5,284	5,443	5,606	5,774	5,948	6,126	6,310	6,499	6,694	6,895	7,102	7,315
Fuel (other biomass)				3,413	3,583	3,763	3,951	4,148	4,356	4,573	4,802	5,042	5,294	5,559	5,837	6,129	6,435	6,757	7,095	7,450	7,822	8,213	8,624	9,055
Land lease				406	418	430	443	456	470	484	499	514	529	545	561	578	596	613	632	651	670	690	711	732
Raw Water				82	85	87	90	93	96	98	101	104	108	111	114	118	121	125	128	132	136	140	145	149
Purchase from EGAT				36	38	40	42	44	47	49	51	54	57	59	62	66	69	72	76	80	84	88	92	97
Insurance				411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411
Total operating expenses				9,563	9,930	10,312	10,711	11,127	11,725	12,185	12,665	13,167	13,689	14,444	15,024	15,629	16,260	16,919	17,608	18,326	19,076	19,859	20,677	21,531
Cash Flow from Operations				3,782	3,816	3,846	3,872	3,893	4,031	4,043	4,049	4,050	4,043	4,095	4,072	4,040	3,998	3,947	3,885	3,811	3,725	3,626	3,512	3,384
Less Depreciation				(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)
Operating Profit (Loss) Before Interest & Tax				1,730	1,763	1,793	1,819	1,841	1,978	1,990	1,997	1,997	1,991	2,042	2,019	1,987	1,945	1,894	1,832	1,758	1,672	1,573	1,459	1,331
Less Corporate Tax				0	0	0	0	0	0	0	0	(218)	(299)	(306)	(303)	(298)	(584)	(568)	(550)	(527)	(502)	(472)	(438)	(399)
Income After Tax				1,730	1,763	**1,793**	1,819	1,841	1,978	1,990	1,997	1,779	1,692	1,736	1,716	1,689	1,362	1,326	1,282	1,231	1,170	1,101	1,022	932
Add Depreciation				2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053
Operating Cash Flow				**3,782**	**3,816**	**3,846**	**3,872**	**3,893**	**4,031**	**4,043**	**4,049**	**3,832**	**3,745**	**3,789**	**3,769**	**3,742**	**3,415**	**3,379**	**3,335**	**3,283**	**3,223**	**3,154**	**3,074**	**2,984**
Capital Expenditure		(14,226)	(28,882)																					
Salvage Value																								
Net Cash Flow Before Interest & Debt Service		**(14,226)**	**(28,882)**	**3,782**	**3,816**	**3,846**	**3,872**	**3,893**	**4,031**	**4,043**	**4,049**	**3,832**	**3,745**	**3,789**	**3,769**	**3,742**	**3,415**	**3,379**	**3,335**	**3,283**	**3,223**	**3,154**	**3,074**	**2,984**
CUM. NET CASHFLOW BEFORE INT. & DEBT SERVICE		**(14,226)**	**(43,108)**	**(39,326)**	**(35,510)**	**(31,664)**	**(27,792)**	**(23,899)**	**(19,868)**	**(15,825)**	**(11,776)**	**(7,944)**	**(4,199)**	**(410)**	**3,359**	**7,100**	**10,515**	**13,893**	**17,228**	**20,512**	**23,735**	**26,888**	**29,963**	**32,947**
Net Present Value (Post-Tax) - total project @	10.00%	**(9,940)**																						
Nominal Post -Tax IRR (project)		**5.92%**																						
Less Interest Expense				(3,445)	(3,191)	(2,912)	(2,605)	(2,267)	(1,896)	(1,488)	(1,038)	(544)	0	0	0	0	0	0	0	0	0	0	0	0
Less Debt Repayments				(2,537)	(2,790)	(3,069)	(3,376)	(3,714)	(4,085)	(4,494)	(4,943)	(5,438)	0	0	0	0	0	0	0	0	0	0	0	0
Net Financing Cash Flow				(2,199)	(2,166)	(2,136)	(2,110)	(2,088)	(1,951)	(1,939)	(1,932)	(2,150)	3,745	3,789	3,769	3,742	3,415	3,379	3,335	3,283	3,223	3,154	3,074	2,984
CUM. NET FINANCING CASH FLOW				(2,199)	(4,365)	(6,500)	(8,610)	(10,698)	(12,649)	(14,588)	(16,520)	(18,670)	(14,925)	(11,136)	(7,367)	(3,626)	(211)	3,167	6,502	9,786	13,009	16,163	19,237	22,221
Equity Cash Flow		(4,064)	(8,252)	(2,199)	(2,166)	(2,136)	(2,110)	(2,088)	(1,951)	(1,939)	(1,932)	(2,150)	3,745	3,789	3,769	3,742	3,415	3,379	3,335	3,283	3,223	3,154	3,074	2,984
Equity IRR (Post-Tax)		**2.27%**																						
Net Present Value (NPV total project @)	10.00%	**(8,868)**																						
Cash Flow Before Interest and Tax		(14,226)	(28,882)	3,782	3,816	3,846	3,872	3,893	4,031	4,043	4,049	4,050	4,043	4,095	4,072	4,040	3,998	3,947	3,885	3,811	3,725	3,626	3,512	3,384
Pre-Tax Project IRR (total)		**6.51%**																						

DEBT SERVICE																								
Overall interest rate		10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
Debt at beginning of year		0	11,154	34,448	31,911	29,121	26,051	22,675	18,961	14,875	10,381	5,438	0	0	0	0	0	0	0	0	0	0	0	0
Debt Drawdown		10,161	20,631																					
Interest During Construction		762	2,663																					
Other Financing Expenses		231																						
Repayment of Principal				(2,537)	(2,790)	(3,069)	(3,376)	(3,714)	(4,085)	(4,494)	(4,943)	(5,438)	0	0	0	0	0	0	0	0	0	0	0	0
Debt at the end of the year		**11,154**	**34,448**	**31,911**	**29,121**	**26,051**	**22,675**	**18,961**	**14,875**	**10,381**	**5,438**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Interest expense				(3,445)	(3,191)	(2,912)	(2,605)	(2,267)	(1,896)	(1,488)	(1,038)	(544)	0	0	0	0	0	0	0	0	0	0	0	0
Total Debt service		**0**	**0**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

DEBT SERVICE COVERAGE RATIOS																						
Pre-Tax Cash Flow Coverage																						
of Interest		1.10	1.20	1.32	1.49	1.72	2.13	2.72	3.90	7.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service		0.63	0.64	0.64	0.65	0.65	0.67	0.68	0.68	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
After-Tax Cash Flow Coverage																						
of Interest		0.50	0.55	0.62	0.70	0.81	1.04	1.34	1.92	3.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service		0.29	0.29	0.30	0.30	0.31	0.33	0.33	0.33	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

COMPANY NAME:	**Dan Chang Bioenergy Co., Ltd.**
Project:	**Dan Chang Bioenergy Cogeneration Plant**
Configuration:	**100 tph and 120 tph biomass-fired boilers**
	37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Condition:	**Sugar Mill to provide bagasse + raw water + land lease**
	Sugar Mill to get steam and electricity
Case:	**sensitivity Wood Bark Price 560 Baht/tonne**
Date:	10/22/01

ASSUMPTIONS AND RESULTS

MILL DATA		
Mill Capacity (input) (tcy)		2,250,000
Type of Residue Produced		bagasse
Residue/Mill Input Ratio		27.00%
Total Bagasse Production (tpy)		607,500
Bagasse Required for Existing Equipment (tpy)		303,068
Available Bagasse (tpy)		304,432
Fuel Required from Other Sources (tpy):		
Rice husk		199,390
Wood bark		10,000
Cane leaves		10,000
Mill Heat Requirement (ton-steam/hr)		
Crushing:	@ 31 bar	44.6
	@ 17 bar	145.0
	@ 8 bar	10.0
	@ 2.5 bar	460.0
Cane-waiting:	@ 31 bar	0.0
	@ 17 bar	0.0
	@ 8 bar	10.0
	@ 2.5 bar	220.3
Remelting:	@ 31 bar	0.0
	@ 17 bar	0.0
	@ 8 bar	10.0
	@2.5 bar	158.3
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - milling		189.6
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - cane-waiting		0.0
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - remelting		0.0
Mill Power Requirement (kW)		
Crushing		21,000
Cane-waiting		12,500
Remelting 1		8,600
Remelting 2		8,600
Off-milling/off-remelting		1,000
Crushing Duration (hr/yr)		1,956
Cane-waiting Duration (hr/yr)		600
Remelting 1 Duration (hr/yr)		1,116
Remelting Duration 2 (hr/yr)		3,528
Pure Power Generation (hr/yr)		720

ENERGY PLANT DATA	
Fuel Data:	
Bagasse	
Moisture Content (wet basis)	50.00%
Lower Heating Value (LHV)(MJ/kg)	7.32
Rice husk	
Moisture Content (wet basis)	12.00%
Lower Heating Value (LHV)(MJ/kg)	11.70
Wood bark	
Moisture Content (wet basis)	32.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Cane leaves	
Moisture Content (wet basis)	24.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Plant Performance:	
Plant Total Operation (hr/yr)	7,920
Parasitic Load (crushing)	1,950
Parasitic Load (cane waiting)	1,800
Parasitic Load (remelting)	1,950
Parasitic Load (pure power generation)	1,800
Transmission Loss	1.00%
Overall Grid Off-take in a Year (year 1-5)	84.05%
Overall Grid Off-take in a Year (year 6-10)	86.67%
Overall Grid Off-take in a Year (year 11-21)	88.85%
Crushing:	
Plant Capacity (kW)	**48,300**
Load Factor	100.00%
Power Generation (kWh/yr)	94,474,800
Mill Power Requirements (kWh/yr)	41,076,000
Grid Export/Excess Power (kWh/yr) - yr 1 -5	40,979,075
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	42,255,871
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	43,319,868
Cane-waiting:	
Plant Capacity (kW)	**39,500**
Load Factor	100.00%
Power Generation (kWh/yr)	23,700,000
Mill Power Requirements (kWh/yr)	7,500,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	12,538,928
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	12,929,606
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	13,255,172
Remelting 1:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	40,079,837
Mill Power Requirements (kWh/yr)	9,601,298
Grid Export/Excess Power (kWh/yr) - yr 1 - 5	23,506,342
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	24,238,735
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	24,849,063
Remelting 2:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	126,639,763
Mill Power Requirements (kWh/yr)	30,337,102
Grid Export/Excess Power (kWh/yr) - yr 1 -5	74,272,695
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	76,586,830
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	78,515,275
Pure Power Generation:	
Plant Capacity (kW)	**28,000**
Load Factor	100.00%
Power Generation (kWh/yr)	20,160,000
Mill Power Requirements (kWh/yr)	720,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	15,116,472
Grid Export/Excess Power (kWh/yr) - yr 6- 10	15,587,460
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	15,979,950
Annual Shutdown/Maintenance:	
Back-up Power Requirements (MW)	1.00
Total Number Days for Annual Maintenance	30

GENERAL DATA	
Plant Life (years)	21
PPA with EGAT (years)	21
Depreciation Policy	straight line
Corporate Tax Rate:	
Year 1-8	0.00%
Year 9-13	15.00%
Year 14 onwards	30.00%

TARIFF	Baht	US$
Energy Payment (Baht/kWh) - EGAT	1.4900	0.0331
Power Capacity Payment (Baht/kW-mo)	458.9474	10.1988
Levelised Electricity Selling Rate (Baht/kWh) - EGAT (RM2+PP)	2.1274	0.0473
Electricity Purchase Price from EGAT (Baht/kWh) - Peak	2.6950	0.0599
Electricity Purchase Price from EGAT (Baht/kWh) - Off-Peak	1.1914	0.0265
Power Demand Charge (Baht/kW-mo)	132.9300	2.9540
Back-up Power Charge for Cogeneration (Baht-kW-mo)	29.4400	0.6542
Service Charge (Baht/mo)	228.1700	5.0704
Levelised Electricity Selling Rate (Baht/kWh) - Sugar Mill (C+CW+RM1	1.7000	0.0378
Steam Selling Rate (Baht/ton) - Sugar Mill (C+CW+RM1)	34.4895	0.7664
Steam Selling Rate (Baht/ton) - Sugar Mill (RM 2)	65.0000	1.4444
Fuel Cost:		
Bagasse (Baht/ton)	250.0000	5.5556
Rice husk (Baht/ton)	700.0000	15.5556
Wood bark (Baht/ton)	560.0000	12.4444
Cane leaves (Baht/ton)	700.0000	15.5556
Natural gas (Baht/million BTU)	151.4518	3.3656
Raw Water (Baht/cu.m.)	6.5000	0.1444
NEPO Incentive (Baht/kWh)	0.1450	0.0032

OPERATING COSTS		1,000 Baht	1,000 US$
Administration		12,000	267
O&M, % of EPC cost (Yr 1-5)	3.50%	40,437	899
O&M, % of EPC cost (Yr 6-10)	4.00%	46,213	1,027
O&M, % of EPC cost (Yr 11 onwards)	4.50%	51,990	1,155
Fuel (bagasse)		151,875	3,375
Fuel (other biomass)		152,173	3,382
Raw Water (C+CW+RM1)		2,429	54
Raw Water (RM2+PP)		1,281	28
Land Lease (C+CW+RM1)		7,651	170
Land Lease (RM2+PP)		10,599	236
Purchase from EGAT		1,642	36
Insurance, % of EPC Cost	1.50%	18,477	411

USES OF FUNDS	1,000 Baht	1,000 US$
Investment Costs		
Development Costs	99,000	2,200
Equipment Costs (main equipment)	1,078,830	23,974
Equipment Costs (BOP)	76,500	1,700
Grid Connection	76,500	1,700
Engineering and Civil Works	135,000	3,000
Import Duty, @ 5.00% of Foreign EPC Cost	32,355	719
Erection, Installation, Training, Handling & Land Transportation	36,000	800
Construction time insurance,1.50 % Equip. Cost	16,200	360
Transferred equipment from sugar mill (old)	297,108	6,602
SUB-TOTAL	1,847,493	41,055
Contingency 5.00% of sub-total	92,375	2,053
Total Investment Costs	1,939,867	43,108
Financing Costs during Construction		
Interest Costs	154,125	3,425
Other Financing Expenses	10,395	231
Total Financing Costs during Construction	164,520	3,656
TOTAL USES OF FUNDS (Project Cost)	**2,104,387**	**46,764**

SOURCES OF FUNDS	1,000 Baht	1,000 US$
Equity 1 28.57% of investment cost	554,220	12,316
Equity 2		
Grant		
Loan*	1,550,167	34,448
TOTAL SOURCES OF FUNDS	**2,104,387**	**46,764**
*Loan		
Amount	1,550,167	34,448
Grace Period		2
Maturity		9
Base Interest Rate		9.00%
Lender's Margin		1.00%
All-in Interest Rate		10.00%
Financing Fees		0.75%

ECONOMIC DATA	
Currency Exchange Rate (Baht/US$)	45.00
Average Inflation Rate (Thai CPI)	5.00%
Crude Oil Price Growth Rate	1.00%
Discount Rate	10.00%

PROJECT PERFORMANCE		
Nominal Pre-Tax Project IRR (total project)		**9.05%**
NPV-CF before Interest & Tax (total project) (in 1000 Baht)		**(2,581)**
Nominal Post-Tax Project IRR (total project)		**8.32%**
NPV - Post-Tax (total project) (in 1000 Baht)		**(4,305)**
Pay-back Period (yrs)		**9.19**
Equity IRR		5.92%
Annual Debt Service Coverage Ratios		
	Minimum	**Average**
Pre-Tax Cash Flow Coverage		
of Interest	**1.30**	**2.00**
of Debt Service	**0.75**	**0.78**
After-Tax Cash Flow Coverage		
of Interest	**0.71**	**1.13**
of Debt Service	**0.41**	**0.44**

(Note: all figures in Baht 1000 unless otherwise stated)

Legend: C-crushing; CW-cane waiting; RM1-remelting 1; RM2-remelting 2; PP-pure power generation

COMPANY NAME:	**Dan Chang Bioenergy Co., Ltd.**
Project:	**Dan Chang Bioenergy Cogeneration Plant**
Configuration:	**100 tph and 120 tph biomass-fired boilers**
	37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Option 1:	**Sugar Mill to provide bagasse + raw water + land lease**
	Sugar Mill to get steam and electricity
Case:	**sensitivity Wood Bark Price 560 Baht/tonne**
Date:	10/22/01

