

## Annex 5

### FINANCIAL MODEL

The financial model prepared by CLNSA consists of four screens (following pages, Figures A5.1 through A5.4). The first three show each of Stage 1 (which also encompasses Stage 2), Stage 3 and Stage 4 as stand-alone investments. The fourth shows all three stages as a single investment program, without CER sales. The fifth shows the integrated project with CER sales. A summary of the results from these screens, showing both the project IRR as well as NPV with and without the sale of CERs appears in Table A5.1.

**Table A5.1: Summary of model results**

	Internal Rate of Return		Net Present Value (at 15% DR)	
	Without CERs	With CERs	Without CERs	With CERs
Stage 1, 2	19%	25%	\$799,826	\$2,217,732
Stage 3	Negative	-1%	(\$712,198)	(\$210,790)
Stage 4	40%	42%	\$1,752,702	\$1,898,154
Integrated project	19%	26%	\$1,248,198	\$3,254,701

The model incorporates assumptions made by CLNSA in evaluating the investment opportunity in the period of time prior to the decision to proceed with the project (2001 to 2002). The inputs and assumptions include the following items:

- ❑ Investment amounts for Stages 1 and 2 together (USD 4.75 million), Stage 3 (USD 480,000), and Stage 4 (USD 2.4 million);
- ❑ Operating costs, by Phase, with escalation factor (2.5%);
- ❑ Savings in fuel oil, electricity;
- ❑ Carbon sales at USD 3.5 per ton.

Table A5.1: Analysis of Stages 1 and 2 as a stand-alone investment (“Etapas 1-2”), without carbon

[illegible]

**Etapas 1: Tratamiento Anaeróbico y Etapa 2: Sistema de Generación de Calor**

					2011	2012	2013	2014	2015	2016	2017	2018
Período					9	10	11	12	13	14	15	16
	Cantidad Diaria	Cantidad Anual	Precio Unitario	Incremento Anual								
Ingresos:												
Ahorro en Búnker	5,500	1,980,000	0.84	0.00%	1,663,200	1,663,200	1,663,200	1,663,200	1,663,200	1,663,200	1,663,200	1,663,200
Ahorro en Electricidad				0.00%	-	-	-	-	-	-	-	-
Créditos de Carbono		Varia	3.49	0.00%	-	-	-	-	-	-	-	-
<b>Total de Ahorro e Ingresos</b>					<b>1,663,200</b>	<b>1,663,200</b>	<b>1,663,200</b>	<b>1,663,200</b>	<b>1,663,200</b>	<b>1,663,200</b>	<b>1,663,200</b>	<b>1,663,200</b>
Costos:												
Gastos Operativos				2.50%	475,474	487,361	499,545	512,034	524,835	537,956	551,404	565,190
Otros				2.50%	-	-	-	-	-	-	-	-
<b>Total Gastos Anuales</b>					<b>475,474</b>	<b>487,361</b>	<b>499,545</b>	<b>512,034</b>	<b>524,835</b>	<b>537,956</b>	<b>551,404</b>	<b>565,190</b>

**Inversión**

<b>Flujo</b>	<b>1,187,726</b>	<b>1,175,839</b>	<b>1,163,655</b>	<b>1,151,166</b>	<b>1,138,365</b>	<b>1,125,244</b>	<b>1,111,796</b>	<b>1,098,010</b>
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Tasa de Descuento

TIR (10 años)

VPN (10 años)

Carbono (1=con, 0=sin) 0

Table A5.2: Analysis of Stage 3 as a stand-alone investment (“Etapapa 3”)

[illegible]

