

## 2.1 Form Template for Non-Fossil Fueled Based Cogeneration Power Projects

Tamil Nadu

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption	%	8.5%
			Plant Load Factor	%	60%
			Life of Power Plant	Years	20
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	445
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	311.5
			Total Equity Amount	Rs Lacs	133.5
		Debt Component	Loan Amount	Rs Lacs	311.5
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	10
			Interest Rate	%	14.29%
		Equity Component	Equity amount	Rs Lacs	133.5
			Return on Equity for first 10 years	% p.a	19.00%
			RoE Period	Year	10.00
Return on Equity after 10 years			24.00%		
Weighted average of ROE			21.50%		
Discount Rate (equiv. to WACC)			16.45%		
4	Financial Assumptions	Depreciation	Depreciation Rate(power plant)	%	7.00%
			Depreciation Rate 11th year onwards	%	2.00%
			Years for 7% depreciation rate		10.00
			MAT Rate	%	16.995%
			Corporate Tax Rate	%	33.99%
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15%
			Receivables for Debtors	Months	2
			For Variable Charges		
			Bagasse Stock	Months	4
Interest On Working Capital	%	13.79%			
6	Fuel Related Assumptions	Heat Rate	After Stabilisation period	Kcal/kwh	3600
			During Stabilization Period	Kcal/kwh	3600
		Bagasse	Base Price(FY09-10)	Rs/T	1243
			GCV - Bagasse	Kcal/kg	2250
		Bagasse Price Escalation Factor		5%	
7	Allocation of Bagasse to Power and Steam	Power	As a % of fuel cost		100%
		Steam	As a % of fuel cost		0%
8	Operation & Maintenance	power plant		Rs Lakh	13.35
		Total O & M Expenses Escalation		%	5.72%
9	Generation and Sale Of Energy	No. of Days		Days	365
		Total No. of Hours		Hrs	8760

2.2 Form Template for (Non fossil Fueled Based Cogeneration Power Projects- Tamil Nadu ) : Determination of Tariff Component

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26
Auxiliary Consumption	MU		0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Net Generation	MU		4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81

Variable Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Biomass Cost	Rs Lakh		104.53	109.76	115.25	121.01	127.05	133.41	140.08	147.09	154.44	162.16	170.27	178.78	187.72	197.11	206.96	217.31	228.18	239.59	251.57	264.15

Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
O&M Expenses	Rs Lakh		13.35	14.11	14.92	15.77	16.68	17.63	18.64	19.71	20.83	22.02	23.28	24.62	26.02	27.51	29.09	30.75	32.51	34.37	36.33	38.41
Depreciation	Rs Lakh		31.15	31.15	31.15	31.15	31.15	31.15	31.15	31.15	31.15	31.15	31.15	31.15	31.15	31.15	31.15	31.15	31.15	31.15	31.15	31.15
Interest on term loan	Rs Lakh		42.29	37.84	33.38	28.93	24.48	20.03	15.58	11.13	6.68	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		10.45	10.78	11.09	11.44	11.81	12.21	12.63	13.08	13.56	14.07	14.29	14.97	15.88	16.43	17.21	18.03	18.90	19.81	20.77	21.77
Return on Equity	Rs Lakh		25.37	25.37	25.37	25.37	25.37	25.37	25.37	25.37	25.37	25.37	25.37	25.37	25.37	25.37	25.37	25.37	25.37	25.37	25.37	25.37
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>122.61</b>	<b>119.23</b>	<b>115.91</b>	<b>112.86</b>	<b>109.49</b>	<b>106.38</b>	<b>103.37</b>	<b>100.43</b>	<b>97.59</b>	<b>94.83</b>	<b>92.52</b>	<b>90.53</b>	<b>82.64</b>	<b>84.88</b>	<b>87.24</b>	<b>89.72</b>	<b>92.35</b>	<b>95.12</b>	<b>98.04</b>	<b>101.12</b>

Levelised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/KWh		2.17	2.28	2.40	2.52	2.64	2.77	2.91	3.06	3.21	3.37	3.54	3.72	3.90	4.10	4.30	4.52	4.74	4.98	5.23	5.49
O&M expn	Rs/KWh		0.28	0.29	0.31	0.33	0.35	0.37	0.39	0.41	0.43	0.46	0.48	0.51	0.54	0.57	0.60	0.64	0.68	0.71	0.76	0.80
Depreciation	Rs/KWh		0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Int. on term loan	Rs/KWh		0.88	0.79	0.69	0.60	0.51	0.42	0.32	0.23	0.14	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/KWh		0.22	0.22	0.23	0.24	0.25	0.25	0.26	0.27	0.28	0.29	0.30	0.31	0.33	0.34	0.36	0.38	0.39	0.41	0.43	0.45
RoE	Rs/KWh		0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53
<b>Total COG</b>	<b>Rs/KWh</b>		<b>4.72</b>	<b>4.76</b>	<b>4.81</b>	<b>4.86</b>	<b>4.92</b>	<b>4.99</b>	<b>5.06</b>	<b>5.15</b>	<b>5.24</b>	<b>5.34</b>	<b>5.47</b>	<b>5.59</b>	<b>5.82</b>	<b>5.96</b>	<b>6.12</b>	<b>6.38</b>	<b>6.66</b>	<b>6.96</b>	<b>7.27</b>	<b>7.60</b>

Levelised Tariff	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor			1	0.859	0.737	0.633	0.544	0.467	0.401	0.344	0.296	0.254	0.216	0.187	0.161	0.138	0.119	0.102	0.087	0.075	0.064	0.055
Variable Cost			137.8	137.8	137.8	137.8	137.8	137.8	137.8	137.8	137.8	137.8	137.8	137.8	137.8	137.8	137.8	137.8	137.8	137.8	137.8	137.8
Fixed Cost			107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5	107.5

Levelised Tariff Variable	2.88
Levelised Tariff Fixed	2.24
<b>Levelised Tariff</b>	<b>5.10</b>

**Determination of Accelerated Depreciation for Non fossil Fueled Based Cogeneration Power Projects- Tamil Nadu**

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax(MAT)	16.995%
Income Tax (Normal Rates)	33.99%
Capital Cost	445.0

Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Book Depreciation	%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	0.24%	0.00%	0.00%
Book Depreciation	Rs Lakh	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	1.07	0.00	0.00

Accelerated Depreciation		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	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%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	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%	0.00%
Accelerated Deprn.	Rs Lakh	178.00	213.60	42.72	8.54	1.71	0.34	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	154.50	190.10	19.22	-14.95	-21.79	-23.15	-23.43	-23.48	-23.49	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-1.07	0.00	0.00	
Tax Benefit	Rs Lakh	26.26	32.31	3.27	-2.54	-3.70	-3.94	-3.98	-3.99	-3.99	-3.99	-3.99	-3.99	-3.99	-3.99	-3.99	-3.99	-3.99	-3.99	-3.99	-0.36	0.00	0.00
Energy generation	MU	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	
Per unit benefit	Rs/Unit	0.55	0.67	0.07	-0.05	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.01	0.00	0.00	
Discounting Factor		1.00	0.86	0.74	0.63	0.54	0.47	0.40	0.34	0.30	0.25	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.06	0.06	0.06	

**Levelised benefit 0.12 Rs/Unit**