CASH FLOW STATEMENT

IndexationYear		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Operating Year		*-1*	*0*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*
Revenues																								
Energy payment - EGAT				5,510	5,675	5,846	6,021	6,202	6,587	6,784	6,988	7,198	7,413	7,828	8,063	8,305	8,554	8,811	9,075	9,347	9,628	9,916	10,214	10,520
Capacity payment - EGAT				2,357	2,428	2,501	2,576	2,653	2,818	2,902	2,989	3,079	3,172	3,349	3,449	3,553	3,659	3,769	3,882	3,999	4,119	4,242	4,370	4,501
Electricity sales- Sugar Mill (C+CW+RM1)				2,198	2,264	2,332	2,402	2,474	2,548	2,624	2,703	2,784	2,868	2,954	3,042	3,134	3,228	3,324	3,424	3,527	3,633	3,742	3,854	3,969
Electricity sales- Sugar Mill (RM2+PG)				1,468	1,512	1,558	1,604	1,653	1,702	1,753	1,806	1,860	1,916	1,973	2,032	2,093	2,156	2,221	2,288	2,356	2,427	2,500	2,575	2,652
Steam sales (C+CW+RM1)				955	983	1,013	1,043	1,074	1,107	1,140	1,174	1,209	1,245	1,283	1,321	1,361	1,402	1,444	1,487	1,532	1,578	1,625	1,674	1,724
Steam sales (RM2)				858	883	910	937	965	994	1,024	1,055	1,086	1,119	1,152	1,187	1,223	1,259	1,297	1,336	1,376	1,417	1,460	1,504	1,549
NEPO incentive																								
Total revenues				13,346	13,746	14,158	14,583	15,021	15,755	16,228	16,715	17,216	17,733	18,539	19,095	19,668	20,258	20,866	21,492	22,137	22,801	23,485	24,189	24,915
Operating Expenses																								
Administration				267	280	294	309	324	340	357	375	394	414	434	456	479	503	528	554	582	611	642	674	708
O&M				899	944	991	1,040	1,092	1,311	1,376	1,445	1,517	1,593	1,882	1,976	2,075	2,179	2,287	2,402	2,522	2,648	2,780	2,919	3,065
Fuel (bagasse)				3,375	3,476	3,581	3,688	3,799	3,913	4,030	4,151	4,275	4,404	4,536	4,672	4,812	4,956	5,105	5,258	5,416	5,578	5,746	5,918	6,096
Fuel (other biomass)				3,382	3,551	3,728	3,915	4,110	4,316	4,532	4,758	4,996	5,246	5,508	5,784	6,073	6,377	6,695	7,030	7,382	7,751	8,138	8,545	8,972
Land lease				406	418	430	443	456	470	484	499	514	529	545	561	578	596	613	632	651	670	690	711	732
Raw Water				82	85	87	90	93	96	98	101	104	108	111	114	118	121	125	128	132	136	140	145	149
Purchase from EGAT				36	38	40	42	44	47	49	51	54	57	59	62	66	69	72	76	80	84	88	92	97
Insurance				411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411
Total operating expenses				8,857	9,202	9,562	9,938	10,330	10,902	11,337	11,791	12,265	12,760	13,486	14,036	14,610	15,210	15,837	16,491	17,175	17,889	18,635	19,415	20,230
Cash Flow from Operations				4,489	4,544	4,596	4,645	4,691	4,853	4,891	4,923	4,951	4,972	5,053	5,059	5,058	5,048	5,029	5,001	4,962	4,912	4,850	4,774	4,685
Less Depreciation				(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)
Operating Profit (Loss) Before Interest & Tax				2,436	2,491	2,543	2,593	2,638	2,800	2,838	2,871	2,898	2,920	3,000	3,007	3,005	2,995	2,977	2,948	2,909	2,859	2,797	2,722	2,633
Less Corporate Tax				0	0	0	0	0	0	0	0	(353)	(438)	(450)	(451)	(451)	(899)	(893)	(884)	(873)	(858)	(839)	(816)	(790)
Income After Tax				2,436	2,491	**2,543**	2,593	2,638	2,800	2,838	2,871	2,545	2,482	2,550	2,556	2,554	2,097	2,084	2,064	2,036	2,001	1,958	1,905	1,843
Add Depreciation				2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053
Operating Cash Flow				**4,489**	**4,544**	**4,596**	**4,645**	**4,691**	**4,853**	**4,891**	**4,923**	**4,598**	**4,534**	**4,603**	**4,608**	**4,607**	**4,149**	**4,136**	**4,116**	**4,089**	**4,054**	**4,011**	**3,958**	**3,896**
Capital Expenditure		(14,226)	(28,882)																					
Salvage Value																								
Net Cash Flow Before Interest & Debt Service		**(14,226)**	**(28,882)**	**4,489**	**4,544**	**4,596**	**4,645**	**4,691**	**4,853**	**4,891**	**4,923**	**4,598**	**4,534**	**4,603**	**4,608**	**4,607**	**4,149**	**4,136**	**4,116**	**4,089**	**4,054**	**4,011**	**3,958**	**3,896**
CUM. NET CASHFLOW BEFORE INT. & DEBT SERVICE		**(14,226)**	**(43,108)**	**(38,620)**	**(34,076)**	**(29,479)**	**(24,834)**	**(20,143)**	**(15,290)**	**(10,400)**	**(5,476)**	**(879)**	**3,656**	**8,259**	**12,867**	**17,474**	**21,624**	**25,760**	**29,876**	**33,966**	**38,020**	**42,030**	**45,988**	**49,884**
Net Present Value (Post-Tax) - total project @	10.00%	**(4,305)**																						
Nominal Post -Tax IRR (project)		**8.32%**																						
Less Interest Expense				(3,445)	(3,191)	(2,912)	(2,605)	(2,267)	(1,896)	(1,488)	(1,038)	(544)	0	0	0	0	0	0	0	0	0	0	0	0
Less Debt Repayments				(2,537)	(2,790)	(3,069)	(3,376)	(3,714)	(4,085)	(4,494)	(4,943)	(5,438)	0	0	0	0	0	0	0	0	0	0	0	0
Net Financing Cash Flow				(1,493)	(1,438)	(1,385)	(1,336)	(1,291)	(1,129)	(1,091)	(1,058)	(1,384)	4,534	4,603	4,608	4,607	4,149	4,136	4,116	4,089	4,054	4,011	3,958	3,896
CUM. NET FINANCING CASH FLOW				(1,493)	(2,931)	(4,316)	(5,652)	(6,943)	(8,071)	(9,162)	(10,221)	(11,605)	(7,070)	(2,467)	2,141	6,748	10,898	15,034	19,150	23,240	27,294	31,304	35,262	39,158
Equity Cash Flow		(4,064)	(8,252)	(1,493)	(1,438)	(1,385)	(1,336)	(1,291)	(1,129)	(1,091)	(1,058)	(1,384)	4,534	4,603	4,608	4,607	4,149	4,136	4,116	4,089	4,054	4,011	3,958	3,896
Equity IRR (Post-Tax)		**5.92%**																						
Net Present Value (NPV total project @)	10.00%	**(2,581)**																						
Cash Flow Before Interest and Tax		(14,226)	(28,882)	4,489	4,544	4,596	4,645	4,691	4,853	4,891	4,923	4,951	4,972	5,053	5,059	5,058	5,048	5,029	5,001	4,962	4,912	4,850	4,774	4,685
Pre-Tax Project IRR (total)		**9.05%**																						
DEBT SERVICE																								
Overall interest rate		10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
Debt at beginning of year		0	11,154	34,448	31,911	29,121	26,051	22,675	18,961	14,875	10,381	5,438	0	0	0	0	0	0	0	0	0	0	0	0
Debt Drawdown		10,161	20,631																					
Interest During Construction		762	2,663																					
Other Financing Expenses		231																						
Repayment of Principal				(2,537)	(2,790)	(3,069)	(3,376)	(3,714)	(4,085)	(4,494)	(4,943)	(5,438)	0	0	0	0	0	0	0	0	0	0	0	0
Debt at the end of the year		**11,154**	**34,448**	**31,911**	**29,121**	**26,051**	**22,675**	**18,961**	**14,875**	**10,381**	**5,438**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Interest expense				(3,445)	(3,191)	(2,912)	(2,605)	(2,267)	(1,896)	(1,488)	(1,038)	(544)	0	0	0	0	0	0	0	0	0	0	0	0
Total Debt service		**0**	**0**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

DEBT SERVICE COVERAGE RATIOS																					
Pre-Tax Cash Flow Coverage																					
of Interest	1.30	1.42	1.58	1.78	2.07	2.56	3.29	4.74	9.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service	0.75	0.76	0.77	0.78	0.78	0.81	0.82	0.82	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
After-Tax Cash Flow Coverage																					
of Interest	0.71	0.78	0.87	1.00	1.16	1.48	1.91	2.77	4.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service	0.41	0.42	0.43	0.43	0.44	0.47	0.47	0.48	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

COMPANY NAME:	**Dan Chang Bioenergy Co., Ltd.**
Project:	**Dan Chang Bioenergy Cogeneration Plant**
Configuration:	**100 tph and 120 tph biomass-fired boilers**
	37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Condition:	**Sugar Mill to provide bagasse + raw water + land lease**
	Sugar Mill to get steam and electricity
Case:	**sensitivity Wood Bark Price 630 Baht/tonne**
Date:	10/22/01

ASSUMPTIONS AND RESULTS

MILL DATA		
Mill Capacity (input) (tcy)		2,250,000
Type of Residue Produced		bagasse
Residue/Mill Input Ratio		27.00%
Total Bagasse Production (tpy)		607,500
Bagasse Required for Existing Equipment (tpy)		303,068
Available Bagasse (tpy)		304,432
Fuel Required from Other Sources (tpy):		
Rice husk		199,390
Wood bark		10,000
Cane leaves		10,000
Mill Heat Requirement (ton-steam/hr)		
Crushing:	@ 31 bar	44.6
	@ 17 bar	145.0
	@ 8 bar	10.0
	@ 2.5 bar	460.0
Cane-waiting:	@ 31 bar	0.0
	@ 17 bar	0.0
	@ 8 bar	10.0
	@ 2.5 bar	220.3
Remelting:	@ 31 bar	0.0
	@ 17 bar	0.0
	@ 8 bar	10.0
	@2.5 bar	158.3
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - milling		189.6
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - cane-waiting		0.0
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - remelting		0.0
Mill Power Requirement (kW)		
Crushing		21,000
Cane-waiting		12,500
Remelting 1		8,600
Remelting 2		8,600
Off-milling/off-remelting		1,000
Crushing Duration (hr/yr)		1,956
Cane-waiting Duration (hr/yr)		600
Remelting 1 Duration (hr/yr)		1,116
Remelting Duration 2 (hr/yr)		3,528
Pure Power Generation (hr/yr)		720

ENERGY PLANT DATA	
Fuel Data:	
Bagasse	
Moisture Content (wet basis)	50.00%
Lower Heating Value (LHV)(MJ/kg)	7.32
Rice husk	
Moisture Content (wet basis)	12.00%
Lower Heating Value (LHV)(MJ/kg)	11.70
Wood bark	
Moisture Content (wet basis)	32.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Cane leaves	
Moisture Content (wet basis)	24.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Plant Performance:	
Plant Total Operation (hr/yr)	7,920
Parasitic Load (crushing)	1,950
Parasitic Load (cane waiting)	1,800
Parasitic Load (remelting)	1,950
Parasitic Load (pure power generation)	1,800
Transmission Loss	1.00%
Overall Grid Off-take in a Year (year 1-5)	84.05%
Overall Grid Off-take in a Year (year 6-10)	86.67%
Overall Grid Off-take in a Year (year 11-21)	88.85%
Crushing:	
Plant Capacity (kW)	**48,300**
Load Factor	100.00%
Power Generation (kWh/yr)	94,474,800
Mill Power Requirements (kWh/yr)	41,076,000
Grid Export/Excess Power (kWh/yr) - yr 1 -5	40,979,075
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	42,255,871
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	43,319,868
Cane-waiting:	
Plant Capacity (kW)	**39,500**
Load Factor	100.00%
Power Generation (kWh/yr)	23,700,000
Mill Power Requirements (kWh/yr)	7,500,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	12,538,928
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	12,929,606
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	13,255,172
Remelting 1:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	40,079,837
Mill Power Requirements (kWh/yr)	9,601,298
Grid Export/Excess Power (kWh/yr) - yr 1 - 5	23,506,342
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	24,238,735
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	24,849,063
Remelting 2:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	126,639,763
Mill Power Requirements (kWh/yr)	30,337,102
Grid Export/Excess Power (kWh/yr) - yr 1 -5	74,272,695
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	76,586,830
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	78,515,275
Pure Power Generation:	
Plant Capacity (kW)	**28,000**
Load Factor	100.00%
Power Generation (kWh/yr)	20,160,000
Mill Power Requirements (kWh/yr)	720,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	15,116,472
Grid Export/Excess Power (kWh/yr) - yr 6- 10	15,587,460
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	15,979,950
Annual Shutdown/Maintenance:	
Back-up Power Requirements (MW)	1.00
Total Number Days for Annual Maintenance	30

GENERAL DATA	
Plant Life (years)	21
PPA with EGAT (years)	21
Depreciation Policy	straight line
Corporate Tax Rate:	
Year 1-8	0.00%
Year 9-13	15.00%
Year 14 onwards	30.00%

TARIFF	Baht	US$
Energy Payment (Baht/kWh) - EGAT	1.4900	0.0331
Power Capacity Payment (Baht/kW-mo)	458.9474	10.1988
Levelised Electricity Selling Rate (Baht/kWh) - EGAT (RM2+PP)	2.1274	0.0473
Electricity Purchase Price from EGAT (Baht/kWh) - Peak	2.6950	0.0599
Electricity Purchase Price from EGAT (Baht/kWh) - Off-Peak	1.1914	0.0265
Power Demand Charge (Baht/kW-mo)	132.9300	2.9540
Back-up Power Charge for Cogeneration (Baht-kW-mo)	29.4400	0.6542
Service Charge (Baht/mo)	228.1700	5.0704
Levelised Electricity Selling Rate (Baht/kWh) - Sugar Mill (C+CW+RM1	1.7000	0.0378
Steam Selling Rate (Baht/ton) - Sugar Mill (C+CW+RM1)	34.4895	0.7664
Steam Selling Rate (Baht/ton) - Sugar Mill (RM 2)	65.0000	1.4444
Fuel Cost:		
Bagasse (Baht/ton)	250.0000	5.5556
Rice husk (Baht/ton)	700.0000	15.5556
Wood bark (Baht/ton)	630.0000	14.0000
Cane leaves (Baht/ton)	700.0000	15.5556
Natural gas (Baht/million BTU)	151.4518	3.3656
Raw Water (Baht/cu.m.)	6.5000	0.1444
NEPO Incentive (Baht/kWh)	0.1450	0.0032

OPERATING COSTS		1,000 Baht	1,000 US$
Administration		12,000	267
O&M, % of EPC cost (Yr 1-5)	3.50%	40,437	899
O&M, % of EPC cost (Yr 6-10)	4.00%	46,213	1,027
O&M, % of EPC cost (Yr 11 onwards)	4.50%	51,990	1,155
Fuel (bagasse)		151,875	3,375
Fuel (other biomass)		152,873	3,397
Raw Water (C+CW+RM1)		2,429	54
Raw Water (RM2+PP)		1,281	28
Land Lease (C+CW+RM1)		7,651	170
Land Lease (RM2+PP)		10,599	236
Purchase from EGAT		1,642	36
Insurance, % of EPC Cost	1.50%	18,477	411

USES OF FUNDS	1,000 Baht	1,000 US$
Investment Costs		
Development Costs	99,000	2,200
Equipment Costs (main equipment)	1,078,830	23,974
Equipment Costs (BOP)	76,500	1,700
Grid Connection	76,500	1,700
Engineering and Civil Works	135,000	3,000
Import Duty, @ 5.00% of Foreign EPC Cost	32,355	719
Erection, Installation, Training, Handling & Land Transportation	36,000	800
Construction time insurance,1.50 % Equip. Cost	16,200	360
Transferred equipment from sugar mill (old)	297,108	6,602
SUB-TOTAL	1,847,493	41,055
Contingency 5.00% of sub-total	92,375	2,053
Total Investment Costs	1,939,867	43,108
Financing Costs during Construction		
Interest Costs	154,125	3,425
Other Financing Expenses	10,395	231
Total Financing Costs during Construction	164,520	3,656
TOTAL USES OF FUNDS (Project Cost)	**2,104,387**	**46,764**

SOURCES OF FUNDS	1,000 Baht	1,000 US$
Equity 1 28.57% of investment cost	554,220	12,316
Equity 2		
Grant		
Loan*	1,550,167	34,448
TOTAL SOURCES OF FUNDS	**2,104,387**	**46,764**
*Loan		
Amount	1,550,167	34,448
Grace Period		2
Maturity		9
Base Interest Rate		9.00%
Lender's Margin		1.00%
All-in Interest Rate		10.00%
Financing Fees		0.75%

ECONOMIC DATA	
Currency Exchange Rate (Baht/US$)	45.00
Average Inflation Rate (Thai CPI)	5.00%
Crude Oil Price Growth Rate	1.00%
Discount Rate	10.00%

PROJECT PERFORMANCE		
Nominal Pre-Tax Project IRR (total project)		**8.99%**
NPV-CF before Interest & Tax (total project) (in 1000 Baht)		**(2,741)**
Nominal Post-Tax Project IRR (total project)		**8.27%**
NPV - Post-Tax (total project) (in 1000 Baht)		**(4,446)**
Pay-back Period (yrs)		**9.23**
Equity IRR		5.83%
Annual Debt Service Coverage Ratios		
	Minimum	**Average**
Pre-Tax Cash Flow Coverage		
of Interest	**1.30**	**1.99**
of Debt Service	**0.75**	**0.78**
After-Tax Cash Flow Coverage		
of Interest	**0.70**	**1.12**
of Debt Service	**0.40**	**0.43**

(Note: all figures in Baht 1000 unless otherwise stated)

Legend: C-crushing; CW-cane waiting; RM1-remelting 1; RM2-remelting 2; PP-pure power generation

COMPANY NAME:	**Dan Chang Bioenergy Co., Ltd.**
Project:	**Dan Chang Bioenergy Cogeneration Plant**
Configuration:	**100 tph and 120 tph biomass-fired boilers**
	37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Option 1:	**Sugar Mill to provide bagasse + raw water + land lease**
	Sugar Mill to get steam and electricity
Case:	**sensitivity Wood Bark Price 630 Baht/tonne**
Date:	10/22/01

CASH FLOW STATEMENT

IndexationYear		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
Operating Year		***-1***	***0***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	***18***	***19***	***20***	***21***
Revenues																								
Energy payment - EGAT				5,510	5,675	5,846	6,021	6,202	6,587	6,784	6,988	7,198	7,413	7,828	8,063	8,305	8,554	8,811	9,075	9,347	9,628	9,916	10,214	10,520
Capacity payment - EGAT				2,357	2,428	2,501	2,576	2,653	2,818	2,902	2,989	3,079	3,172	3,349	3,449	3,553	3,659	3,769	3,882	3,999	4,119	4,242	4,370	4,501
Electricity sales- Sugar Mill (C+CW+RM1)				2,198	2,264	2,332	2,402	2,474	2,548	2,624	2,703	2,784	2,868	2,954	3,042	3,134	3,228	3,324	3,424	3,527	3,633	3,742	3,854	3,969
Electricity sales- Sugar Mill (RM2+PG)				1,468	1,512	1,558	1,604	1,653	1,702	1,753	1,806	1,860	1,916	1,973	2,032	2,093	2,156	2,221	2,288	2,356	2,427	2,500	2,575	2,652
Steam sales (C+CW+RM1)				955	983	1,013	1,043	1,074	1,107	1,140	1,174	1,209	1,245	1,283	1,321	1,361	1,402	1,444	1,487	1,532	1,578	1,625	1,674	1,724
Steam sales (RM2)				858	883	910	937	965	994	1,024	1,055	1,086	1,119	1,152	1,187	1,223	1,259	1,297	1,336	1,376	1,417	1,460	1,504	1,549
NEPO incentive																								
Total revenues				13,346	13,746	14,158	14,583	15,021	15,755	16,228	16,715	17,216	17,733	18,539	19,095	19,668	20,258	20,866	21,492	22,137	22,801	23,485	24,189	24,915
Operating Expenses																								
Administration				267	280	294	309	324	340	357	375	394	414	434	456	479	503	528	554	582	611	642	674	708
O&M				899	944	991	1,040	1,092	1,311	1,376	1,445	1,517	1,593	1,882	1,976	2,075	2,179	2,287	2,402	2,522	2,648	2,780	2,919	3,065
Fuel (bagasse)				3,375	3,476	3,581	3,688	3,799	3,913	4,030	4,151	4,275	4,404	4,536	4,672	4,812	4,956	5,105	5,258	5,416	5,578	5,746	5,918	6,096
Fuel (other biomass)				3,397	3,567	3,745	3,933	4,129	4,336	4,553	4,780	5,019	5,270	5,534	5,810	6,101	6,406	6,726	7,062	7,416	7,786	8,176	8,584	9,014
Land lease				406	418	430	443	456	470	484	499	514	529	545	561	578	596	613	632	651	670	690	711	732
Raw Water				82	85	87	90	93	96	98	101	104	108	111	114	118	121	125	128	132	136	140	145	149
Purchase from EGAT				36	38	40	42	44	47	49	51	54	57	59	62	66	69	72	76	80	84	88	92	97
Insurance				411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411
Total operating expenses				8,873	9,218	9,579	9,956	10,348	10,922	11,358	11,813	12,288	12,784	13,511	14,063	14,638	15,240	15,868	16,524	17,209	17,925	18,673	19,454	20,271
Cash Flow from Operations				4,473	4,528	4,579	4,627	4,672	4,833	4,870	4,901	4,928	4,948	5,028	5,033	5,030	5,019	4,998	4,968	4,928	4,876	4,812	4,735	4,644
Less Depreciation				(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)
Operating Profit (Loss) Before Interest & Tax				2,420	2,475	2,526	2,575	2,619	2,780	2,817	2,849	2,875	2,895	2,975	2,980	2,977	2,966	2,946	2,916	2,875	2,823	2,759	2,682	2,591
Less Corporate Tax				0	0	0	0	0	0	0	0	(350)	(434)	(446)	(447)	(447)	(890)	(884)	(875)	(863)	(847)	(828)	(805)	(777)
Income After Tax				2,420	2,475	**2,526**	2,575	2,619	2,780	2,817	2,849	2,525	2,461	2,529	2,533	2,531	2,076	2,062	2,041	2,013	1,976	1,932	1,878	1,814
Add Depreciation				2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053
Operating Cash Flow				**4,473**	**4,528**	**4,579**	**4,627**	**4,672**	**4,833**	**4,870**	**4,901**	**4,578**	**4,514**	**4,581**	**4,586**	**4,583**	**4,129**	**4,115**	**4,094**	**4,065**	**4,029**	**3,984**	**3,930**	**3,867**
Capital Expenditure		(14,226)	(28,882)																					
Salvage Value																								
Net Cash Flow Before Interest & Debt Service		**(14,226)**	**(28,882)**	**4,473**	**4,528**	**4,579**	**4,627**	**4,672**	**4,833**	**4,870**	**4,901**	**4,578**	**4,514**	**4,581**	**4,586**	**4,583**	**4,129**	**4,115**	**4,094**	**4,065**	**4,029**	**3,984**	**3,930**	**3,867**
CUM. NET CASHFLOW BEFORE INT. & DEBT SERVICE		**(14,226)**	**(43,108)**	**(38,635)**	**(34,108)**	**(29,528)**	**(24,901)**	**(20,229)**	**(15,396)**	**(10,526)**	**(5,625)**	**(1,047)**	**3,467**	**8,049**	**12,634**	**17,218**	**21,347**	**25,461**	**29,555**	**33,621**	**37,650**	**41,634**	**45,564**	**49,431**
Net Present Value (Post-Tax) - total project @	10.00%	**(4,446)**																						
Nominal Post -Tax IRR (project)		**8.27%**																						
Less Interest Expense				(3,445)	(3,191)	(2,912)	(2,605)	(2,267)	(1,896)	(1,488)	(1,038)	(544)	0	0	0	0	0	0	0	0	0	0	0	0
Less Debt Repayments				(2,537)	(2,790)	(3,069)	(3,376)	(3,714)	(4,085)	(4,494)	(4,943)	(5,438)	0	0	0	0	0	0	0	0	0	0	0	0
Net Financing Cash Flow				(1,509)	(1,454)	(1,402)	(1,354)	(1,309)	(1,148)	(1,112)	(1,080)	(1,403)	4,514	4,581	4,586	4,583	4,129	4,115	4,094	4,065	4,029	3,984	3,930	3,867
CUM. NET FINANCING CASH FLOW				(1,509)	(2,963)	(4,365)	(5,719)	(7,029)	(8,177)	(9,289)	(10,369)	(11,773)	(7,259)	(2,677)	1,908	6,492	10,621	14,736	18,829	22,895	26,924	30,908	34,839	38,705
Equity Cash Flow		(4,064)	(8,252)	(1,509)	(1,454)	(1,402)	(1,354)	(1,309)	(1,148)	(1,112)	(1,080)	(1,403)	4,514	4,581	4,586	4,583	4,129	4,115	4,094	4,065	4,029	3,984	3,930	3,867
Equity IRR (Post-Tax)		**5.83%**																						
Net Present Value (NPV total project @)	10.00%	**(2,741)**																						
Cash Flow Before Interest and Tax		(14,226)	(28,882)	4,473	4,528	4,579	4,627	4,672	4,833	4,870	4,901	4,928	4,948	5,028	5,033	5,030	5,019	4,998	4,968	4,928	4,876	4,812	4,735	4,644
Pre-Tax Project IRR (total)		**8.99%**																						