### Etapas 3: Irrigación Laminar

					2011	2012	2013	2014	2015	2016	2017	2018
Período					9	10	11	12	13	14	15	16
	Cantidad Diaria	Cantidad Anual	Precio Unitario	Incremento Anual								
Ingresos:												
Ahorro en Búnker	-	-	0.84	0.00%	-	-	-	-	-	-	-	-
Ahorro en Electricidad				0.00%	-	-	-	-	-	-	-	-
Créditos de Carbono		-	3.49	0.00%	-	-	-	-	-	-	-	-
<b>Total de Ahorro e Ingresos</b>					-	-	-	-	-	-	-	-
Costos:												
Gastos Operativos				2.50%	52,186	53,491	54,828	56,199	57,604	59,044	60,520	62,033
Otros				2.50%	-	-	-	-	-	-	-	-
<b>Total Gastos Anuales</b>					<b>52,186</b>	<b>53,491</b>	<b>54,828</b>	<b>56,199</b>	<b>57,604</b>	<b>59,044</b>	<b>60,520</b>	<b>62,033</b>

### Inversión

<b>Flujo</b>	<b>(52,186)</b>	<b>(53,491)</b>	<b>(54,828)</b>	<b>(56,199)</b>	<b>(57,604)</b>	<b>(59,044)</b>	<b>(60,520)</b>	<b>(62,033)</b>
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Tasa de Descuento

TIR (10 años)

VPN (10 años)

Carbono (1=con, 0=sin) 0

Table A5.3: Analysis of Stage 4 as a stand-alone investment (“Etapa 4”)

Etapa 4: Cogeneración					2007	2008	2009	2010
Período					5	6	7	8
	Cantidad Diaria	Cantidad Anual	Precio Unitario	Incremento Anual				
Ingresos:								
Ahorro en Búnker	-	-	0.84	0.00%		-	-	-
Ahorro en Electricidad				0.00%		1,150,000	1,150,000	1,150,000
Créditos de Carbono		-	3.49	0.00%		-	-	-
<b>Total de Ahorro e Ingresos</b>						<b>1,150,000</b>	<b>1,150,000</b>	<b>1,150,000</b>
Costos:								
Gastos Operativos				2.50%		50,000	51,250	52,531
Otros				2.50%		-	-	-
<b>Total Gastos Anuales</b>						<b>50,000</b>	<b>51,250</b>	<b>52,531</b>
<b>Inversión</b>					2,400,000			
<b>Flujo</b>					<b>(2,400,000)</b>	<b>1,100,000</b>	<b>1,098,750</b>	<b>1,097,469</b>
Tasa de Descuento					15%			
TIR (10 años)					40%			
VPN (10 años)					1,752,702			
Carbono (1=con, 0=sin)	0							

#### Etapa 4: Cogeneración

					2011	2012	2013	2014	2015	2016	2017	2018
Período					9	10	11	12	13	14	15	16
	Cantidad Diaria	Cantidad Anual	Precio Unitario	Incremento Anual								
Ingresos:												
Ahorro en Búnker	-	-	0.84	0.00%	-	-	-	-	-	-	-	-
Ahorro en Electricidad				0.00%	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000
Créditos de Carbono		-	3.49	0.00%	-	-	-	-	-	-	-	-
<b>Total de Ahorro e Ingresos</b>					<b>1,150,000</b>	<b>1,150,000</b>	<b>1,150,000</b>	<b>1,150,000</b>	<b>1,150,000</b>	<b>1,150,000</b>	<b>1,150,000</b>	<b>1,150,000</b>
Costos:												
Gastos Operativos				2.50%	53,845	55,191	56,570	57,985	59,434	60,920	62,443	64,004
Otros				2.50%	-	-	-	-	-	-	-	-
<b>Total Gastos Anuales</b>					<b>53,845</b>	<b>55,191</b>	<b>56,570</b>	<b>57,985</b>	<b>59,434</b>	<b>60,920</b>	<b>62,443</b>	<b>64,004</b>

#### Inversión

<b>Flujo</b>	<b>1,096,155</b>	<b>1,094,809</b>	<b>1,093,430</b>	<b>1,092,015</b>	<b>1,090,566</b>	<b>1,089,080</b>	<b>1,087,557</b>	<b>1,085,996</b>
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Tasa de Descuento

