(Unit: Million US$)

Item	Foreign	Local	Total
1. Public Roads	0.10	1.20	1.30
2. Hospital	0.50	1.80	2.30
3. Employee Colony	4.70	18.60	23.30
Total	5.30	21.60	26.90

These above expenses are to be borne by the State Government for this project, and therefore are not included in the financial project cost but shall be deemed as social expenses and as cost in case of economic analysis.

Other than above there is the expense of $21 million estimated for the berth project but this would be a public facility, and the frequency with which it would be utilized for this project is very low (2 times per month); therefore it is not deemed as an expense for this project.

3-2 Economic Evaluation

3-2-1 ERR and NPV

The economic internal rate of return (ERR) which was calculated using the economic prices determined in the preceeding sub-section (3-1) is as under

ERR in 1991 constant prices: 12.99%

FRR after tax is 9.95%; FRR before tax was calculated as 11.92%. In comparison with the latter in which tax is not deemed as cost, ERR is higher by about 1%.

The main reasons for this are that economic cost of wood was deemed as US$15/bdt (in case of financial analysis US$27.72/bdt), the same as the cost of fuel wood, and the increase of profits from this exceeds the increase of investment for social infrastructure (US$26.90 million).

The 13% EER value, the same as the FRR of 10%, is not a satisfactory value but still is considered in the range adequate feasibility enough.

If the discount rate is set as 10%, the economical net present value (ENPV) will become as follows.

ENPV in 1991 constant price: US$110.3 million

This means if opportunity capital cost is supposed as 10% the national benefit after deduction of cost (net), and is US$110.3 million, the contribution of this project to the national economy can be said very strong.

3-2-2 Sensitivity Analysis

The result of calculations concerning sensitivity of ERR to change of main economic elements are shown in Figure VI-3, attached at the end of this Part.

The summary of results of calculation are shown in the following table.

Table VI-11 SENSITIVITY ANALYSIS

(ERR % Constant Price)

	20% up	10% up	10% down	20% down
Construction cost	10.53	11.68	14.46	16.17
Raw material cost	12.61	12.80	13.17	13.36
Selling price	16.39	14.76	11.03	8.86
Operation rate	15.96	14.53	11.31	9.47
Base Value		12.99		

As it is clear in Figure VI-3 Raw Material Price is almost flat, if there is fluctuation in Cost of Raw Material, ERR is hardly effected. The items in order of influence are (1) selling price, (2) utilization of capacity and (3) construction cost.

For instance if construction cost is increased 20% and selling price is reduced 10%, then the ERR is reduced by 4.42% and becomes 8.57%. This is the result of the double effect of the two undesirable factors, but ERR 8.57% is considered as a limit value.

If construction cost is increased 20%, selling price is increased 10% and raw material cost is also increased 10% then ERR will decrease 1.83% and reach 11.16%.

3-2-3 Effect on Foreign Currency Earnings

The main export goods in Uruguay today are agricultural, liverstock products. It is necessary to amount increase the earned by exports for the future development of the Uruguayan economy.

Because there are almost no resources to be processed by industry in Uruguay, the rapid development of industry is difficult and as the result it seems difficult to increase employment in a short period.

In the present situation, possible industrial products based on the local resources would be agricultural products, fishery products and livestock related products but these would be week in their impact on economic recovery.

In case of a pulp mill producing 750T/D LBKP as conceived for this project is realized, then the entire quantity of its products would be exported, as already explained.

The total value of exports of Uruguay in 1983 was US$1,045,000,000. For instance, by discounting US$407/T in 1985 at the rate of 5% per annum then the selling price in 1983 would become $369/t. If this figure is multipled by the estimated export quantity 273,700 t/y it become approximately US$100,000,000. This is equivalent to 9.5% of the former figure.

(1) Base of calculation for earning foreign currency by this project

In order to determine the contribution to improvement of foreign currency income in Uruguay by the realization of this project, the net earning amount of foreign currency is calculated by the following method. All of the inflow and outflow of local currency is eliminated from the calculation.

a) All prices and costs adopted are market prices.

b) All sales are deemed as earning foreign currency

c) Among the chemicals included in the item of production cost. All are deemed as causing an outflow of foreign currency except limestone, which shall be purchased locally.

d) In the fuel cost, natural gas imported from Argentina is classified as an outflow of foreign currency. Fuel wood is procured locally and therefore excluded from the calculation.

e) 50% of the maintenance cost shall be deemed as the cost of importing spare parts and classified as an outflow of foreign currency.

f) 80% of the cost of operation advisors from abroad shall be included in the outflow of foreign currency. The remaining 20% is deemed as locally spent as their Living Expenses.

g) Among the capital source, the loan is calculated as an inflow of foreign currency and the foreign currency portion of project cost is calculated as an outflow of foreign currency.

h) Repayment of loan after start of commercial operation is considered as an outflow of foreign currency.

i) Interest on the loan (made in foreign currency) shall be an outflow of foreign currency.