DEBT SERVICE																								
Overall interest rate		10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
Debt at beginning of year		0	11,154	34,448	31,911	29,121	26,051	22,675	18,961	14,875	10,381	5,438	0	0	0	0	0	0	0	0	0	0	0	0
Debt Drawdown		10,161	20,631																					
Interest During Construction		762	2,663																					
Other Financing Expenses		231																						
Repayment of Principal				(2,537)	(2,790)	(3,069)	(3,376)	(3,714)	(4,085)	(4,494)	(4,943)	(5,438)	0	0	0	0	0	0	0	0	0	0	0	0
Debt at the end of the year		**11,154**	**34,448**	**31,911**	**29,121**	**26,051**	**22,675**	**18,961**	**14,875**	**10,381**	**5,438**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Interest expense				(3,445)	(3,191)	(2,912)	(2,605)	(2,267)	(1,896)	(1,488)	(1,038)	(544)	0	0	0	0	0	0	0	0	0	0	0	0
Total Debt service		**0**	**0**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

DEBT SERVICE COVERAGE RATIOS																					
Pre-Tax Cash Flow Coverage																					
of Interest	1.30	1.42	1.57	1.78	2.06	2.55	3.27	4.72	9.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service	0.75	0.76	0.77	0.77	0.78	0.81	0.81	0.82	0.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
After-Tax Cash Flow Coverage																					
of Interest	0.70	0.78	0.87	0.99	1.16	1.47	1.89	2.74	4.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service	0.40	0.41	0.42	0.43	0.44	0.46	0.47	0.48	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

COMPANY NAME: Dan Chang Bioenergy Co., Ltd.
Project: Dan Chang Bioenergy Cogeneration Plant
Configuration: 100 tph and 120 tph biomass-fired boilers
37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Condition: Sugar Mill to provide bagasse + raw water + land lease
Sugar Mill to get steam and electricity
Case: sensitivity Wood Bark Price 770 Baht/tonne
Date: 10/22/01

ASSUMPTIONS AND RESULTS

MILL DATA	
Mill Capacity (input) (tcy)	2,250,000
Type of Residue Produced	bagasse
Residue/Mill Input Ratio	27.00%
Total Bagasse Production (tpy)	607,500
Bagasse Required for Existing Equipment (tpy)	303,068
Available Bagasse (tpy)	304,432
Fuel Required from Other Sources (tpy):	
Rice husk	199,390
Wood bark	10,000
Cane leaves	10,000
Mill Heat Requirement (ton-steam/hr)	
Crushing: @ 31 bar	44.6
@ 17 bar	145.0
@ 8 bar	10.0
@ 2.5 bar	460.0
Cane-waiting: @ 31 bar	0.0
@ 17 bar	0.0
@ 8 bar	10.0
@ 2.5 bar	220.3
Remelting: @ 31 bar	0.0
@ 17 bar	0.0
@ 8 bar	10.0
@2.5 bar	158.3
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - milling	189.6
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - cane-waiting	0.0
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - remelting	0.0
Mill Power Requirement (kW)	
Crushing	21,000
Cane-waiting	12,500
Remelting 1	8,600
Remelting 2	8,600
Off-milling/off-remelting	1,000
Crushing Duration (hr/yr)	1,956
Cane-waiting Duration (hr/yr)	600
Remelting 1 Duration (hr/yr)	1,116
Remelting Duration 2 (hr/yr)	3,528
Pure Power Generation (hr/yr)	720

ENERGY PLANT DATA	
Fuel Data:	
Bagasse	
Moisture Content (wet basis)	50.00%
Lower Heating Value (LHV)(MJ/kg)	7.32
Rice husk	
Moisture Content (wet basis)	12.00%
Lower Heating Value (LHV)(MJ/kg)	11.70
Wood bark	
Moisture Content (wet basis)	32.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Cane leaves	
Moisture Content (wet basis)	24.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Plant Performance:	
Plant Total Operation (hr/yr)	7,920
Parasitic Load (crushing)	1,950
Parasitic Load (cane waiting)	1,800
Parasitic Load (remelting)	1,950
Parasitic Load (pure power generation)	1,800
Transmission Loss	1.00%
Overall Grid Off-take in a Year (year 1-5)	84.05%
Overall Grid Off-take in a Year (year 6-10)	86.67%
Overall Grid Off-take in a Year (year 11-21)	88.85%
Crushing:	
Plant Capacity (kW)	**48,300**
Load Factor	100.00%
Power Generation (kWh/yr)	94,474,800
Mill Power Requirements (kWh/yr)	41,076,000
Grid Export/Excess Power (kWh/yr) - yr 1 -5	40,979,075
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	42,255,871
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	43,319,868
Cane-waiting:	
Plant Capacity (kW)	**39,500**
Load Factor	100.00%
Power Generation (kWh/yr)	23,700,000
Mill Power Requirements (kWh/yr)	7,500,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	12,538,928
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	12,929,606
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	13,255,172
Remelting 1:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	40,079,837
Mill Power Requirements (kWh/yr)	9,601,298
Grid Export/Excess Power (kWh/yr) - yr 1 - 5	23,506,342
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	24,238,735
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	24,849,063
Remelting 2:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	126,639,763
Mill Power Requirements (kWh/yr)	30,337,102
Grid Export/Excess Power (kWh/yr) - yr 1 -5	74,272,695
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	76,586,830
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	78,515,275
Pure Power Generation:	
Plant Capacity (kW)	**28,000**
Load Factor	100.00%
Power Generation (kWh/yr)	20,160,000
Mill Power Requirements (kWh/yr)	720,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	15,116,472
Grid Export/Excess Power (kWh/yr) - yr 6- 10	15,587,460
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	15,979,950
Annual Shutdown/Maintenance:	
Back-up Power Requirements (MW)	1.00
Total Number Days for Annual Maintenance	30

GENERAL DATA	
Plant Life (years)	21
PPA with EGAT (years)	21
Depreciation Policy	straight line
Corporate Tax Rate:	
Year 1-8	0.00%
Year 9-13	15.00%
Year 14 onwards	30.00%

TARIFF	Baht	US$
Energy Payment (Baht/kWh) - EGAT	1.4900	0.0331
Power Capacity Payment (Baht/kW-mo)	458.9474	10.1988
Levelised Electricity Selling Rate (Baht/kWh) - EGAT (RM2+PP)	2.1274	0.0473
Electricity Purchase Price from EGAT (Baht/kWh) - Peak	2.6950	0.0599
Electricity Purchase Price from EGAT (Baht/kWh) - Off-Peak	1.1914	0.0265
Power Demand Charge (Baht/kW-mo)	132.9300	2.9540
Back-up Power Charge for Cogeneration (Baht-kW-mo)	29.4400	0.6542
Service Charge (Baht/mo)	228.1700	5.0704
Levelised Electricity Selling Rate (Baht/kWh) - Sugar Mill (C+CW+RM1	1.7000	0.0378
Steam Selling Rate (Baht/ton) - Sugar Mill (C+CW+RM1)	34.4895	0.7664
Steam Selling Rate (Baht/ton) - Sugar Mill (RM 2)	65.0000	1.4444
Fuel Cost:		
Bagasse (Baht/ton)	250.0000	5.5556
Rice husk (Baht/ton)	700.0000	15.5556
Wood bark (Baht/ton)	770.0000	17.1111
Cane leaves (Baht/ton)	700.0000	15.5556
Natural gas (Baht/million BTU)	151.4518	3.3656
Raw Water (Baht/cu.m.)	6.5000	0.1444
NEPO Incentive (Baht/kWh)	0.1450	0.0032

OPERATING COSTS		1,000 Baht	1,000 US$
Administration		12,000	267
O&M, % of EPC cost (Yr 1-5)	3.50%	40,437	899
O&M, % of EPC cost (Yr 6-10)	4.00%	46,213	1,027
O&M, % of EPC cost (Yr 11 onwards)	4.50%	51,990	1,155
Fuel (bagasse)		151,875	3,375
Fuel (other biomass)		154,273	3,428
Raw Water (C+CW+RM1)		2,429	54
Raw Water (RM2+PP)		1,281	28
Land Lease (C+CW+RM1)		7,651	170
Land Lease (RM2+PP)		10,599	236
Purchase from EGAT		1,642	36
Insurance, % of EPC Cost	1.50%	18,477	411

USES OF FUNDS	1,000 Baht	1,000 US$
Investment Costs		
Development Costs	99,000	2,200
Equipment Costs (main equipment)	1,078,830	23,974
Equipment Costs (BOP)	76,500	1,700
Grid Connection	76,500	1,700
Engineering and Civil Works	135,000	3,000
Import Duty, @ 5.00% of Foreign EPC Cost	32,355	719
Erection, Installation, Training, Handling & Land Transportation	36,000	800
Construction time insurance,1.50 % Equip. Cost	16,200	360
Transferred equipment from sugar mill (old)	297,108	6,602
SUB-TOTAL	1,847,493	41,055
Contingency 5.00% of sub-total	92,375	2,053
Total Investment Costs	1,939,867	43,108
Financing Costs during Construction		
Interest Costs	154,125	3,425
Other Financing Expenses	10,395	231
Total Financing Costs during Construction	164,520	3,656
TOTAL USES OF FUNDS (Project Cost)	**2,104,387**	**46,764**

SOURCES OF FUNDS	1,000 Baht	1,000 US$
Equity 1 28.57% of investment cost	554,220	12,316
Equity 2		
Grant		
Loan*	1,550,167	34,448
TOTAL SOURCES OF FUNDS	**2,104,387**	**46,764**
*Loan		
Amount	1,550,167	34,448
Grace Period		2
Maturity		9
Base Interest Rate		9.00%
Lender's Margin		1.00%
All-in Interest Rate		10.00%
Financing Fees		0.75%

ECONOMIC DATA	
Currency Exchange Rate (Baht/US$)	45.00
Average Inflation Rate (Thai CPI)	5.00%
Crude Oil Price Growth Rate	1.00%
Discount Rate	10.00%

PROJECT PERFORMANCE	
Nominal Pre-Tax Project IRR (total project)	**8.87%**
NPV-CF before Interest & Tax (total project) (in 1000 Baht)	**(3,062)**
Nominal Post-Tax Project IRR (total project)	**8.15%**
NPV - Post-Tax (total project) (in 1000 Baht)	**(4,730)**
Pay-back Period (yrs)	**9.31**
Equity IRR	5.64%

Annual Debt Service Coverage Ratios	**Minimum**	**Average**
Pre-Tax Cash Flow Coverage		
of Interest	**1.29**	**1.98**
of Debt Service	**0.74**	**0.77**
After-Tax Cash Flow Coverage		
of Interest	**0.69**	**1.11**
of Debt Service	**0.40**	**0.43**

(Note: all figures in Baht 1000 unless otherwise stated)
Legend: C-crushing; CW-cane waiting; RM1-remelting 1; RM2-remelting 2; PP-pure power generation

COMPANY NAME: Dan Chang Bioenergy Co., Ltd.
Project: Dan Chang Bioenergy Cogeneration Plant
Configuration: 100 tph and 120 tph biomass-fired boilers
37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Option 1: Sugar Mill to provide bagasse + raw water + land lease
Sugar Mill to get steam and electricity
Case: sensitivity Wood Bark Price 770 Baht/tonne
Date: 10/22/01

CASH FLOW STATEMENT

IndexationYear		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Operating Year		*-1*	*0*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*
Revenues																								
Energy payment - EGAT				5,510	5,675	5,846	6,021	6,202	6,587	6,784	6,988	7,198	7,413	7,828	8,063	8,305	8,554	8,811	9,075	9,347	9,628	9,916	10,214	10,520
Capacity payment - EGAT				2,357	2,428	2,501	2,576	2,653	2,818	2,902	2,989	3,079	3,172	3,349	3,449	3,553	3,659	3,769	3,882	3,999	4,119	4,242	4,370	4,501
Electricity sales- Sugar Mill (C+CW+RM1)				2,198	2,264	2,332	2,402	2,474	2,548	2,624	2,703	2,784	2,868	2,954	3,042	3,134	3,228	3,324	3,424	3,527	3,633	3,742	3,854	3,969
Electricity sales- Sugar Mill (RM2+PG)				1,468	1,512	1,558	1,604	1,653	1,702	1,753	1,806	1,860	1,916	1,973	2,032	2,093	2,156	2,221	2,288	2,356	2,427	2,500	2,575	2,652
Steam sales (C+CW+RM1)				955	983	1,013	1,043	1,074	1,107	1,140	1,174	1,209	1,245	1,283	1,321	1,361	1,402	1,444	1,487	1,532	1,578	1,625	1,674	1,724
Steam sales (RM2)				858	883	910	937	965	994	1,024	1,055	1,086	1,119	1,152	1,187	1,223	1,259	1,297	1,336	1,376	1,417	1,460	1,504	1,549
NEPO incentive																								
Total revenues				13,346	13,746	14,158	14,583	15,021	15,755	16,228	16,715	17,216	17,733	18,539	19,095	19,668	20,258	20,866	21,492	22,137	22,801	23,485	24,189	24,915
Operating Expenses																								
Administration				267	280	294	309	324	340	357	375	394	414	434	456	479	503	528	554	582	611	642	674	708
O&M				899	944	991	1,040	1,092	1,311	1,376	1,445	1,517	1,593	1,882	1,976	2,075	2,179	2,287	2,402	2,522	2,648	2,780	2,919	3,065
Fuel (bagasse)				3,375	3,476	3,581	3,688	3,799	3,913	4,030	4,151	4,275	4,404	4,536	4,672	4,812	4,956	5,105	5,258	5,416	5,578	5,746	5,918	6,096
Fuel (other biomass)				3,428	3,600	3,780	3,969	4,167	4,375	4,594	4,824	5,065	5,318	5,584	5,864	6,157	6,465	6,788	7,127	7,484	7,858	8,251	8,663	9,096
Land lease				406	418	430	443	456	470	484	499	514	529	545	561	578	596	613	632	651	670	690	711	732
Raw Water				82	85	87	90	93	96	98	101	104	108	111	114	118	121	125	128	132	136	140	145	149
Purchase from EGAT				36	38	40	42	44	47	49	51	54	57	59	62	66	69	72	76	80	84	88	92	97
Insurance				411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411
Total operating expenses				8,904	9,251	9,613	9,992	10,386	10,962	11,400	11,857	12,334	12,833	13,562	14,116	14,694	15,298	15,929	16,588	17,277	17,996	18,748	19,533	20,354
Cash Flow from Operations				4,442	4,495	4,545	4,591	4,634	4,793	4,828	4,858	4,882	4,900	4,977	4,979	4,974	4,960	4,937	4,904	4,860	4,805	4,737	4,656	4,562
Less Depreciation				(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)
Operating Profit (Loss) Before Interest & Tax				2,389	2,442	2,492	2,539	2,581	2,741	2,775	2,805	2,829	2,847	2,924	2,927	2,921	2,907	2,884	2,851	2,807	2,752	2,684	2,604	2,509
Less Corporate Tax				0	0	0	0	0	0	0	0	(343)	(427)	(439)	(439)	(438)	(872)	(865)	(855)	(842)	(826)	(805)	(781)	(753)
Income After Tax				2,389	2,442	2,492	2,539	2,581	2,741	2,775	2,805	2,486	2,420	2,486	2,488	2,483	2,035	2,019	1,996	1,965	1,926	1,879	1,823	1,756
Add Depreciation				2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053
Operating Cash Flow				**4,442**	**4,495**	**4,545**	**4,591**	**4,634**	**4,793**	**4,828**	**4,858**	**4,539**	**4,473**	**4,538**	**4,540**	**4,536**	**4,088**	**4,072**	**4,048**	**4,018**	**3,979**	**3,932**	**3,875**	**3,809**
Capital Expenditure		(14,226)	(28,882)																					
Salvage Value																								
Net Cash Flow Before Interest & Debt Service		**(14,226)**	**(28,882)**	**4,442**	**4,495**	**4,545**	**4,591**	**4,634**	**4,793**	**4,828**	**4,858**	**4,539**	**4,473**	**4,538**	**4,540**	**4,536**	**4,088**	**4,072**	**4,048**	**4,018**	**3,979**	**3,932**	**3,875**	**3,809**
CUM. NET CASHFLOW BEFORE INT. & DEBT SERVICE		**(14,226)**	**(43,108)**	**(38,666)**	**(34,171)**	**(29,627)**	**(25,035)**	**(20,401)**	**(15,608)**	**(10,780)**	**(5,922)**	**(1,383)**	**3,090**	**7,628**	**12,169**	**16,705**	**20,793**	**24,864**	**28,913**	**32,931**	**36,910**	**40,842**	**44,717**	**48,526**
Net Present Value (Post-Tax) - total project @	10.00%	**(4,730)**																						
Nominal Post -Tax IRR (project)		**8.15%**																						
Less Interest Expense				(3,445)	(3,191)	(2,912)	(2,605)	(2,267)	(1,896)	(1,488)	(1,038)	(544)	0	0	0	0	0	0	0	0	0	0	0	0
Less Debt Repayments				(2,537)	(2,790)	(3,069)	(3,376)	(3,714)	(4,085)	(4,494)	(4,943)	(5,438)	0	0	0	0	0	0	0	0	0	0	0	0
Net Financing Cash Flow				(1,540)	(1,487)	(1,437)	(1,390)	(1,347)	(1,188)	(1,154)	(1,124)	(1,443)	4,473	4,538	4,540	4,536	4,088	4,072	4,048	4,018	3,979	3,932	3,875	3,809
CUM. NET FINANCING CASH FLOW				(1,540)	(3,026)	(4,463)	(5,853)	(7,201)	(8,389)	(9,542)	(10,666)	(12,109)	(7,636)	(3,097)	1,443	5,979	10,067	14,138	18,187	22,205	26,184	30,116	33,991	37,800
Equity Cash Flow		(4,064)	(8,252)	(1,540)	(1,487)	(1,437)	(1,390)	(1,347)	(1,188)	(1,154)	(1,124)	(1,443)	4,473	4,538	4,540	4,536	4,088	4,072	4,048	4,018	3,979	3,932	3,875	3,809
Equity IRR (Post-Tax)		**5.64%**																						
Net Present Value (NPV total project @)	10.00%	**(3,062)**																						
Cash Flow Before Interest and Tax		(14,226)	(28,882)	4,442	4,495	4,545	4,591	4,634	4,793	4,828	4,858	4,882	4,900	4,977	4,979	4,974	4,960	4,937	4,904	4,860	4,805	4,737	4,656	4,562
Pre-Tax Project IRR (total)		**8.87%**																						