TIR (10 años)

VPN (10 años)

Carbono (1=con, 0=sin) 0

Table A5.4: Analysis of Stages 1, 2 and 3 as a single investment program (“Proyecto Completo”), without CERs

[illegible]



**Proyecto Completo**

					2010	2011	2012	2013	2014	2015	2016	2017
Período					8	9	10	11	12	13	14	15
Ingresos:	Cantidad Diaria	Cantidad Anual	Precio Unitario	Incremento Anual								
Ahorro en Búnker					1,663,200	1,663,200	1,663,200	1,663,200	1,663,200	1,663,200	1,663,200	1,663,200
Ahorro en Electricidad					1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000
Créditos de Carbono					-	-	-	-	-	-	-	-
<b>Total de Ahorro e Ingresos</b>					<b>2,813,200</b>	<b>2,813,200</b>	<b>2,813,200</b>	<b>2,813,200</b>	<b>2,813,200</b>	<b>2,813,200</b>	<b>2,813,200</b>	<b>2,813,200</b>
Costos:					-	-	-	-	-	-	-	-
Gastos Operativos				2.50%	567,322	581,505	596,043	610,944	626,217	641,873	657,920	674,368
Otros				2.50%	-	-	-	-	-	-	-	-
<b>Total Gastos Anuales</b>					<b>567,322</b>	<b>581,505</b>	<b>596,043</b>	<b>610,944</b>	<b>626,217</b>	<b>641,873</b>	<b>657,920</b>	<b>674,368</b>
Inversión					-	-	-	-	-	-	-	-
					-	-	-	-	-	-	-	-
<b>Flujo</b>					<b>2,245,878</b>	<b>2,231,695</b>	<b>2,217,157</b>	<b>2,202,256</b>	<b>2,186,983</b>	<b>2,171,327</b>	<b>2,155,280</b>	<b>2,138,832</b>
Tasa de Descuento												
TIR (20 años)					13.6%	16.6%	18.6%	20.0%	21.0%	21.8%	22.3%	22.7%
TIR (10 años)												
VPN					(\$111,602)	\$617,943	\$1,248,198	\$1,792,562				
Carbono (1=con, 0=sin)						0						

Table A5.5: Analysis of Stages 1, 2 and 3 as a single investment program (“Proyecto Completo”), with CERs

[illegible]

## Proyecto Completo

Período	2010	2011	2012	2013	2014	2015	2016	2017
	8	9	10	11	12	13	14	15
Ingresos:	Cantidad Diaria	Cantidad Anual	Precio Unitario	Incremento Anual				
Ahorro en Búnker		1,663,200	1,663,200	1,663,200	1,663,200	1,663,200	1,663,200	1,663,200
Ahorro en Electricidad		1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000
Créditos de Carbono		435,546	435,546	435,546	193,664	-	-	-
<b>Total de Ahorro e Ingresos</b>		3,248,746	3,248,746	3,248,746	3,006,864	2,813,200	2,813,200	2,813,200
Costos:		-	-	-	-	-	-	-
Gastos Operativos		2.50%	567,322	581,505	596,043	610,944	626,217	641,873
Otros		2.50%	-	-	-	-	-	-
<b>Total Gastos Anuales</b>		567,322	581,505	596,043	610,944	626,217	641,873	657,920
<b>Inversión</b>		-	-	-	-	-	-	-
<b>Flujo</b>		-	-	-	-	-	-	-
		2,681,424	2,667,241	2,652,704	2,395,920	2,186,983	2,171,327	2,155,280
		2,138,832						
Tasa de Descuento								
TIR (20 años)		21.6%	24.0%	25.6%	26.6%	27.3%	27.7%	28.1%
TIR (10 años)								
VPN								
Carbono (1=con, 0=sin)	1	\$1,628,711	\$2,500,637	\$3,254,701	\$3,846,936			