As shown in Table VI-12, during the period of 1993 and 1994 the acquirement of foreign currency falls to a minus value, because during such a period the required foreign currency is 77.4% of total required capital while the assumption of loan in foreign currency is only 70%. The shortage of foreign currency shall be invested in this project from the foreign currency reserves of Uruguay.

After 1994 the acquisition of foreign currency increases gradually; after 4 years from the start of commercial operation, i.e., the middle of 1999, it will exceed the balance of the loan in foreign currency. Accumulation of acquired foreign currency during 10 years after the start of operation (up to 2004) reaches US$1,299,000,000, net. Accordingly the contribution of this project to increase the holdings of foreign currency in Uruguay can be said to be very large.

3-2-4 Other Indirect Economic Advantage

(1) Promotion of employment

For the operation of an 750 T/D LBKP mill 1,021 persons are to be employed and another 2,000 persons are estimated as needed for afforestation.

As the construction workers, during the 3.5 years, 1,450,000 man-days are estimated to be hired. As a simple calculation, if annual working days are assumed as 300 days, this project will create jobs for an average of 1,380 persons during 3.5 years period. Considering that the total population is 3,000,000 and the population employed in industry is 160,000 (in 1980) the employment effect of this project can be said to be enormous.

(2) Effective utilization of poorly used land

The required area for the pulp mill and afforestation is estimated as 50,000 - 100,000 ha. This area can create the new value as capital from almost nothing.

Those area were appointed as the area for aforestation, by the Government of Uruguay and shall not effect any influence on livestock-farming at all.

(3) Development of related industry

Other than the effect of stimulating industry to supply construction materials, new industry will be encouraged, for the supply of spare parts, etc. Moreover, the increase of income due to the increased number of workers is expected to promote development of new types of service industry.

(4) Effects of improvement of technological level

There is almost no other large scale industry comparable to this project in Uruguay. As the result of operation of this pulp mill, technological transfer of pulp making and related technology is expected. And at the same time modern factory operation and administration technology would be advanced and it could be applicable for other industry also.

Table VI-1 PRODUCTION RATE AND PRODUCTION VOLUME

		Base Case		Case 1		Case 2		Case 3	
		A(%)	B(t)	A(%)	B(t)	A(%)	B(t)	A(%)	B(t)
1995	N	-	-	-	-	-	-	-	-
	L	-	-	-	-	30	82,110	30	82,110
1996	N	-	-	-	-	-	-	-	-
	L	-	-	-	-	90	246,330	90	246,330
1997	N	-	-	-	-	-	-	-	-
	L	-	-	-	-	100	273,700	100	273,700
1998	N	30	38,282	30	32,282	-	-	-	-
	L	30	38,399	30	38,399	100	273,700	100	273,700
1999	N	90	114,844	90	114,844	-	-	-	-
	L	90	115,195	90	115,195	100	273,700	100	273,700
2000	N	100	127,605	100	127,605	-	-	-	-
	L	100	127,995	100	127,995	100	273,700	100	273,700
2001	N	100	127,605	100	127,605	-	-	-	-
↓	L	100	127,995	100	127,995	100	273,700	100	273,700

Notes: 1. Production start of Base Case and Case 1 in 1998, project life up to middle of 2012 year.
2. Production start of Case 2 and Case 3 in 1995, project life up to middle of 2009 year.
3. A; production rate
4. B; production volume

Table VI-2 MATERIALS AND PRODUCTS INVENTORY

Item	Case No. Base Case N:L = 50:50 Average	1 N:L = 50:50 N = Average L = Globulus	2 L = 100 Average	3 L = 100 Globulus
1. Chemicals				
Salt	5,770 t	5,770 t	4,700 t	4,700 t
Sulfuric Acid	1,750 t	1,750 t	1,600 t	1,600 t
Lime Stone	600 t	600 t	530 t	530 t
Sublimated Sulfur	100 t	100 t	85 t	85 t
Other Chemicals	1 Lot	1 Lot	1 Lot	1 Lot
2. Raw Matirial				
N-Wood	73,300 m3	73,300 m3	-	-
L-Wood	46,800 m3	40,530 m3	100,230 m3	86,850 m3
3. Product				
N-Pulp	11,280 t	11,280 t	-	-
L-Pulp	11,270 t	11,270 t	22,800 t	22,800 t
4. Fuel Wood	-	-	2,200 t	2,450 t

Table VI-3 ESCALATED CAPITAL COST ESTIMATE

(Unit: Millionn US$)