DEBT SERVICE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Overall interest rate		10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
Debt at beginning of year		0	11,154	34,448	31,911	29,121	26,051	22,675	18,961	14,875	10,381	5,438	0	0	0	0	0	0	0	0	0	0	0	0
Debt Drawdown		10,161	20,631																					
Interest During Construction		762	2,663																					
Other Financing Expenses		231																						
Repayment of Principal				(2,537)	(2,790)	(3,069)	(3,376)	(3,714)	(4,085)	(4,494)	(4,943)	(5,438)	0	0	0	0	0	0	0	0	0	0	0	0
Debt at the end of the year		**11,154**	**34,448**	**31,911**	**29,121**	**26,051**	**22,675**	**18,961**	**14,875**	**10,381**	**5,438**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Interest expense				(3,445)	(3,191)	(2,912)	(2,605)	(2,267)	(1,896)	(1,488)	(1,038)	(544)	0	0	0	0	0	0	0	0	0	0	0	0
Total Debt service		**0**	**0**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

DEBT SERVICE COVERAGE RATIOS	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Pre-Tax Cash Flow Coverage																					
of Interest	1.29	1.41	1.56	1.76	2.04	2.53	3.25	4.68	8.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service	0.74	0.75	0.76	0.77	0.77	0.80	0.81	0.81	0.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
After-Tax Cash Flow Coverage																					
of Interest	0.69	0.77	0.86	0.97	1.14	1.45	1.87	2.70	4.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service	0.40	0.41	0.42	0.42	0.43	0.46	0.46	0.47	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

COMPANY NAME:	**Dan Chang Bioenergy Co., Ltd.**
Project:	**Dan Chang Bioenergy Cogeneration Plant**
Configuration:	**100 tph and 120 tph biomass-fired boilers**
	37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Condition:	**Sugar Mill to provide bagasse + raw water + land lease**
	Sugar Mill to get steam and electricity
Case:	**sensitivity Wood Bark Price 840 Baht/tonne**
Date:	10/22/01

ASSUMPTIONS AND RESULTS

MILL DATA	
Mill Capacity (input) (tcy)	2,250,000
Type of Residue Produced	bagasse
Residue/Mill Input Ratio	27.00%
Total Bagasse Production (tpy)	607,500
Bagasse Required for Existing Equipment (tpy)	303,068
Available Bagasse (tpy)	304,432
Fuel Required from Other Sources (tpy):	
Rice husk	199,390
Wood bark	10,000
Cane leaves	10,000
Mill Heat Requirement (ton-steam/hr)	
Crushing: @ 31 bar	44.6
@ 17 bar	145.0
@ 8 bar	10.0
@ 2.5 bar	460.0
Cane-waiting: @ 31 bar	0.0
@ 17 bar	0.0
@ 8 bar	10.0
@ 2.5 bar	220.3
Remelting: @ 31 bar	0.0
@ 17 bar	0.0
@ 8 bar	10.0
@2.5 bar	158.3
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - milling	189.6
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - cane-waiting	0.0
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - remelting	0.0
Mill Power Requirement (kW)	
Crushing	21,000
Cane-waiting	12,500
Remelting 1	8,600
Remelting 2	8,600
Off-milling/off-remelting	1,000
Crushing Duration (hr/yr)	1,956
Cane-waiting Duration (hr/yr)	600
Remelting 1 Duration (hr/yr)	1,116
Remelting Duration 2 (hr/yr)	3,528
Pure Power Generation (hr/yr)	720

ENERGY PLANT DATA	
Fuel Data:	
Bagasse	
Moisture Content (wet basis)	50.00%
Lower Heating Value (LHV)(MJ/kg)	7.32
Rice husk	
Moisture Content (wet basis)	12.00%
Lower Heating Value (LHV)(MJ/kg)	11.70
Wood bark	
Moisture Content (wet basis)	32.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Cane leaves	
Moisture Content (wet basis)	24.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Plant Performance:	
Plant Total Operation (hr/yr)	7,920
Parasitic Load (crushing)	1,950
Parasitic Load (cane waiting)	1,800
Parasitic Load (remelting)	1,950
Parasitic Load (pure power generation)	1,800
Transmission Loss	1.00%
Overall Grid Off-take in a Year (year 1-5)	84.05%
Overall Grid Off-take in a Year (year 6-10)	86.67%
Overall Grid Off-take in a Year (year 11-21)	88.85%
Crushing:	
Plant Capacity (kW)	**48,300**
Load Factor	100.00%
Power Generation (kWh/yr)	94,474,800
Mill Power Requirements (kWh/yr)	41,076,000
Grid Export/Excess Power (kWh/yr) - yr 1 -5	40,979,075
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	42,255,871
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	43,319,868
Cane-waiting:	
Plant Capacity (kW)	**39,500**
Load Factor	100.00%
Power Generation (kWh/yr)	23,700,000
Mill Power Requirements (kWh/yr)	7,500,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	12,538,928
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	12,929,606
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	13,255,172
Remelting 1:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	40,079,837
Mill Power Requirements (kWh/yr)	9,601,298
Grid Export/Excess Power (kWh/yr) - yr 1 - 5	23,506,342
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	24,238,735
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	24,849,063
Remelting 2:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	126,639,763
Mill Power Requirements (kWh/yr)	30,337,102
Grid Export/Excess Power (kWh/yr) - yr 1 -5	74,272,695
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	76,586,830
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	78,515,275
Pure Power Generation:	
Plant Capacity (kW)	**28,000**
Load Factor	100.00%
Power Generation (kWh/yr)	20,160,000
Mill Power Requirements (kWh/yr)	720,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	15,116,472
Grid Export/Excess Power (kWh/yr) - yr 6- 10	15,587,460
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	15,979,950
Annual Shutdown/Maintenance:	
Back-up Power Requirements (MW)	1.00
Total Number Days for Annual Maintenance	30

GENERAL DATA	
Plant Life (years)	21
PPA with EGAT (years)	21
Depreciation Policy	straight line
Corporate Tax Rate:	
Year 1-8	0.00%
Year 9-13	15.00%
Year 14 onwards	30.00%

TARIFF	Baht	US$
Energy Payment (Baht/kWh) - EGAT	1.4900	0.0331
Power Capacity Payment (Baht/kW-mo)	458.9474	10.1988
Levelised Electricity Selling Rate (Baht/kWh) - EGAT (RM2+PP)	2.1274	0.0473
Electricity Purchase Price from EGAT (Baht/kWh) - Peak	2.6950	0.0599
Electricity Purchase Price from EGAT (Baht/kWh) - Off-Peak	1.1914	0.0265
Power Demand Charge (Baht/kW-mo)	132.9300	2.9540
Back-up Power Charge for Cogeneration (Baht-kW-mo)	29.4400	0.6542
Service Charge (Baht/mo)	228.1700	5.0704
Levelised Electricity Selling Rate (Baht/kWh) - Sugar Mill (C+CW+RM1	1.7000	0.0378
Steam Selling Rate (Baht/ton) - Sugar Mill (C+CW+RM1)	34.4895	0.7664
Steam Selling Rate (Baht/ton) - Sugar Mill (RM 2)	65.0000	1.4444
Fuel Cost:		
Bagasse (Baht/ton)	250.0000	5.5556
Rice husk (Baht/ton)	700.0000	15.5556
Wood bark (Baht/ton)	840.0000	18.6667
Cane leaves (Baht/ton)	700.0000	15.5556
Natural gas (Baht/million BTU)	151.4518	3.3656
Raw Water (Baht/cu.m.)	6.5000	0.1444
NEPO Incentive (Baht/kWh)	0.1450	0.0032

OPERATING COSTS		1,000 Baht	1,000 US$
Administration		12,000	267
O&M, % of EPC cost (Yr 1-5)	3.50%	40,437	899
O&M, % of EPC cost (Yr 6-10)	4.00%	46,213	1,027
O&M, % of EPC cost (Yr 11 onwards)	4.50%	51,990	1,155
Fuel (bagasse)		151,875	3,375
Fuel (other biomass)		154,973	3,444
Raw Water (C+CW+RM1)		2,429	54
Raw Water (RM2+PP)		1,281	28
Land Lease (C+CW+RM1)		7,651	170
Land Lease (RM2+PP)		10,599	236
Purchase from EGAT		1,642	36
Insurance, % of EPC Cost	1.50%	18,477	411

USES OF FUNDS	1,000 Baht	1,000 US$
Investment Costs		
Development Costs	99,000	2,200
Equipment Costs (main equipment)	1,078,830	23,974
Equipment Costs (BOP)	76,500	1,700
Grid Connection	76,500	1,700
Engineering and Civil Works	135,000	3,000
Import Duty, @ 5.00% of Foreign EPC Cost	32,355	719
Erection, Installation, Training, Handling & Land Transportation	36,000	800
Construction time insurance,1.50 % Equip. Cost	16,200	360
Transferred equipment from sugar mill (old)	297,108	6,602
SUB-TOTAL	1,847,493	41,055
Contingency 5.00% of sub-total	92,375	2,053
Total Investment Costs	1,939,867	43,108
Financing Costs during Construction		
Interest Costs	154,125	3,425
Other Financing Expenses	10,395	231
Total Financing Costs during Construction	164,520	3,656
TOTAL USES OF FUNDS (Project Cost)	**2,104,387**	**46,764**

SOURCES OF FUNDS	1,000 Baht	1,000 US$
Equity 1 28.57% of investment cost	554,220	12,316
Equity 2		
Grant		
Loan*	1,550,167	34,448
TOTAL SOURCES OF FUNDS	**2,104,387**	**46,764**
*Loan		
Amount	1,550,167	34,448
Grace Period		2
Maturity		9
Base Interest Rate		9.00%
Lender's Margin		1.00%
All-in Interest Rate		10.00%
Financing Fees		0.75%

ECONOMIC DATA	
Currency Exchange Rate (Baht/US$)	45.00
Average Inflation Rate (Thai CPI)	5.00%
Crude Oil Price Growth Rate	1.00%
Discount Rate	10.00%

PROJECT PERFORMANCE		
Nominal Pre-Tax Project IRR (total project)		**8.80%**
NPV-CF before Interest & Tax (total project) (in 1000 Baht)		**(3,222)**
Nominal Post-Tax Project IRR (total project)		**8.09%**
NPV - Post-Tax (total project) (in 1000 Baht)		**(4,872)**
Pay-back Period (yrs)		**9.35**
Equity IRR		5.55%
Annual Debt Service Coverage Ratios		
	Minimum	**Average**
Pre-Tax Cash Flow Coverage		
of Interest	**1.28**	**1.97**
of Debt Service	**0.74**	**0.77**
After-Tax Cash Flow Coverage		
of Interest	**0.69**	**1.10**
of Debt Service	**0.40**	**0.43**

(Note: all figures in Baht 1000 unless otherwise stated)

Legend: C-crushing; CW-cane waiting; RM1-remelting 1; RM2-remelting 2; PP-pure power generation

COMPANY NAME: Dan Chang Bioenergy Co., Ltd.
Project: Dan Chang Bioenergy Cogeneration Plant
Configuration: 100 tph and 120 tph biomass-fired boilers
37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Option 1: Sugar Mill to provide bagasse + raw water + land lease
Sugar Mill to get steam and electricity
Case: sensitivity Wood Bark Price 840 Baht/tonne
Date: 10/22/01

CASH FLOW STATEMENT

IndexationYear		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Operating Year		*-1*	*0*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*
Revenues																								
Energy payment - EGAT				5,510	5,675	5,846	6,021	6,202	6,587	6,784	6,988	7,198	7,413	7,828	8,063	8,305	8,554	8,811	9,075	9,347	9,628	9,916	10,214	10,520
Capacity payment - EGAT				2,357	2,428	2,501	2,576	2,653	2,818	2,902	2,989	3,079	3,172	3,349	3,449	3,553	3,659	3,769	3,882	3,999	4,119	4,242	4,370	4,501
Electricity sales- Sugar Mill (C+CW+RM1)				2,198	2,264	2,332	2,402	2,474	2,548	2,624	2,703	2,784	2,868	2,954	3,042	3,134	3,228	3,324	3,424	3,527	3,633	3,742	3,854	3,969
Electricity sales- Sugar Mill (RM2+PG)				1,468	1,512	1,558	1,604	1,653	1,702	1,753	1,806	1,860	1,916	1,973	2,032	2,093	2,156	2,221	2,288	2,356	2,427	2,500	2,575	2,652
Steam sales (C+CW+RM1)				955	983	1,013	1,043	1,074	1,107	1,140	1,174	1,209	1,245	1,283	1,321	1,361	1,402	1,444	1,487	1,532	1,578	1,625	1,674	1,724
Steam sales (RM2)				858	883	910	937	965	994	1,024	1,055	1,086	1,119	1,152	1,187	1,223	1,259	1,297	1,336	1,376	1,417	1,460	1,504	1,549
NEPO incentive																								
Total revenues				13,346	13,746	14,158	14,583	15,021	15,755	16,228	16,715	17,216	17,733	18,539	19,095	19,668	20,258	20,866	21,492	22,137	22,801	23,485	24,189	24,915
Operating Expenses																								
Administration				267	280	294	309	324	340	357	375	394	414	434	456	479	503	528	554	582	611	642	674	708
O&M				899	944	991	1,040	1,092	1,311	1,376	1,445	1,517	1,593	1,882	1,976	2,075	2,179	2,287	2,402	2,522	2,648	2,780	2,919	3,065
Fuel (bagasse)				3,375	3,476	3,581	3,688	3,799	3,913	4,030	4,151	4,275	4,404	4,536	4,672	4,812	4,956	5,105	5,258	5,416	5,578	5,746	5,918	6,096
Fuel (other biomass)				3,444	3,616	3,797	3,987	4,186	4,395	4,615	4,846	5,088	5,343	5,610	5,890	6,185	6,494	6,819	7,160	7,517	7,893	8,288	8,702	9,138
Land lease				406	418	430	443	456	470	484	499	514	529	545	561	578	596	613	632	651	670	690	711	732
Raw Water				82	85	87	90	93	96	98	101	104	108	111	114	118	121	125	128	132	136	140	145	149
Purchase from EGAT				36	38	40	42	44	47	49	51	54	57	59	62	66	69	72	76	80	84	88	92	97
Insurance				411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411	411
Total operating expenses				8,919	9,267	9,631	10,010	10,405	10,982	11,421	11,879	12,357	12,857	13,588	14,143	14,722	15,328	15,960	16,621	17,311	18,032	18,785	19,572	20,395
Cash Flow from Operations				4,426	4,479	4,528	4,573	4,615	4,774	4,807	4,836	4,859	4,876	4,952	4,953	4,946	4,931	4,906	4,871	4,826	4,769	4,700	4,617	4,520
Less Depreciation				(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)	(2,053)
Operating Profit (Loss) Before Interest & Tax				2,374	2,426	2,475	2,521	2,563	2,721	2,754	2,783	2,806	2,823	2,899	2,900	2,893	2,878	2,853	2,819	2,773	2,716	2,647	2,564	2,467
Less Corporate Tax				0	0	0	0	0	0	0	0	(339)	(423)	(435)	(435)	(434)	(863)	(856)	(846)	(832)	(815)	(794)	(769)	(740)
Income After Tax				2,374	2,426	**2,475**	2,521	2,563	2,721	2,754	2,783	2,467	2,400	2,464	2,465	2,459	2,015	1,997	1,973	1,941	1,901	1,853	1,795	1,727
Add Depreciation				2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053	2,053
Operating Cash Flow				**4,426**	**4,479**	**4,528**	**4,573**	**4,615**	**4,774**	**4,807**	**4,836**	**4,519**	**4,452**	**4,517**	**4,518**	**4,512**	**4,067**	**4,050**	**4,026**	**3,994**	**3,954**	**3,906**	**3,848**	**3,780**
Capital Expenditure		(14,226)	(28,882)																					
Salvage Value																								
Net Cash Flow Before Interest & Debt Service		**(14,226)**	**(28,882)**	**4,426**	**4,479**	**4,528**	**4,573**	**4,615**	**4,774**	**4,807**	**4,836**	**4,519**	**4,452**	**4,517**	**4,518**	**4,512**	**4,067**	**4,050**	**4,026**	**3,994**	**3,954**	**3,906**	**3,848**	**3,780**
CUM. NET CASHFLOW BEFORE INT. & DEBT SERVICE		**(14,226)**	**(43,108)**	**(38,682)**	**(34,203)**	**(29,676)**	**(25,102)**	**(20,487)**	**(15,713)**	**(10,906)**	**(6,070)**	**(1,551)**	**2,901**	**7,418**	**11,936**	**16,448**	**20,516**	**24,566**	**28,592**	**32,586**	**36,540**	**40,446**	**44,293**	**48,073**
Net Present Value (Post-Tax) - total project @	10.00%	**(4,872)**																						
Nominal Post -Tax IRR (project)		**8.09%**																						
Less Interest Expense				(3,445)	(3,191)	(2,912)	(2,605)	(2,267)	(1,896)	(1,488)	(1,038)	(544)	0	0	0	0	0	0	0	0	0	0	0	0
Less Debt Repayments				(2,537)	(2,790)	(3,069)	(3,376)	(3,714)	(4,085)	(4,494)	(4,943)	(5,438)	0	0	0	0	0	0	0	0	0	0	0	0
Net Financing Cash Flow				(1,555)	(1,503)	(1,454)	(1,408)	(1,366)	(1,208)	(1,174)	(1,146)	(1,462)	4,452	4,517	4,518	4,512	4,067	4,050	4,026	3,994	3,954	3,906	3,848	3,780
CUM. NET FINANCING CASH FLOW				(1,555)	(3,058)	(4,512)	(5,920)	(7,287)	(8,495)	(9,669)	(10,815)	(12,277)	(7,824)	(3,308)	1,210	5,722	9,790	13,840	17,866	21,860	25,814	29,720	33,568	37,348
Equity Cash Flow		(4,064)	(8,252)	(1,555)	(1,503)	(1,454)	(1,408)	(1,366)	(1,208)	(1,174)	(1,146)	(1,462)	4,452	4,517	4,518	4,512	4,067	4,050	4,026	3,994	3,954	3,906	3,848	3,780
Equity IRR (Post-Tax)		**5.55%**																						
Net Present Value (NPV total project @)	10.00%	**(3,222)**																						
Cash Flow Before Interest and Tax		(14,226)	(28,882)	4,426	4,479	4,528	4,573	4,615	4,774	4,807	4,836	4,859	4,876	4,952	4,953	4,946	4,931	4,906	4,871	4,826	4,769	4,700	4,617	4,520
Pre-Tax Project IRR (total)		**8.80%**																						

DEBT SERVICE																								
Overall interest rate		10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
Debt at beginning of year		0	11,154	34,448	31,911	29,121	26,051	22,675	18,961	14,875	10,381	5,438	0	0	0	0	0	0	0	0	0	0	0	0
Debt Drawdown		10,161	20,631																					
Interest During Construction		762	2,663																					
Other Financing Expenses		231																						
Repayment of Principal				(2,537)	(2,790)	(3,069)	(3,376)	(3,714)	(4,085)	(4,494)	(4,943)	(5,438)	0	0	0	0	0	0	0	0	0	0	0	0
Debt at the end of the year		**11,154**	**34,448**	**31,911**	**29,121**	**26,051**	**22,675**	**18,961**	**14,875**	**10,381**	**5,438**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Interest expense				(3,445)	(3,191)	(2,912)	(2,605)	(2,267)	(1,896)	(1,488)	(1,038)	(544)	0	0	0	0	0	0	0	0	0	0	0	0
Total Debt service		**0**	**0**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**(5,982)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

DEBT SERVICE COVERAGE RATIOS																						
Pre-Tax Cash Flow Coverage																						
of Interest		1.28	1.40	1.55	1.76	2.04	2.52	3.23	4.66	8.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service		0.74	0.75	0.76	0.76	0.77	0.80	0.80	0.81	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
After-Tax Cash Flow Coverage																						
of Interest		0.69	0.76	0.85	0.97	1.13	1.43	1.85	2.68	4.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service		0.40	0.41	0.41	0.42	0.43	0.45	0.46	0.47	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

COMPANY NAME:	**Dan Chang Bioenergy Co., Ltd.**
Project:	**Dan Chang Bioenergy Cogeneration Plant**
Configuration:	**100 tph and 120 tph biomass-fired boilers**
	37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Condition:	**Sugar Mill to provide bagasse + raw water + land lease**
	Sugar Mill to get steam and electricity
Case:	**sensitivity Investment Cost - 10%**
Date:	10/22/01

ASSUMPTIONS AND RESULTS

MILL DATA		
Mill Capacity (input) (tcy)		2,250,000
Type of Residue Produced		bagasse
Residue/Mill Input Ratio		27.00%
Total Bagasse Production (tpy)		607,500
Bagasse Required for Existing Equipment (tpy)		303,068
Available Bagasse (tpy)		304,432
Fuel Required from Other Sources (tpy):		
Rice husk		199,390
Wood bark		10,000
Cane leaves		10,000
Mill Heat Requirement (ton-steam/hr)		
Crushing:	@ 31 bar	44.6
	@ 17 bar	145.0
	@ 8 bar	10.0
	@ 2.5 bar	460.0
Cane-waiting:	@ 31 bar	0.0
	@ 17 bar	0.0
	@ 8 bar	10.0
	@ 2.5 bar	220.3
Remelting:	@ 31 bar	0.0
	@ 17 bar	0.0
	@ 8 bar	10.0
	@2.5 bar	158.3
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - milling		189.6
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - cane-waiting		0.0
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - remelting		0.0
Mill Power Requirement (kW)		
Crushing		21,000
Cane-waiting		12,500
Remelting 1		8,600
Remelting 2		8,600
Off-milling/off-remelting		1,000
Crushing Duration (hr/yr)		1,956
Cane-waiting Duration (hr/yr)		600
Remelting 1 Duration (hr/yr)		1,116
Remelting Duration 2 (hr/yr)		3,528
Pure Power Generation (hr/yr)		720

ENERGY PLANT DATA	
Fuel Data:	
Bagasse	
Moisture Content (wet basis)	50.00%
Lower Heating Value (LHV)(MJ/kg)	7.32
Rice husk	
Moisture Content (wet basis)	12.00%
Lower Heating Value (LHV)(MJ/kg)	11.70
Wood bark	
Moisture Content (wet basis)	32.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Cane leaves	
Moisture Content (wet basis)	24.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Plant Performance:	
Plant Total Operation (hr/yr)	7,920
Parasitic Load (crushing)	1,950
Parasitic Load (cane waiting)	1,800
Parasitic Load (remelting)	1,950
Parasitic Load (pure power generation)	1,800
Transmission Loss	1.00%
Overall Grid Off-take in a Year (year 1-5)	84.05%
Overall Grid Off-take in a Year (year 6-10)	86.67%
Overall Grid Off-take in a Year (year 11-21)	88.85%
Crushing:	
Plant Capacity (kW)	**48,300**
Load Factor	100.00%
Power Generation (kWh/yr)	94,474,800
Mill Power Requirements (kWh/yr)	41,076,000
Grid Export/Excess Power (kWh/yr) - yr 1 -5	40,979,075
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	42,255,871
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	43,319,868
Cane-waiting:	
Plant Capacity (kW)	**39,500**
Load Factor	100.00%
Power Generation (kWh/yr)	23,700,000
Mill Power Requirements (kWh/yr)	7,500,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	12,538,928
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	12,929,606
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	13,255,172
Remelting 1:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	40,079,837
Mill Power Requirements (kWh/yr)	9,601,298
Grid Export/Excess Power (kWh/yr) - yr 1 - 5	23,506,342
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	24,238,735
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	24,849,063
Remelting 2:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	126,639,763
Mill Power Requirements (kWh/yr)	30,337,102
Grid Export/Excess Power (kWh/yr) - yr 1 -5	74,272,695
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	76,586,830
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	78,515,275
Pure Power Generation:	
Plant Capacity (kW)	**28,000**
Load Factor	100.00%
Power Generation (kWh/yr)	20,160,000
Mill Power Requirements (kWh/yr)	720,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	15,116,472
Grid Export/Excess Power (kWh/yr) - yr 6- 10	15,587,460
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	15,979,950
Annual Shutdown/Maintenance:	
Back-up Power Requirements (MW)	1.00
Total Number Days for Annual Maintenance	30

GENERAL DATA	
Plant Life (years)	21
PPA with EGAT (years)	21
Depreciation Policy	straight line
Corporate Tax Rate:	
Year 1-8	0.00%
Year 9-13	15.00%
Year 14 onwards	30.00%

TARIFF	Baht	US$
Energy Payment (Baht/kWh) - EGAT	1.4900	0.0331
Power Capacity Payment (Baht/kW-mo)	458.9474	10.1988
Levelised Electricity Selling Rate (Baht/kWh) - EGAT (RM2+PP)	2.1274	0.0473
Electricity Purchase Price from EGAT (Baht/kWh) - Peak	2.6950	0.0599
Electricity Purchase Price from EGAT (Baht/kWh) - Off-Peak	1.1914	0.0265
Power Demand Charge (Baht/kW-mo)	132.9300	2.9540
Back-up Power Charge for Cogeneration (Baht-kW-mo)	29.4400	0.6542
Service Charge (Baht/mo)	228.1700	5.0704
Levelised Electricity Selling Rate (Baht/kWh) - Sugar Mill (C+CW+RM1	1.7000	0.0378
Steam Selling Rate (Baht/ton) - Sugar Mill (C+CW+RM1)	34.4895	0.7664
Steam Selling Rate (Baht/ton) - Sugar Mill (RM 2)	65.0000	1.4444
Fuel Cost:		
Bagasse (Baht/ton)	250.0000	5.5556
Rice husk (Baht/ton)	700.0000	15.5556
Wood bark (Baht/ton)	700.0000	15.5556
Cane leaves (Baht/ton)	700.0000	15.5556
Natural gas (Baht/million BTU)	151.4518	3.3656
Raw Water (Baht/cu.m.)	6.5000	0.1444
NEPO Incentive (Baht/kWh)	0.1450	0.0032

OPERATING COSTS		1,000 Baht	1,000 US$
Administration		12,000	267
O&M, % of EPC cost (Yr 1-5)	3.50%	36,393	809
O&M, % of EPC cost (Yr 6-10)	4.00%	41,592	924
O&M, % of EPC cost (Yr 11 onwards)	4.50%	46,791	1,040
Fuel (bagasse)		151,875	3,375
Fuel (other biomass)		153,573	3,413
Raw Water (C+CW+RM1)		2,429	54
Raw Water (RM2+PP)		1,281	28
Land Lease (C+CW+RM1)		7,651	170
Land Lease (RM2+PP)		10,599	236
Purchase from EGAT		1,642	36
Insurance, % of EPC Cost	1.50%	16,630	370

USES OF FUNDS		1,000 Baht	1,000 US$
Investment Costs			
Development Costs		89,100	1,980
Equipment Costs (main equipment)		970,947	21,577
Equipment Costs (BOP)		68,850	1,530
Grid Connection		68,850	1,530
Engineering and Civil Works		121,500	2,700
Import Duty, @ 5.00% of Foreign EPC Cost		29,120	647
Erection, Installation, Training, Handling & Land Transportation		32,400	720
Construction time insurance,1.50 % Equip. Cost		14,580	324
Transferred equipment from sugar mill (old)		267,397	5,942
SUB-TOTAL		1,662,743	36,950
Contingency	5.00% of sub-total	83,137	1,847
Total Investment Costs		1,745,880	38,797
Financing Costs during Construction			
Interest Costs		154,125	3,425
Other Financing Expenses		10,395	231
Total Financing Costs during Construction		164,520	3,656
TOTAL USES OF FUNDS (Project Cost)		**1,910,400**	**42,453**

SOURCES OF FUNDS		1,000 Baht	1,000 US$
Equity 1	28.57% of investment cost	498,798	11,084
Equity 2			
Grant			
Loan*		1,411,602	31,369
TOTAL SOURCES OF FUNDS		**1,910,400**	**42,453**
*Loan			
Amount		1,411,602	31,369
Grace Period			2
Maturity			9
Base Interest Rate			9.00%
Lender's Margin			1.00%
All-in Interest Rate			10.00%
Financing Fees			0.75%

ECONOMIC DATA	
Currency Exchange Rate (Baht/US$)	45.00
Average Inflation Rate (Thai CPI)	5.00%
Crude Oil Price Growth Rate	1.00%
Discount Rate	10.00%

PROJECT PERFORMANCE		
Nominal Pre-Tax Project IRR (total project)		**10.85%**
NPV-CF before Interest & Tax (total project) (in 1000 Baht)		**2,140**
Nominal Post-Tax Project IRR (total project)		**10.07%**
NPV - Post-Tax (total project) (in 1000 Baht)		**166**
Pay-back Period (yrs)		**8.05**
Equity IRR		8.74%
Annual Debt Service Coverage Ratios		
	Minimum	**Average**
Pre-Tax Cash Flow Coverage		
of Interest	**1.48**	**2.28**
of Debt Service	**0.85**	**0.89**
After-Tax Cash Flow Coverage		
of Interest	**0.88**	**1.41**
of Debt Service	**0.51**	**0.55**

(Note: all figures in Baht 1000 unless otherwise stated)

Legend: C-crushing; CW-cane waiting; RM1-remelting 1; RM2-remelting 2; PP-pure power generation

COMPANY NAME: Dan Chang Bioenergy Co., Ltd.
Project: Dan Chang Bioenergy Cogeneration Plant
Configuration: 100 tph and 120 tph biomass-fired boilers
37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Option 1: Sugar Mill to provide bagasse + raw water + land lease
Sugar Mill to get steam and electricity
Case: sensitivity Investment Cost - 10%
Date: 10/22/01

CASH FLOW STATEMENT

IndexationYear		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Operating Year		*-1*	*0*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*
Revenues																								
Energy payment - EGAT				5,510	5,675	5,846	6,021	6,202	6,587	6,784	6,988	7,198	7,413	7,828	8,063	8,305	8,554	8,811	9,075	9,347	9,628	9,916	10,214	10,520
Capacity payment - EGAT				2,357	2,428	2,501	2,576	2,653	2,818	2,902	2,989	3,079	3,172	3,349	3,449	3,553	3,659	3,769	3,882	3,999	4,119	4,242	4,370	4,501
Electricity sales- Sugar Mill (C+CW+RM1)				2,198	2,264	2,332	2,402	2,474	2,548	2,624	2,703	2,784	2,868	2,954	3,042	3,134	3,228	3,324	3,424	3,527	3,633	3,742	3,854	3,969
Electricity sales- Sugar Mill (RM2+PG)				1,468	1,512	1,558	1,604	1,653	1,702	1,753	1,806	1,860	1,916	1,973	2,032	2,093	2,156	2,221	2,288	2,356	2,427	2,500	2,575	2,652
Steam sales (C+CW+RM1)				955	983	1,013	1,043	1,074	1,107	1,140	1,174	1,209	1,245	1,283	1,321	1,361	1,402	1,444	1,487	1,532	1,578	1,625	1,674	1,724
Steam sales (RM2)				858	883	910	937	965	994	1,024	1,055	1,086	1,119	1,152	1,187	1,223	1,259	1,297	1,336	1,376	1,417	1,460	1,504	1,549
NEPO incentive																								
Total revenues				13,346	13,746	14,158	14,583	15,021	15,755	16,228	16,715	17,216	17,733	18,539	19,095	19,668	20,258	20,866	21,492	22,137	22,801	23,485	24,189	24,915
Operating Expenses																								
Administration				267	280	294	309	324	340	357	375	394	414	434	456	479	503	528	554	582	611	642	674	708
O&M				809	849	892	936	983	1,180	1,239	1,301	1,366	1,434	1,694	1,778	1,867	1,961	2,059	2,162	2,270	2,383	2,502	2,628	2,759
Fuel (bagasse)				3,375	3,476	3,581	3,688	3,799	3,913	4,030	4,151	4,275	4,404	4,536	4,672	4,812	4,956	5,105	5,258	5,416	5,578	5,746	5,918	6,096
Fuel (other biomass)				3,413	3,583	3,763	3,951	4,148	4,356	4,573	4,802	5,042	5,294	5,559	5,837	6,129	6,435	6,757	7,095	7,450	7,822	8,213	8,624	9,055
Land lease				406	418	430	443	456	470	484	499	514	529	545	561	578	596	613	632	651	670	690	711	732
Raw Water				82	85	87	90	93	96	98	101	104	108	111	114	118	121	125	128	132	136	140	145	149
Purchase from EGAT				36	38	40	42	44	47	49	51	54	57	59	62	66	69	72	76	80	84	88	92	97
Insurance				370	370	370	370	370	370	370	370	370	370	370	370	370	370	370	370	370	370	370	370	370
Total operating expenses				8,757	9,099	9,456	9,829	10,217	10,770	11,200	11,650	12,119	12,608	13,308	13,851	14,418	15,010	15,629	16,275	16,950	17,655	18,391	19,161	19,965
Cash Flow from Operations				4,588	4,647	4,702	4,754	4,803	4,985	5,028	5,065	5,098	5,124	5,232	5,245	5,251	5,248	5,237	5,217	5,187	5,146	5,094	5,029	4,950
Less Depreciation				(1,847)	(1,847)	(1,847)	(1,847)	(1,847)	(1,847)	(1,847)	(1,847)	(1,847)	(1,847)	(1,847)	(1,847)	(1,847)	(1,847)	(1,847)	(1,847)	(1,847)	(1,847)	(1,847)	(1,847)	(1,847)
Operating Profit (Loss) Before Interest & Tax				2,741	2,799	2,855	2,907	2,956	3,138	3,180	3,218	3,250	3,277	3,384	3,397	3,403	3,401	3,390	3,370	3,340	3,299	3,246	3,181	3,103
Less Corporate Tax				0	0	0	0	0	0	0	0	(414)	(492)	(508)	(510)	(510)	(1,020)	(1,017)	(1,011)	(1,002)	(990)	(974)	(954)	(931)
Income After Tax				2,741	2,799	**2,855**	2,907	2,956	3,138	3,180	3,218	2,836	2,785	2,877	2,888	2,893	2,381	2,373	2,359	2,338	2,309	2,272	2,227	2,172
Add Depreciation				1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847	1,847
Operating Cash Flow				**4,588**	**4,647**	**4,702**	**4,754**	**4,803**	**4,985**	**5,028**	**5,065**	**4,683**	**4,633**	**4,724**	**4,735**	**4,740**	**4,228**	**4,220**	**4,206**	**4,185**	**4,157**	**4,120**	**4,074**	**4,020**
Capital Expenditure		(12,803)	(25,994)																					
Salvage Value																								
Net Cash Flow Before Interest & Debt Service		**(12,803)**	**(25,994)**	**4,588**	**4,647**	**4,702**	**4,754**	**4,803**	**4,985**	**5,028**	**5,065**	**4,683**	**4,633**	**4,724**	**4,735**	**4,740**	**4,228**	**4,220**	**4,206**	**4,185**	**4,157**	**4,120**	**4,074**	**4,020**
CUM. NET CASHFLOW BEFORE INT. & DEBT SERVICE		**(12,803)**	**(38,797)**	**(34,209)**	**(29,562)**	**(24,860)**	**(20,106)**	**(15,302)**	**(10,317)**	**(5,289)**	**(224)**	**4,459**	**9,092**	**13,816**	**18,551**	**23,291**	**27,519**	**31,740**	**35,946**	**40,132**	**44,288**	**48,408**	**52,483**	**56,502**
Net Present Value (Post-Tax) - total project @	10.00%	**166**																						
Nominal Post -Tax IRR (project)		**10.07%**																						
Less Interest Expense				(3,100)	(2,872)	(2,621)	(2,345)	(2,041)	(1,706)	(1,339)	(934)	(489)	0	0	0	0	0	0	0	0	0	0	0	0
Less Debt Repayments				(2,283)	(2,511)	(2,763)	(3,039)	(3,343)	(3,677)	(4,045)	(4,449)	(4,894)	0	0	0	0	0	0	0	0	0	0	0	0
Net Financing Cash Flow				(795)	(737)	(681)	(629)	(580)	(398)	(356)	(318)	(700)	4,633	4,724	4,735	4,740	4,228	4,220	4,206	4,185	4,157	4,120	4,074	4,020
CUM. NET FINANCING CASH FLOW				(795)	(1,532)	(2,213)	(2,842)	(3,422)	(3,820)	(4,176)	(4,494)	(5,194)	(561)	4,163	8,898	13,638	17,866	22,087	26,293	30,478	34,635	38,755	42,829	46,849
Equity Cash Flow		(3,658)	(7,427)	(795)	(737)	(681)	(629)	(580)	(398)	(356)	(318)	(700)	4,633	4,724	4,735	4,740	4,228	4,220	4,206	4,185	4,157	4,120	4,074	4,020
Equity IRR (Post-Tax)		**8.74%**																						
Net Present Value (NPV total project @)	10.00%	**2,140**																						
Cash Flow Before Interest and Tax		(12,803)	(25,994)	4,588	4,647	4,702	4,754	4,803	4,985	5,028	5,065	5,098	5,124	5,232	5,245	5,251	5,248	5,237	5,217	5,187	5,146	5,094	5,029	4,950
Pre-Tax Project IRR (total)		**10.85%**																						

DEBT SERVICE																								
Overall interest rate		10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
Debt at beginning of year		0	10,039	31,003	28,720	26,209	23,446	20,407	17,065	13,388	9,343	4,894	0	0	0	0	0	0	0	0	0	0	0	0
Debt Drawdown		9,145	18,568																					
Interest During Construction		686	2,396																					
Other Financing Expenses		208																						
Repayment of Principal				(2,283)	(2,511)	(2,763)	(3,039)	(3,343)	(3,677)	(4,045)	(4,449)	(4,894)	0	0	0	0	0	0	0	0	0	0	0	0
Debt at the end of the year		**10,039**	**31,003**	**28,720**	**26,209**	**23,446**	**20,407**	**17,065**	**13,388**	**9,343**	**4,894**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Interest expense				(3,100)	(2,872)	(2,621)	(2,345)	(2,041)	(1,706)	(1,339)	(934)	(489)	0	0	0	0	0	0	0	0	0	0	0	0
Total Debt service		**0**	**0**	**(5,383)**	**(5,383)**	**(5,383)**	**(5,383)**	**(5,383)**	**(5,383)**	**(5,383)**	**(5,383)**	**(5,383)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

DEBT SERVICE COVERAGE RATIOS																						
Pre-Tax Cash Flow Coverage																						
of Interest		1.48	1.62	1.79	2.03	2.35	2.92	3.76	5.42	10.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service		0.85	0.86	0.87	0.88	0.89	0.93	0.93	0.94	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
After-Tax Cash Flow Coverage																						
of Interest		0.88	0.97	1.09	1.24	1.45	1.84	2.38	3.44	5.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service		0.51	0.52	0.53	0.54	0.55	0.58	0.59	0.60	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

COMPANY NAME:	**Dan Chang Bioenergy Co., Ltd.**
Project:	**Dan Chang Bioenergy Cogeneration Plant**
Configuration:	**100 tph and 120 tph biomass-fired boilers**
	37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Condition:	**Sugar Mill to provide bagasse + raw water + land lease**
	Sugar Mill to get steam and electricity
Case:	**sensitivity Investment Cost - 5%**
Date:	10/22/01

ASSUMPTIONS AND RESULTS

MILL DATA		
Mill Capacity (input) (tcy)		2,250,000
Type of Residue Produced		bagasse
Residue/Mill Input Ratio		27.00%
Total Bagasse Production (tpy)		607,500
Bagasse Required for Existing Equipment (tpy)		303,068
Available Bagasse (tpy)		304,432
Fuel Required from Other Sources (tpy):		
Rice husk		199,390
Wood bark		10,000
Cane leaves		10,000
Mill Heat Requirement (ton-steam/hr)		
Crushing:	@ 31 bar	44.6
	@ 17 bar	145.0
	@ 8 bar	10.0
	@ 2.5 bar	460.0
Cane-waiting:	@ 31 bar	0.0
	@ 17 bar	0.0
	@ 8 bar	10.0
	@ 2.5 bar	220.3
Remelting:	@ 31 bar	0.0
	@ 17 bar	0.0
	@ 8 bar	10.0
	@2.5 bar	158.3
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - milling		189.6
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - cane-waiting		0.0
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - remelting		0.0
Mill Power Requirement (kW)		
Crushing		21,000
Cane-waiting		12,500
Remelting 1		8,600
Remelting 2		8,600
Off-milling/off-remelting		1,000
Crushing Duration (hr/yr)		1,956
Cane-waiting Duration (hr/yr)		600
Remelting 1 Duration (hr/yr)		1,116
Remelting Duration 2 (hr/yr)		3,528
Pure Power Generation (hr/yr)		720

ENERGY PLANT DATA	
Fuel Data:	
Bagasse	
Moisture Content (wet basis)	50.00%
Lower Heating Value (LHV)(MJ/kg)	7.32
Rice husk	
Moisture Content (wet basis)	12.00%
Lower Heating Value (LHV)(MJ/kg)	11.70
Wood bark	
Moisture Content (wet basis)	32.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Cane leaves	
Moisture Content (wet basis)	24.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Plant Performance:	
Plant Total Operation (hr/yr)	7,920
Parasitic Load (crushing)	1,950
Parasitic Load (cane waiting)	1,800
Parasitic Load (remelting)	1,950
Parasitic Load (pure power generation)	1,800
Transmission Loss	1.00%
Overall Grid Off-take in a Year (year 1-5)	84.05%
Overall Grid Off-take in a Year (year 6-10)	86.67%
Overall Grid Off-take in a Year (year 11-21)	88.85%
Crushing:	
Plant Capacity (kW)	**48,300**
Load Factor	100.00%
Power Generation (kWh/yr)	94,474,800
Mill Power Requirements (kWh/yr)	41,076,000
Grid Export/Excess Power (kWh/yr) - yr 1 -5	40,979,075
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	42,255,871
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	43,319,868
Cane-waiting:	
Plant Capacity (kW)	**39,500**
Load Factor	100.00%
Power Generation (kWh/yr)	23,700,000
Mill Power Requirements (kWh/yr)	7,500,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	12,538,928
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	12,929,606
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	13,255,172
Remelting 1:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	40,079,837
Mill Power Requirements (kWh/yr)	9,601,298
Grid Export/Excess Power (kWh/yr) - yr 1 - 5	23,506,342
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	24,238,735
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	24,849,063
Remelting 2:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	126,639,763
Mill Power Requirements (kWh/yr)	30,337,102
Grid Export/Excess Power (kWh/yr) - yr 1 -5	74,272,695
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	76,586,830
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	78,515,275
Pure Power Generation:	
Plant Capacity (kW)	**28,000**
Load Factor	100.00%
Power Generation (kWh/yr)	20,160,000
Mill Power Requirements (kWh/yr)	720,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	15,116,472
Grid Export/Excess Power (kWh/yr) - yr 6- 10	15,587,460
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	15,979,950
Annual Shutdown/Maintenance:	
Back-up Power Requirements (MW)	1.00
Total Number Days for Annual Maintenance	30

GENERAL DATA	
Plant Life (years)	21
PPA with EGAT (years)	21
Depreciation Policy	straight line
Corporate Tax Rate:	
Year 1-8	0.00%
Year 9-13	15.00%
Year 14 onwards	30.00%

TARIFF	Baht	US$
Energy Payment (Baht/kWh) - EGAT	1.4900	0.0331
Power Capacity Payment (Baht/kW-mo)	458.9474	10.1988
Levelised Electricity Selling Rate (Baht/kWh) - EGAT (RM2+PP)	2.1274	0.0473
Electricity Purchase Price from EGAT (Baht/kWh) - Peak	2.6950	0.0599
Electricity Purchase Price from EGAT (Baht/kWh) - Off-Peak	1.1914	0.0265
Power Demand Charge (Baht/kW-mo)	132.9300	2.9540
Back-up Power Charge for Cogeneration (Baht-kW-mo)	29.4400	0.6542
Service Charge (Baht/mo)	228.1700	5.0704
Levelised Electricity Selling Rate (Baht/kWh) - Sugar Mill (C+CW+RM1	1.7000	0.0378
Steam Selling Rate (Baht/ton) - Sugar Mill (C+CW+RM1)	34.4895	0.7664
Steam Selling Rate (Baht/ton) - Sugar Mill (RM 2)	65.0000	1.4444
Fuel Cost:		
Bagasse (Baht/ton)	250.0000	5.5556
Rice husk (Baht/ton)	700.0000	15.5556
Wood bark (Baht/ton)	700.0000	15.5556
Cane leaves (Baht/ton)	700.0000	15.5556
Natural gas (Baht/million BTU)	151.4518	3.3656
Raw Water (Baht/cu.m.)	6.5000	0.1444
NEPO Incentive (Baht/kWh)	0.1450	0.0032

OPERATING COSTS		1,000 Baht	1,000 US$
Administration		12,000	267
O&M, % of EPC cost (Yr 1-5)	3.50%	38,415	854
O&M, % of EPC cost (Yr 6-10)	4.00%	43,903	976
O&M, % of EPC cost (Yr 11 onwards)	4.50%	49,390	1,098
Fuel (bagasse)		151,875	3,375
Fuel (other biomass)		153,573	3,413
Raw Water (C+CW+RM1)		2,429	54
Raw Water (RM2+PP)		1,281	28
Land Lease (C+CW+RM1)		7,651	170
Land Lease (RM2+PP)		10,599	236
Purchase from EGAT		1,642	36
Insurance, % of EPC Cost	1.50%	17,554	390

USES OF FUNDS		1,000 Baht	1,000 US$
Investment Costs			
Development Costs		94,050	2,090
Equipment Costs (main equipment)		1,024,889	22,775
Equipment Costs (BOP)		72,675	1,615
Grid Connection		72,675	1,615
Engineering and Civil Works		128,250	2,850
Import Duty, @ 5.00% of Foreign EPC Cost		30,737	683
Erection, Installation, Training, Handling & Land Transportation		34,200	760
Construction time insurance,1.50 % Equip. Cost		15,390	342
Transferred equipment from sugar mill (old)		282,252	6,272
SUB-TOTAL		1,755,118	39,003
Contingency	5.00% of sub-total	87,756	1,950
Total Investment Costs		1,842,874	40,953
Financing Costs during Construction			
Interest Costs		154,125	3,425
Other Financing Expenses		10,395	231
Total Financing Costs during Construction		164,520	3,656
TOTAL USES OF FUNDS (Project Cost)		**2,007,394**	**44,609**

SOURCES OF FUNDS		1,000 Baht	1,000 US$
Equity 1	28.57% of investment cost	526,509	11,700
Equity 2			
Grant			
Loan*		1,480,885	32,909
TOTAL SOURCES OF FUNDS		**2,007,394**	**44,609**
*Loan			
Amount		1,480,885	32,909
Grace Period			2
Maturity			9
Base Interest Rate			9.00%
Lender's Margin			1.00%
All-in Interest Rate			10.00%
Financing Fees			0.75%

ECONOMIC DATA	
Currency Exchange Rate (Baht/US$)	45.00
Average Inflation Rate (Thai CPI)	5.00%
Crude Oil Price Growth Rate	1.00%
Discount Rate	10.00%

PROJECT PERFORMANCE		
Nominal Pre-Tax Project IRR (total project)		**9.85%**
NPV-CF before Interest & Tax (total project) (in 1000 Baht)		**(381)**
Nominal Post-Tax Project IRR (total project)		**9.10%**
NPV - Post-Tax (total project) (in 1000 Baht)		**(2,211)**
Pay-back Period (yrs)		**8.65**
Equity IRR		7.15%
Annual Debt Service Coverage Ratios		
	Minimum	**Average**
Pre-Tax Cash Flow Coverage		
of Interest	**1.38**	**2.12**
of Debt Service	**0.80**	**0.83**
After-Tax Cash Flow Coverage		
of Interest	**0.79**	**1.25**
of Debt Service	**0.45**	**0.49**

(Note: all figures in Baht 1000 unless otherwise stated)

Legend: C-crushing; CW-cane waiting; RM1-remelting 1; RM2-remelting 2; PP-pure power generation

COMPANY NAME: Dan Chang Bioenergy Co., Ltd.
Project: Dan Chang Bioenergy Cogeneration Plant
Configuration: 100 tph and 120 tph biomass-fired boilers
37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Option 1: Sugar Mill to provide bagasse + raw water + land lease
Sugar Mill to get steam and electricity
Case: sensitivity Investment Cost - 5%
Date: 10/22/01

CASH FLOW STATEMENT

IndexationYear		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Operating Year		-1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Revenues																								
Energy payment - EGAT				5,510	5,675	5,846	6,021	6,202	6,587	6,784	6,988	7,198	7,413	7,828	8,063	8,305	8,554	8,811	9,075	9,347	9,628	9,916	10,214	10,520
Capacity payment - EGAT				2,357	2,428	2,501	2,576	2,653	2,818	2,902	2,989	3,079	3,172	3,349	3,449	3,553	3,659	3,769	3,882	3,999	4,119	4,242	4,370	4,501
Electricity sales- Sugar Mill (C+CW+RM1)				2,198	2,264	2,332	2,402	2,474	2,548	2,624	2,703	2,784	2,868	2,954	3,042	3,134	3,228	3,324	3,424	3,527	3,633	3,742	3,854	3,969
Electricity sales- Sugar Mill (RM2+PG)				1,468	1,512	1,558	1,604	1,653	1,702	1,753	1,806	1,860	1,916	1,973	2,032	2,093	2,156	2,221	2,288	2,356	2,427	2,500	2,575	2,652
Steam sales (C+CW+RM1)				955	983	1,013	1,043	1,074	1,107	1,140	1,174	1,209	1,245	1,283	1,321	1,361	1,402	1,444	1,487	1,532	1,578	1,625	1,674	1,724
Steam sales (RM2)				858	883	910	937	965	994	1,024	1,055	1,086	1,119	1,152	1,187	1,223	1,259	1,297	1,336	1,376	1,417	1,460	1,504	1,549
NEPO incentive																								
Total revenues				13,346	13,746	14,158	14,583	15,021	15,755	16,228	16,715	17,216	17,733	18,539	19,095	19,668	20,258	20,866	21,492	22,137	22,801	23,485	24,189	24,915
Operating Expenses																								
Administration				267	280	294	309	324	340	357	375	394	414	434	456	479	503	528	554	582	611	642	674	708
O&M				854	896	941	988	1,038	1,245	1,307	1,373	1,441	1,513	1,788	1,877	1,971	2,070	2,173	2,282	2,396	2,516	2,641	2,773	2,912
Fuel (bagasse)				3,375	3,476	3,581	3,688	3,799	3,913	4,030	4,151	4,275	4,404	4,536	4,672	4,812	4,956	5,105	5,258	5,416	5,578	5,746	5,918	6,096
Fuel (other biomass)				3,413	3,583	3,763	3,951	4,148	4,356	4,573	4,802	5,042	5,294	5,559	5,837	6,129	6,435	6,757	7,095	7,450	7,822	8,213	8,624	9,055
Land lease				406	418	430	443	456	470	484	499	514	529	545	561	578	596	613	632	651	670	690	711	732
Raw Water				82	85	87	90	93	96	98	101	104	108	111	114	118	121	125	128	132	136	140	145	149
Purchase from EGAT				36	38	40	42	44	47	49	51	54	57	59	62	66	69	72	76	80	84	88	92	97
Insurance				390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
Total operating expenses				8,823	9,167	9,526	9,901	10,292	10,856	11,290	11,742	12,215	12,708	13,422	13,970	14,542	15,139	15,763	16,415	17,096	17,808	18,551	19,327	20,139
Cash Flow from Operations				4,523	4,579	4,632	4,682	4,728	4,899	4,938	4,972	5,001	5,024	5,117	5,125	5,126	5,119	5,103	5,077	5,041	4,993	4,934	4,862	4,777
Less Depreciation				(1,950)	(1,950)	(1,950)	(1,950)	(1,950)	(1,950)	(1,950)	(1,950)	(1,950)	(1,950)	(1,950)	(1,950)	(1,950)	(1,950)	(1,950)	(1,950)	(1,950)	(1,950)	(1,950)	(1,950)	(1,950)
Operating Profit (Loss) Before Interest & Tax				2,573	2,629	2,682	2,732	2,778	2,949	2,988	3,022	3,051	3,074	3,167	3,175	3,176	3,169	3,152	3,127	3,090	3,043	2,984	2,912	2,826
Less Corporate Tax				0	0	0	0	0	0	0	0	(380)	(461)	(475)	(476)	(476)	(951)	(946)	(938)	(927)	(913)	(895)	(874)	(848)
Income After Tax				2,573	2,629	**2,682**	2,732	2,778	2,949	2,988	3,022	2,671	2,613	2,692	2,699	2,700	2,218	2,207	2,189	2,163	2,130	2,089	2,039	1,979
Add Depreciation				1,950	1,950	1,950	1,950	1,950	1,950	1,950	1,950	1,950	1,950	1,950	1,950	1,950	1,950	1,950	1,950	1,950	1,950	1,950	1,950	1,950
Operating Cash Flow				**4,523**	**4,579**	**4,632**	**4,682**	**4,728**	**4,899**	**4,938**	**4,972**	**4,621**	**4,563**	**4,642**	**4,649**	**4,650**	**4,168**	**4,157**	**4,139**	**4,113**	**4,080**	**4,039**	**3,989**	**3,929**
Capital Expenditure		(13,514)	(27,438)																					
Salvage Value																								
Net Cash Flow Before Interest & Debt Service		**(13,514)**	**(27,438)**	**4,523**	**4,579**	**4,632**	**4,682**	**4,728**	**4,899**	**4,938**	**4,972**	**4,621**	**4,563**	**4,642**	**4,649**	**4,650**	**4,168**	**4,157**	**4,139**	**4,113**	**4,080**	**4,039**	**3,989**	**3,929**
CUM. NET CASHFLOW BEFORE INT. & DEBT SERVICE		**(13,514)**	**(40,953)**	**(36,430)**	**(31,851)**	**(27,219)**	**(22,537)**	**(17,809)**	**(12,909)**	**(7,971)**	**(2,999)**	**1,622**	**6,185**	**10,827**	**15,476**	**20,126**	**24,294**	**28,451**	**32,590**	**36,704**	**40,784**	**44,823**	**48,812**	**52,740**
Net Present Value (Post-Tax) - total project @	10.00%	**(2,211)**																						
Nominal Post -Tax IRR (project)		**9.10%**																						
Less Interest Expense				(3,273)	(3,032)	(2,766)	(2,475)	(2,154)	(1,801)	(1,413)	(986)	(517)	0	0	0	0	0	0	0	0	0	0	0	0
Less Debt Repayments				(2,410)	(2,651)	(2,916)	(3,208)	(3,528)	(3,881)	(4,269)	(4,696)	(5,166)	0	0	0	0	0	0	0	0	0	0	0	0
Net Financing Cash Flow				(1,160)	(1,104)	(1,050)	(1,001)	(954)	(783)	(744)	(710)	(1,061)	4,563	4,642	4,649	4,650	4,168	4,157	4,139	4,113	4,080	4,039	3,989	3,929
CUM. NET FINANCING CASH FLOW				(1,160)	(2,263)	(3,314)	(4,314)	(5,268)	(6,052)	(6,796)	(7,506)	(8,567)	(4,004)	638	5,287	9,937	14,105	18,262	22,401	26,514	30,594	34,633	38,622	42,551
Equity Cash Flow		(3,861)	(7,839)	(1,160)	(1,104)	(1,050)	(1,001)	(954)	(783)	(744)	(710)	(1,061)	4,563	4,642	4,649	4,650	4,168	4,157	4,139	4,113	4,080	4,039	3,989	3,929
Equity IRR (Post-Tax)		**7.15%**																						
Net Present Value (NPV total project @)	10.00%	**(381)**																						
Cash Flow Before Interest and Tax		(13,514)	(27,438)	4,523	4,579	4,632	4,682	4,728	4,899	4,938	4,972	5,001	5,024	5,117	5,125	5,126	5,119	5,103	5,077	5,041	4,993	4,934	4,862	4,777
Pre-Tax Project IRR (total)		**9.85%**																						

DEBT SERVICE																								
Overall interest rate		10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
Debt at beginning of year		0	10,597	32,726	30,316	27,665	24,749	21,541	18,013	14,131	9,862	5,166	0	0	0	0	0	0	0	0	0	0	0	0
Debt Drawdown		9,653	19,599																					
Interest During Construction		724	2,530																					
Other Financing Expenses		219																						
Repayment of Principal				(2,410)	(2,651)	(2,916)	(3,208)	(3,528)	(3,881)	(4,269)	(4,696)	(5,166)	0	0	0	0	0	0	0	0	0	0	0	0
Debt at the end of the year		**10,597**	**32,726**	**30,316**	**27,665**	**24,749**	**21,541**	**18,013**	**14,131**	**9,862**	**5,166**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Interest expense				(3,273)	(3,032)	(2,766)	(2,475)	(2,154)	(1,801)	(1,413)	(986)	(517)	0	0	0	0	0	0	0	0	0	0	0	0
Total Debt service		**0**	**0**	**(5,682)**	**(5,682)**	**(5,682)**	**(5,682)**	**(5,682)**	**(5,682)**	**(5,682)**	**(5,682)**	**(5,682)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

DEBT SERVICE COVERAGE RATIOS																						
Pre-Tax Cash Flow Coverage																						
of Interest		1.38	1.51	1.67	1.89	2.20	2.72	3.49	5.04	9.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service		0.80	0.81	0.82	0.82	0.83	0.86	0.87	0.88	0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
After-Tax Cash Flow Coverage																						
of Interest		0.79	0.87	0.97	1.10	1.29	1.64	2.11	3.06	5.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service		0.45	0.46	0.47	0.48	0.49	0.52	0.53	0.53	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

COMPANY NAME:	**Dan Chang Bioenergy Co., Ltd.**
Project:	**Dan Chang Bioenergy Cogeneration Plant**
Configuration:	**100 tph and 120 tph biomass-fired boilers**
	37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Condition:	**Sugar Mill to provide bagasse + raw water + land lease**
	Sugar Mill to get steam and electricity
Case:	**sensitivity Investment Cost + 5%**
Date:	10/22/01

ASSUMPTIONS AND RESULTS

MILL DATA		
Mill Capacity (input) (tcy)		2,250,000
Type of Residue Produced		bagasse
Residue/Mill Input Ratio		27.00%
Total Bagasse Production (tpy)		607,500
Bagasse Required for Existing Equipment (tpy)		303,068
Available Bagasse (tpy)		304,432
Fuel Required from Other Sources (tpy):		
Rice husk		199,390
Wood bark		10,000
Cane leaves		10,000
Mill Heat Requirement (ton-steam/hr)		
Crushing:	@ 31 bar	44.6
	@ 17 bar	145.0
	@ 8 bar	10.0
	@ 2.5 bar	460.0
Cane-waiting:	@ 31 bar	0.0
	@ 17 bar	0.0
	@ 8 bar	10.0
	@ 2.5 bar	220.3
Remelting:	@ 31 bar	0.0
	@ 17 bar	0.0
	@ 8 bar	10.0
	@2.5 bar	158.3
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - milling		189.6
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - cane-waiting		0.0
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - remelting		0.0
Mill Power Requirement (kW)		
Crushing		21,000
Cane-waiting		12,500
Remelting 1		8,600
Remelting 2		8,600
Off-milling/off-remelting		1,000
Crushing Duration (hr/yr)		1,956
Cane-waiting Duration (hr/yr)		600
Remelting 1 Duration (hr/yr)		1,116
Remelting Duration 2 (hr/yr)		3,528
Pure Power Generation (hr/yr)		720

ENERGY PLANT DATA	
Fuel Data:	
Bagasse	
Moisture Content (wet basis)	50.00%
Lower Heating Value (LHV)(MJ/kg)	7.32
Rice husk	
Moisture Content (wet basis)	12.00%
Lower Heating Value (LHV)(MJ/kg)	11.70
Wood bark	
Moisture Content (wet basis)	32.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Cane leaves	
Moisture Content (wet basis)	24.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Plant Performance:	
Plant Total Operation (hr/yr)	7,920
Parasitic Load (crushing)	1,950
Parasitic Load (cane waiting)	1,800
Parasitic Load (remelting)	1,950
Parasitic Load (pure power generation)	1,800
Transmission Loss	1.00%
Overall Grid Off-take in a Year (year 1-5)	84.05%
Overall Grid Off-take in a Year (year 6-10)	86.67%
Overall Grid Off-take in a Year (year 11-21)	88.85%
Crushing:	
Plant Capacity (kW)	**48,300**
Load Factor	100.00%
Power Generation (kWh/yr)	94,474,800
Mill Power Requirements (kWh/yr)	41,076,000
Grid Export/Excess Power (kWh/yr) - yr 1 -5	40,979,075
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	42,255,871
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	43,319,868
Cane-waiting:	
Plant Capacity (kW)	**39,500**
Load Factor	100.00%
Power Generation (kWh/yr)	23,700,000
Mill Power Requirements (kWh/yr)	7,500,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	12,538,928
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	12,929,606
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	13,255,172
Remelting 1:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	40,079,837
Mill Power Requirements (kWh/yr)	9,601,298
Grid Export/Excess Power (kWh/yr) - yr 1 - 5	23,506,342
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	24,238,735
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	24,849,063
Remelting 2:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	126,639,763
Mill Power Requirements (kWh/yr)	30,337,102
Grid Export/Excess Power (kWh/yr) - yr 1 -5	74,272,695
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	76,586,830
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	78,515,275
Pure Power Generation:	
Plant Capacity (kW)	**28,000**
Load Factor	100.00%
Power Generation (kWh/yr)	20,160,000
Mill Power Requirements (kWh/yr)	720,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	15,116,472
Grid Export/Excess Power (kWh/yr) - yr 6- 10	15,587,460
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	15,979,950
Annual Shutdown/Maintenance:	
Back-up Power Requirements (MW)	1.00
Total Number Days for Annual Maintenance	30

GENERAL DATA	
Plant Life (years)	21
PPA with EGAT (years)	21
Depreciation Policy	straight line
Corporate Tax Rate:	
Year 1-8	0.00%
Year 9-13	15.00%
Year 14 onwards	30.00%

TARIFF	Baht	US$
Energy Payment (Baht/kWh) - EGAT	1.4900	0.0331
Power Capacity Payment (Baht/kW-mo)	458.9474	10.1988
Levelised Electricity Selling Rate (Baht/kWh) - EGAT (RM2+PP)	2.1274	0.0473
Electricity Purchase Price from EGAT (Baht/kWh) - Peak	2.6950	0.0599
Electricity Purchase Price from EGAT (Baht/kWh) - Off-Peak	1.1914	0.0265
Power Demand Charge (Baht/kW-mo)	132.9300	2.9540
Back-up Power Charge for Cogeneration (Baht-kW-mo)	29.4400	0.6542
Service Charge (Baht/mo)	228.1700	5.0704
Levelised Electricity Selling Rate (Baht/kWh) - Sugar Mill (C+CW+RM1	1.7000	0.0378
Steam Selling Rate (Baht/ton) - Sugar Mill (C+CW+RM1)	34.4895	0.7664
Steam Selling Rate (Baht/ton) - Sugar Mill (RM 2)	65.0000	1.4444
Fuel Cost:		
Bagasse (Baht/ton)	250.0000	5.5556
Rice husk (Baht/ton)	700.0000	15.5556
Wood bark (Baht/ton)	700.0000	15.5556
Cane leaves (Baht/ton)	700.0000	15.5556
Natural gas (Baht/million BTU)	151.4518	3.3656
Raw Water (Baht/cu.m.)	6.5000	0.1444
NEPO Incentive (Baht/kWh)	0.1450	0.0032

OPERATING COSTS		1,000 Baht	1,000 US$
Administration		12,000	267
O&M, % of EPC cost (Yr 1-5)	3.50%	42,458	944
O&M, % of EPC cost (Yr 6-10)	4.00%	48,524	1,078
O&M, % of EPC cost (Yr 11 onwards)	4.50%	54,589	1,213
Fuel (bagasse)		151,875	3,375
Fuel (other biomass)		153,573	3,413
Raw Water (C+CW+RM1)		2,429	54
Raw Water (RM2+PP)		1,281	28
Land Lease (C+CW+RM1)		7,651	170
Land Lease (RM2+PP)		10,599	236
Purchase from EGAT		1,642	36
Insurance, % of EPC Cost	1.50%	19,401	431

USES OF FUNDS		1,000 Baht	1,000 US$
Investment Costs			
Development Costs		103,950	2,310
Equipment Costs (main equipment)		1,132,772	25,173
Equipment Costs (BOP)		80,325	1,785
Grid Connection		80,325	1,785
Engineering and Civil Works		141,750	3,150
Import Duty, @ 5.00% of Foreign EPC Cost		33,973	755
Erection, Installation, Training, Handling & Land Transportation		37,800	840
Construction time insurance,1.50 % Equip. Cost		17,010	378
Transferred equipment from sugar mill (old)		311,963	6,933
SUB-TOTAL		1,939,867	43,108
Contingency	5.00% of sub-total	96,993	2,155
Total Investment Costs		2,036,860	45,264
Financing Costs during Construction			
Interest Costs		154,125	3,425
Other Financing Expenses		10,395	231
Total Financing Costs during Construction		164,520	3,656
TOTAL USES OF FUNDS (Project Cost)		**2,201,380**	**48,920**

SOURCES OF FUNDS		1,000 Baht	1,000 US$
Equity 1	28.57% of investment cost	581,931	12,932
Equity 2			
Grant			
Loan*		1,619,449	35,988
TOTAL SOURCES OF FUNDS		**2,201,380**	**48,920**

*Loan		
Amount	1,619,449	35,988
Grace Period		2
Maturity		9
Base Interest Rate		9.00%
Lender's Margin		1.00%
All-in Interest Rate		10.00%
Financing Fees		0.75%

ECONOMIC DATA	
Currency Exchange Rate (Baht/US$)	45.00
Average Inflation Rate (Thai CPI)	5.00%
Crude Oil Price Growth Rate	1.00%
Discount Rate	10.00%

PROJECT PERFORMANCE		
Nominal Pre-Tax Project IRR (total project)		**8.05%**
NPV-CF before Interest & Tax (total project) (in 1000 Baht)		**(5,422)**
Nominal Post-Tax Project IRR (total project)		**7.37%**
NPV - Post-Tax (total project) (in 1000 Baht)		**(6,965)**
Pay-back Period (yrs)		**9.92**
Equity IRR		4.45%
Annual Debt Service Coverage Ratios		
	Minimum	**Average**
Pre-Tax Cash Flow Coverage		
of Interest	**1.21**	**1.86**
of Debt Service	**0.70**	**0.73**
After-Tax Cash Flow Coverage		
of Interest	**0.62**	**0.99**
of Debt Service	**0.36**	**0.38**

(Note: all figures in Baht 1000 unless otherwise stated)

Legend: C-crushing; CW-cane waiting; RM1-remelting 1; RM2-remelting 2; PP-pure power generation

COMPANY NAME:	**Dan Chang Bioenergy Co., Ltd.**
Project:	**Dan Chang Bioenergy Cogeneration Plant**
Configuration:	**100 tph and 120 tph biomass-fired boilers**
	37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Option 1:	**Sugar Mill to provide bagasse + raw water + land lease**
	Sugar Mill to get steam and electricity
Case:	**sensitivity Investment Cost + 5%**
Date:	10/22/01

CASH FLOW STATEMENT

IndexationYear		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Operating Year		*-1*	*0*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*
Revenues																								
Energy payment - EGAT				5,510	5,675	5,846	6,021	6,202	6,587	6,784	6,988	7,198	7,413	7,828	8,063	8,305	8,554	8,811	9,075	9,347	9,628	9,916	10,214	10,520
Capacity payment - EGAT				2,357	2,428	2,501	2,576	2,653	2,818	2,902	2,989	3,079	3,172	3,349	3,449	3,553	3,659	3,769	3,882	3,999	4,119	4,242	4,370	4,501
Electricity sales- Sugar Mill (C+CW+RM1)				2,198	2,264	2,332	2,402	2,474	2,548	2,624	2,703	2,784	2,868	2,954	3,042	3,134	3,228	3,324	3,424	3,527	3,633	3,742	3,854	3,969
Electricity sales- Sugar Mill (RM2+PG)				1,468	1,512	1,558	1,604	1,653	1,702	1,753	1,806	1,860	1,916	1,973	2,032	2,093	2,156	2,221	2,288	2,356	2,427	2,500	2,575	2,652
Steam sales (C+CW+RM1)				955	983	1,013	1,043	1,074	1,107	1,140	1,174	1,209	1,245	1,283	1,321	1,361	1,402	1,444	1,487	1,532	1,578	1,625	1,674	1,724
Steam sales (RM2)				858	883	910	937	965	994	1,024	1,055	1,086	1,119	1,152	1,187	1,223	1,259	1,297	1,336	1,376	1,417	1,460	1,504	1,549
NEPO incentive																								
Total revenues				13,346	13,746	14,158	14,583	15,021	15,755	16,228	16,715	17,216	17,733	18,539	19,095	19,668	20,258	20,866	21,492	22,137	22,801	23,485	24,189	24,915
Operating Expenses																								
Administration				267	280	294	309	324	340	357	375	394	414	434	456	479	503	528	554	582	611	642	674	708
O&M				944	991	1,040	1,092	1,147	1,376	1,445	1,517	1,593	1,673	1,976	2,075	2,179	2,287	2,402	2,522	2,648	2,780	2,919	3,065	3,219
Fuel (bagasse)				3,375	3,476	3,581	3,688	3,799	3,913	4,030	4,151	4,275	4,404	4,536	4,672	4,812	4,956	5,105	5,258	5,416	5,578	5,746	5,918	6,096
Fuel (other biomass)				3,413	3,583	3,763	3,951	4,148	4,356	4,573	4,802	5,042	5,294	5,559	5,837	6,129	6,435	6,757	7,095	7,450	7,822	8,213	8,624	9,055
Land lease				406	418	430	443	456	470	484	499	514	529	545	561	578	596	613	632	651	670	690	711	732
Raw Water				82	85	87	90	93	96	98	101	104	108	111	114	118	121	125	128	132	136	140	145	149
Purchase from EGAT				36	38	40	42	44	47	49	51	54	57	59	62	66	69	72	76	80	84	88	92	97
Insurance				431	431	431	431	431	431	431	431	431	431	431	431	431	431	431	431	431	431	431	431	431
Total operating expenses				8,954	9,302	9,666	10,046	10,442	11,028	11,468	11,928	12,408	12,909	13,651	14,209	14,791	15,398	16,033	16,697	17,389	18,113	18,870	19,660	20,486
Cash Flow from Operations				4,392	4,444	4,492	4,537	4,578	4,727	4,760	4,787	4,808	4,824	4,888	4,887	4,878	4,860	4,833	4,796	4,747	4,688	4,615	4,529	4,429
Less Depreciation				(2,155)	(2,155)	(2,155)	(2,155)	(2,155)	(2,155)	(2,155)	(2,155)	(2,155)	(2,155)	(2,155)	(2,155)	(2,155)	(2,155)	(2,155)	(2,155)	(2,155)	(2,155)	(2,155)	(2,155)	(2,155)
Operating Profit (Loss) Before Interest & Tax				2,237	2,288	2,336	2,381	2,423	2,572	2,604	2,631	2,653	2,668	2,732	2,731	2,722	2,705	2,677	2,640	2,592	2,532	2,460	2,374	2,274
Less Corporate Tax				0	0	0	0	0	0	0	0	(312)	(400)	(410)	(410)	(408)	(811)	(803)	(792)	(778)	(760)	(738)	(712)	(682)
Income After Tax				2,237	2,288	**2,336**	2,381	2,423	2,572	2,604	2,631	2,341	2,268	2,323	2,322	2,314	1,893	1,874	1,848	1,814	1,772	1,722	1,662	1,592
Add Depreciation				2,155	2,155	2,155	2,155	2,155	2,155	2,155	2,155	2,155	2,155	2,155	2,155	2,155	2,155	2,155	2,155	2,155	2,155	2,155	2,155	2,155
Operating Cash Flow				**4,392**	**4,444**	**4,492**	**4,537**	**4,578**	**4,727**	**4,760**	**4,787**	**4,496**	**4,424**	**4,478**	**4,477**	**4,469**	**4,049**	**4,030**	**4,003**	**3,970**	**3,928**	**3,877**	**3,817**	**3,747**
Capital Expenditure		(14,937)	(30,327)																					
Salvage Value																								
Net Cash Flow Before Interest & Debt Service		**(14,937)**	**(30,327)**	**4,392**	**4,444**	**4,492**	**4,537**	**4,578**	**4,727**	**4,760**	**4,787**	**4,496**	**4,424**	**4,478**	**4,477**	**4,469**	**4,049**	**4,030**	**4,003**	**3,970**	**3,928**	**3,877**	**3,817**	**3,747**
CUM. NET CASHFLOW BEFORE INT. & DEBT SERVICE		**(14,937)**	**(45,264)**	**(40,872)**	**(36,428)**	**(31,936)**	**(27,399)**	**(22,821)**	**(18,094)**	**(13,335)**	**(8,548)**	**(4,052)**	**372**	**4,850**	**9,327**	**13,796**	**17,845**	**21,874**	**25,878**	**29,848**	**33,775**	**37,653**	**41,470**	**45,217**
Net Present Value (Post-Tax) - total project @	10.00%	**(6,965)**																						
Nominal Post -Tax IRR (project)		**7.37%**																						
Less Interest Expense				(3,617)	(3,351)	(3,058)	(2,735)	(2,381)	(1,991)	(1,562)	(1,090)	(571)	0	0	0	0	0	0	0	0	0	0	0	0
Less Debt Repayments				(2,664)	(2,930)	(3,223)	(3,545)	(3,900)	(4,290)	(4,719)	(5,191)	(5,710)	0	0	0	0	0	0	0	0	0	0	0	0
Net Financing Cash Flow				(1,889)	(1,837)	(1,789)	(1,744)	(1,703)	(1,553)	(1,521)	(1,494)	(1,785)	4,424	4,478	4,477	4,469	4,049	4,030	4,003	3,970	3,928	3,877	3,817	3,747
CUM. NET FINANCING CASH FLOW				(1,889)	(3,726)	(5,515)	(7,258)	(8,961)	(10,514)	(12,036)	(13,529)	(15,314)	(10,890)	(6,412)	(1,935)	2,534	6,583	10,612	14,616	18,585	22,513	26,391	30,208	33,955
Equity Cash Flow		(4,267)	(8,664)	(1,889)	(1,837)	(1,789)	(1,744)	(1,703)	(1,553)	(1,521)	(1,494)	(1,785)	4,424	4,478	4,477	4,469	4,049	4,030	4,003	3,970	3,928	3,877	3,817	3,747
Equity IRR (Post-Tax)		**4.45%**																						
Net Present Value (NPV total project @)	10.00%	**(5,422)**																						
Cash Flow Before Interest and Tax		(14,937)	(30,327)	4,392	4,444	4,492	4,537	4,578	4,727	4,760	4,787	4,808	4,824	4,888	4,887	4,878	4,860	4,833	4,796	4,747	4,688	4,615	4,529	4,429
Pre-Tax Project IRR (total)		**8.05%**																						

DEBT SERVICE																								
Overall interest rate		10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
Debt at beginning of year		0	11,712	36,170	33,507	30,577	27,354	23,809	19,909	15,619	10,900	5,710	0	0	0	0	0	0	0	0	0	0	0	0
Debt Drawdown		10,669	21,662																					
Interest During Construction		800	2,796																					
Other Financing Expenses		242																						
Repayment of Principal				(2,664)	(2,930)	(3,223)	(3,545)	(3,900)	(4,290)	(4,719)	(5,191)	(5,710)	0	0	0	0	0	0	0	0	0	0	0	0
Debt at the end of the year		**11,712**	**36,170**	**33,507**	**30,577**	**27,354**	**23,809**	**19,909**	**15,619**	**10,900**	**5,710**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Interest expense				(3,617)	(3,351)	(3,058)	(2,735)	(2,381)	(1,991)	(1,562)	(1,090)	(571)	0	0	0	0	0	0	0	0	0	0	0	0
Total Debt service		**0**	**0**	**(6,281)**	**(6,281)**	**(6,281)**	**(6,281)**	**(6,281)**	**(6,281)**	**(6,281)**	**(6,281)**	**(6,281)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

DEBT SERVICE COVERAGE RATIOS																						
Pre-Tax Cash Flow Coverage																						
of Interest	1.21	1.33	1.47	1.66	1.92	2.37	3.05	4.39	8.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service	0.70	0.71	0.72	0.72	0.73	0.75	0.76	0.76	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
After-Tax Cash Flow Coverage																						
of Interest	0.62	0.68	0.76	0.87	1.02	1.29	1.67	2.41	4.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service	0.36	0.36	0.37	0.38	0.39	0.41	0.41	0.42	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

COMPANY NAME:	**Dan Chang Bioenergy Co., Ltd.**
Project:	**Dan Chang Bioenergy Cogeneration Plant**
Configuration:	**100 tph and 120 tph biomass-fired boilers**
	37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Condition:	**Sugar Mill to provide bagasse + raw water + land lease**
	Sugar Mill to get steam and electricity
Case:	**sensitivity Investment Cost + 10%**
Date:	10/22/01

ASSUMPTIONS AND RESULTS

MILL DATA		
Mill Capacity (input) (tcy)		2,250,000
Type of Residue Produced		bagasse
Residue/Mill Input Ratio		27.00%
Total Bagasse Production (tpy)		607,500
Bagasse Required for Existing Equipment (tpy)		303,068
Available Bagasse (tpy)		304,432
Fuel Required from Other Sources (tpy):		
Rice husk		199,390
Wood bark		10,000
Cane leaves		10,000
Mill Heat Requirement (ton-steam/hr)		
Crushing:	@ 31 bar	44.6
	@ 17 bar	145.0
	@ 8 bar	10.0
	@ 2.5 bar	460.0
Cane-waiting:	@ 31 bar	0.0
	@ 17 bar	0.0
	@ 8 bar	10.0
	@ 2.5 bar	220.3
Remelting:	@ 31 bar	0.0
	@ 17 bar	0.0
	@ 8 bar	10.0
	@2.5 bar	158.3
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - milling		189.6
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - cane-waiting		0.0
Steam Exhaust from Drives (ton-steam/hr@2.5 bar) - remelting		0.0
Mill Power Requirement (kW)		
Crushing		21,000
Cane-waiting		12,500
Remelting 1		8,600
Remelting 2		8,600
Off-milling/off-remelting		1,000
Crushing Duration (hr/yr)		1,956
Cane-waiting Duration (hr/yr)		600
Remelting 1 Duration (hr/yr)		1,116
Remelting Duration 2 (hr/yr)		3,528
Pure Power Generation (hr/yr)		720

ENERGY PLANT DATA	
Fuel Data:	
Bagasse	
Moisture Content (wet basis)	50.00%
Lower Heating Value (LHV)(MJ/kg)	7.32
Rice husk	
Moisture Content (wet basis)	12.00%
Lower Heating Value (LHV)(MJ/kg)	11.70
Wood bark	
Moisture Content (wet basis)	32.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Cane leaves	
Moisture Content (wet basis)	24.00%
Lower Heating Value (LHV)(MJ/kg)	12.50
Plant Performance:	
Plant Total Operation (hr/yr)	7,920
Parasitic Load (crushing)	1,950
Parasitic Load (cane waiting)	1,800
Parasitic Load (remelting)	1,950
Parasitic Load (pure power generation)	1,800
Transmission Loss	1.00%
Overall Grid Off-take in a Year (year 1-5)	84.05%
Overall Grid Off-take in a Year (year 6-10)	86.67%
Overall Grid Off-take in a Year (year 11-21)	88.85%
Crushing:	
Plant Capacity (kW)	**48,300**
Load Factor	100.00%
Power Generation (kWh/yr)	94,474,800
Mill Power Requirements (kWh/yr)	41,076,000
Grid Export/Excess Power (kWh/yr) - yr 1 -5	40,979,075
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	42,255,871
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	43,319,868
Cane-waiting:	
Plant Capacity (kW)	**39,500**
Load Factor	100.00%
Power Generation (kWh/yr)	23,700,000
Mill Power Requirements (kWh/yr)	7,500,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	12,538,928
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	12,929,606
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	13,255,172
Remelting 1:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	40,079,837
Mill Power Requirements (kWh/yr)	9,601,298
Grid Export/Excess Power (kWh/yr) - yr 1 - 5	23,506,342
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	24,238,735
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	24,849,063
Remelting 2:	
Plant Capacity (kW)	**35,900**
Load Factor	100.00%
Power Generation (kWh/yr)	126,639,763
Mill Power Requirements (kWh/yr)	30,337,102
Grid Export/Excess Power (kWh/yr) - yr 1 -5	74,272,695
Grid Export/Excess Power (kWh/yr) - yr 6 - 10	76,586,830
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	78,515,275
Pure Power Generation:	
Plant Capacity (kW)	**28,000**
Load Factor	100.00%
Power Generation (kWh/yr)	20,160,000
Mill Power Requirements (kWh/yr)	720,000
Grid Export/Excess Power (kWh/yr) - yr 1- 5	15,116,472
Grid Export/Excess Power (kWh/yr) - yr 6- 10	15,587,460
Grid Export/Excess Power (kWh/yr) - yr 11 - 21	15,979,950
Annual Shutdown/Maintenance:	
Back-up Power Requirements (MW)	1.00
Total Number Days for Annual Maintenance	30

GENERAL DATA	
Plant Life (years)	21
PPA with EGAT (years)	21
Depreciation Policy	straight line
Corporate Tax Rate:	
Year 1-8	0.00%
Year 9-13	15.00%
Year 14 onwards	30.00%

TARIFF	Baht	US$
Energy Payment (Baht/kWh) - EGAT	1.4900	0.0331
Power Capacity Payment (Baht/kW-mo)	458.9474	10.1988
Levelised Electricity Selling Rate (Baht/kWh) - EGAT (RM2+PP)	2.1274	0.0473
Electricity Purchase Price from EGAT (Baht/kWh) - Peak	2.6950	0.0599
Electricity Purchase Price from EGAT (Baht/kWh) - Off-Peak	1.1914	0.0265
Power Demand Charge (Baht/kW-mo)	132.9300	2.9540
Back-up Power Charge for Cogeneration (Baht-kW-mo)	29.4400	0.6542
Service Charge (Baht/mo)	228.1700	5.0704
Levelised Electricity Selling Rate (Baht/kWh) - Sugar Mill (C+CW+RM1	1.7000	0.0378
Steam Selling Rate (Baht/ton) - Sugar Mill (C+CW+RM1)	34.4895	0.7664
Steam Selling Rate (Baht/ton) - Sugar Mill (RM 2)	65.0000	1.4444
Fuel Cost:		
Bagasse (Baht/ton)	250.0000	5.5556
Rice husk (Baht/ton)	700.0000	15.5556
Wood bark (Baht/ton)	700.0000	15.5556
Cane leaves (Baht/ton)	700.0000	15.5556
Natural gas (Baht/million BTU)	151.4518	3.3656
Raw Water (Baht/cu.m.)	6.5000	0.1444
NEPO Incentive (Baht/kWh)	0.1450	0.0032

OPERATING COSTS		1,000 Baht	1,000 US$
Administration		12,000	267
O&M, % of EPC cost (Yr 1-5)	3.50%	44,480	988
O&M, % of EPC cost (Yr 6-10)	4.00%	50,835	1,130
O&M, % of EPC cost (Yr 11 onwards)	4.50%	57,189	1,271
Fuel (bagasse)		151,875	3,375
Fuel (other biomass)		153,573	3,413
Raw Water (C+CW+RM1)		2,429	54
Raw Water (RM2+PP)		1,281	28
Land Lease (C+CW+RM1)		7,651	170
Land Lease (RM2+PP)		10,599	236
Purchase from EGAT		1,642	36
Insurance, % of EPC Cost	1.50%	20,325	452

USES OF FUNDS		1,000 Baht	1,000 US$
Investment Costs			
Development Costs		108,900	2,420
Equipment Costs (main equipment)		1,186,713	26,371
Equipment Costs (BOP)		84,150	1,870
Grid Connection		84,150	1,870
Engineering and Civil Works		148,500	3,300
Import Duty, @ 5.00% of Foreign EPC Cost		35,591	791
Erection, Installation, Training, Handling & Land Transportation		39,600	880
Construction time insurance,1.50 % Equip. Cost		17,820	396
Transferred equipment from sugar mill (old)		326,818	7,263
SUB-TOTAL		2,032,242	45,161
Contingency	5.00% of sub-total	101,612	2,258
Total Investment Costs		2,133,854	47,419
Financing Costs during Construction			
Interest Costs		154,125	3,425
Other Financing Expenses		10,395	231
Total Financing Costs during Construction		164,520	3,656
TOTAL USES OF FUNDS (Project Cost)		**2,298,374**	**51,075**

SOURCES OF FUNDS		1,000 Baht	1,000 US$
Equity 1	28.57% of investment cost	609,642	13,548
Equity 2			
Grant			
Loan*		1,688,732	37,527
TOTAL SOURCES OF FUNDS		**2,298,374**	**51,075**
*Loan			
Amount		1,688,732	37,527
Grace Period			2
Maturity			9
Base Interest Rate			9.00%
Lender's Margin			1.00%
All-in Interest Rate			10.00%
Financing Fees			0.75%

ECONOMIC DATA	
Currency Exchange Rate (Baht/US$)	45.00
Average Inflation Rate (Thai CPI)	5.00%
Crude Oil Price Growth Rate	1.00%
Discount Rate	10.00%

PROJECT PERFORMANCE		
Nominal Pre-Tax Project IRR (total project)		**7.23%**
NPV-CF before Interest & Tax (total project) (in 1000 Baht)		**(7,943)**
Nominal Post-Tax Project IRR (total project)		**6.58%**
NPV - Post-Tax (total project) (in 1000 Baht)		**(9,342)**
Pay-back Period (yrs)		**10.58**
Equity IRR		3.28%
Annual Debt Service Coverage Ratios		
	Minimum	**Average**
Pre-Tax Cash Flow Coverage		
of Interest	**1.14**	**1.74**
of Debt Service	**0.66**	**0.68**
After-Tax Cash Flow Coverage		
of Interest	**0.55**	**0.87**
of Debt Service	**0.31**	**0.34**

(Note: all figures in Baht 1000 unless otherwise stated)

Legend: C-crushing; CW-cane waiting; RM1-remelting 1; RM2-remelting 2; PP-pure power generation

COMPANY NAME: Dan Chang Bioenergy Co., Ltd.
Project: Dan Chang Bioenergy Cogeneration Plant
Configuration: 100 tph and 120 tph biomass-fired boilers
37.8 MW extraction-condensing turbo-generator, Firm Contract for 21 years
Option 1: Sugar Mill to provide bagasse + raw water + land lease
Sugar Mill to get steam and electricity
Case: sensitivity Investment Cost + 10%
Date: 10/22/01

CASH FLOW STATEMENT

IndexationYear		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Operating Year		*-1*	*0*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*
Revenues																								
Energy payment - EGAT				5,510	5,675	5,846	6,021	6,202	6,587	6,784	6,988	7,198	7,413	7,828	8,063	8,305	8,554	8,811	9,075	9,347	9,628	9,916	10,214	10,520
Capacity payment - EGAT				2,357	2,428	2,501	2,576	2,653	2,818	2,902	2,989	3,079	3,172	3,349	3,449	3,553	3,659	3,769	3,882	3,999	4,119	4,242	4,370	4,501
Electricity sales- Sugar Mill (C+CW+RM1)				2,198	2,264	2,332	2,402	2,474	2,548	2,624	2,703	2,784	2,868	2,954	3,042	3,134	3,228	3,324	3,424	3,527	3,633	3,742	3,854	3,969
Electricity sales- Sugar Mill (RM2+PG)				1,468	1,512	1,558	1,604	1,653	1,702	1,753	1,806	1,860	1,916	1,973	2,032	2,093	2,156	2,221	2,288	2,356	2,427	2,500	2,575	2,652
Steam sales (C+CW+RM1)				955	983	1,013	1,043	1,074	1,107	1,140	1,174	1,209	1,245	1,283	1,321	1,361	1,402	1,444	1,487	1,532	1,578	1,625	1,674	1,724
Steam sales (RM2)				858	883	910	937	965	994	1,024	1,055	1,086	1,119	1,152	1,187	1,223	1,259	1,297	1,336	1,376	1,417	1,460	1,504	1,549
NEPO incentive																								
Total revenues				13,346	13,746	14,158	14,583	15,021	15,755	16,228	16,715	17,216	17,733	18,539	19,095	19,668	20,258	20,866	21,492	22,137	22,801	23,485	24,189	24,915
Operating Expenses																								
Administration				267	280	294	309	324	340	357	375	394	414	434	456	479	503	528	554	582	611	642	674	708
O&M				988	1,038	1,090	1,144	1,201	1,442	1,514	1,590	1,669	1,752	2,070	2,174	2,282	2,396	2,516	2,642	2,774	2,913	3,058	3,211	3,372
Fuel (bagasse)				3,375	3,476	3,581	3,688	3,799	3,913	4,030	4,151	4,275	4,404	4,536	4,672	4,812	4,956	5,105	5,258	5,416	5,578	5,746	5,918	6,096
Fuel (other biomass)				3,413	3,583	3,763	3,951	4,148	4,356	4,573	4,802	5,042	5,294	5,559	5,837	6,129	6,435	6,757	7,095	7,450	7,822	8,213	8,624	9,055
Land lease				406	418	430	443	456	470	484	499	514	529	545	561	578	596	613	632	651	670	690	711	732
Raw Water				82	85	87	90	93	96	98	101	104	108	111	114	118	121	125	128	132	136	140	145	149
Purchase from EGAT				36	38	40	42	44	47	49	51	54	57	59	62	66	69	72	76	80	84	88	92	97
Insurance				452	452	452	452	452	452	452	452	452	452	452	452	452	452	452	452	452	452	452	452	452
Total operating expenses				9,019	9,370	9,736	10,119	10,518	11,114	11,558	12,021	12,504	13,009	13,766	14,328	14,915	15,528	16,168	16,837	17,536	18,266	19,029	19,827	20,660
Cash Flow from Operations				4,327	4,376	4,422	4,464	4,503	4,641	4,670	4,694	4,712	4,724	4,773	4,767	4,753	4,730	4,698	4,655	4,601	4,535	4,456	4,363	4,255
Less Depreciation				(2,258)	(2,258)	(2,258)	(2,258)	(2,258)	(2,258)	(2,258)	(2,258)	(2,258)	(2,258)	(2,258)	(2,258)	(2,258)	(2,258)	(2,258)	(2,258)	(2,258)	(2,258)	(2,258)	(2,258)	(2,258)
Operating Profit (Loss) Before Interest & Tax				2,068	2,118	2,164	2,206	2,245	2,383	2,412	2,436	2,454	2,466	2,515	2,509	2,495	2,472	2,440	2,397	2,343	2,277	2,198	2,105	1,997
Less Corporate Tax				0	0	0	0	0	0	0	0	(278)	(370)	(377)	(376)	(374)	(742)	(732)	(719)	(703)	(683)	(659)	(631)	(599)
Income After Tax				2,068	2,118	2,164	2,206	2,245	2,383	2,412	2,436	2,176	2,096	2,138	2,133	2,121	1,731	1,708	1,678	1,640	1,594	1,538	1,473	1,398
Add Depreciation				2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258
Operating Cash Flow				**4,327**	**4,376**	**4,422**	**4,464**	**4,503**	**4,641**	**4,670**	**4,694**	**4,434**	**4,354**	**4,396**	**4,391**	**4,379**	**3,989**	**3,966**	**3,936**	**3,898**	**3,852**	**3,796**	**3,731**	**3,656**
Capital Expenditure		(15,648)	(31,771)																					
Salvage Value																								
Net Cash Flow Before Interest & Debt Service		**(15,648)**	**(31,771)**	**4,327**	**4,376**	**4,422**	**4,464**	**4,503**	**4,641**	**4,670**	**4,694**	**4,434**	**4,354**	**4,396**	**4,391**	**4,379**	**3,989**	**3,966**	**3,936**	**3,898**	**3,852**	**3,796**	**3,731**	**3,656**
CUM. NET CASHFLOW BEFORE INT. & DEBT SERVICE		**(15,648)**	**(47,419)**	**(43,092)**	**(38,717)**	**(34,295)**	**(29,830)**	**(25,328)**	**(20,687)**	**(16,016)**	**(11,322)**	**(6,889)**	**(2,535)**	**1,861**	**6,252**	**10,631**	**14,620**	**18,586**	**22,522**	**26,420**	**30,271**	**34,068**	**37,799**	**41,455**
Net Present Value (Post-Tax) - total project @	10.00%	**(9,342)**																						
Nominal Post -Tax IRR (project)		**6.58%**																						
Less Interest Expense				(3,789)	(3,510)	(3,203)	(2,866)	(2,494)	(2,086)	(1,636)	(1,142)	(598)	0	0	0	0	0	0	0	0	0	0	0	0
Less Debt Repayments				(2,790)	(3,069)	(3,376)	(3,714)	(4,085)	(4,494)	(4,943)	(5,438)	(5,982)	0	0	0	0	0	0	0	0	0	0	0	0
Net Financing Cash Flow				(2,253)	(2,204)	(2,158)	(2,115)	(2,077)	(1,939)	(1,910)	(1,886)	(2,146)	4,354	4,396	4,391	4,379	3,989	3,966	3,936	3,898	3,852	3,796	3,731	3,656
CUM. NET FINANCING CASH FLOW				(2,253)	(4,457)	(6,615)	(8,730)	(10,807)	(12,746)	(14,655)	(16,541)	(18,687)	(14,333)	(9,937)	(5,546)	(1,167)	2,821	6,787	10,723	14,621	18,473	22,269	26,000	29,656
Equity Cash Flow		(4,471)	(9,077)	(2,253)	(2,204)	(2,158)	(2,115)	(2,077)	(1,939)	(1,910)	(1,886)	(2,146)	4,354	4,396	4,391	4,379	3,989	3,966	3,936	3,898	3,852	3,796	3,731	3,656
Equity IRR (Post-Tax)		**3.28%**																						
Net Present Value (NPV total project @)	10.00%	**(7,943)**																						
Cash Flow Before Interest and Tax		(15,648)	(31,771)	4,327	4,376	4,422	4,464	4,503	4,641	4,670	4,694	4,712	4,724	4,773	4,767	4,753	4,730	4,698	4,655	4,601	4,535	4,456	4,363	4,255
Pre-Tax Project IRR (total)		**7.23%**																						

DEBT SERVICE																								
Overall interest rate		10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
Debt at beginning of year		0	12,270	37,893	35,102	32,033	28,656	24,942	20,857	16,363	11,419	5,982	0	0	0	0	0	0	0	0	0	0	0	0
Debt Drawdown		11,178	22,694																					
Interest During Construction		838	2,929																					
Other Financing Expenses		254																						
Repayment of Principal				(2,790)	(3,069)	(3,376)	(3,714)	(4,085)	(4,494)	(4,943)	(5,438)	(5,982)	0	0	0	0	0	0	0	0	0	0	0	0
Debt at the end of the year		**12,270**	**37,893**	**35,102**	**32,033**	**28,656**	**24,942**	**20,857**	**16,363**	**11,419**	**5,982**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Interest expense				(3,789)	(3,510)	(3,203)	(2,866)	(2,494)	(2,086)	(1,636)	(1,142)	(598)	0	0	0	0	0	0	0	0	0	0	0	0
Total Debt service		**0**	**0**	**(6,580)**	**(6,580)**	**(6,580)**	**(6,580)**	**(6,580)**	**(6,580)**	**(6,580)**	**(6,580)**	**(6,580)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

DEBT SERVICE COVERAGE RATIOS																						
Pre-Tax Cash Flow Coverage																						
of Interest		1.14	1.25	1.38	1.56	1.81	2.23	2.85	4.11	7.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service		0.66	0.67	0.67	0.68	0.68	0.71	0.71	0.71	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
After-Tax Cash Flow Coverage																						
of Interest		0.55	0.60	0.68	0.77	0.90	1.14	1.47	2.13	3.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
of Debt Service		0.31	0.32	0.33	0.34	0.34	0.36	0.37	0.37	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00