Item	N : L = 50 : 50						L = 100					
	Base Case			Case 1			Case 2			Case 3		
	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total
Base Project Cost												
1. Land Acquisition	0.00	0.02	0.02	0.00	0.02	0.02	0.00	0.02	0.02	0.00	0.02	0.02
2. Site Preparation	5.60	2.50	8.10	5.60	2.50	8.10	5.60	2.50	8.10	5.60	2.50	8.10
3. Equipment & Materials	134.50	17.30	151.80	134.50	17.30	151.80	134.50	17.30	151.80	134.50	17.30	151.80
4. Spare Parts & Chemicals	6.40	3.40	9.80	6.40	3.40	9.80	6.40	3.40	9.80	6.40	3.40	9.80
5. Construction Erection Labor	13.80	26.30	40.10	13.80	26.30	40.10	13.80	26.30	40.10	13.80	26.30	4.10
6. Const. Equipment & Consumables	12.00	2.90	14.90	12.00	2.90	14.90	12.00	2.90	14.90	12.00	2.90	14.90
7. Temporary Facilities	2.10	3.90	6.00	2.10	3.90	6.00	2.10	3.90	6.00	2.10	3.90	6.00
8. Transport, Insurance, etc.	13.80	1.10	14.90	13.80	1.10	14.90	13.80	1.10	14.90	13.80	1.10	14.90
9. Indirect Field Expenses	8.40	3.50	11.90	8.40	3.50	11.90	8.40	3.50	11.90	8.40	3.50	11.90
10. Engineering Fee	14.20	0.80	15.00	14.20	0.80	15.00	14.20	0.80	15.00	14.20	0.80	15.00
11. Home Office Expenses	5.90	0.00	5.90	5.90	0.00	5.90	5.90	0.00	5.90	5.90	0.00	5.90
12. Pre-operation	3.50	6.40	9.90	3.50	6.30	9.80	3.50	5.50	9.00	3.50	5.20	8.70
Sub Total	220.20	68.12	288.32	220.20	68.02	288.22	220.20	67.22	287.42	220.20	66.92	287.12
13. Physical Contingency	22.10	6.80	28.90	22.10	6.80	28.90	22.10	6.80	28.90	22.10	6.70	28.80
14. Price Contingency	144.30	48.10	192.30	144.30	48.00	192.30	91.90	30.90	122.80	91.90	30.80	122.70
15. Initial Working Capital	0.00	38.90	38.90	0.00	38.90	38.90	0.00	33.50	33.50	0.00	33.50	33.50
16. Interest During Construction	161.40	0.00	161.40	161.20	0.00	161.20	138.90	0.00	138.90	138.90	0.00	138.90
Sub Total	327.80	93.80	421.60	327.60	93.70	421.30	252.90	71.20	324.10	252.90	71.00	323.90
Grand Total	548.00	161.92	709.92	547.80	161.72	709.52	473.10	138.42	611.52	473.10	137.92	611.02

Table VI-4 * * * PULP PROJECT IN URUGUAY * * * PAGE 1

PRODUCTION COST STATEMENTS

CASE 3 - LBKP: 100% (GLOBULUS) - (USD 1000)

YEAR	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
PRODUCTION (VOLUME)	0.	0.	0.	0.	82110.	246330.	273700.	273700.	273700.	273700.
RAW MATERIAL COST	0.	0.	0.	0.	7402.	23317.	27203.	28563.	29991.	31491.
CHEMICALS	0.	0.	0.	0.	1273.	4009.	4677.	4911.	5157.	5414.
UTILITIES	0.	0.	0.	0.	1376.	4397.	5130.	5386.	5656.	5938.
PACKING MATERIAL	0.	0.	0.	0.	245.	771.	899.	944.	991.	1041.
MOBILE FUEL	0.	0.	0.	0.	293.	923.	1077.	1131.	1188.	1247.
VARIABLE COST	0.	0.	0.	0.	10609.	33417.	38987.	40936.	42983.	45132.
EMPLOYMENT COST	0.	0.	0.	0.	8957.	20899.	22153.	23482.	24871.	26385.
LABOR COST	0.	0.	0.	0.	7464.	14928.	15824.	16773.	17779.	18846.
OVERHEAD	0.	0.	0.	0.	1493.	5971.	6329.	6709.	7112.	7538.
MAINTENANCE	0.	0.	0.	0.	5292.	10584.	11219.	11892.	12605.	13361.
FOR EQUIPMENT & MATERIAL	0.	0.	0.	0.	4716.	9432.	9997.	10597.	11233.	11907.
FOR BUILDING	0.	0.	0.	0.	576.	1152.	1221.	1294.	1372.	1454.
INSURANCE	0.	0.	0.	0.	558.	1116.	1183.	1254.	1329.	1409.
PROPERTY TAX	0.	0.	0.	0.	0.	0.	0.	0.	0.	18240.
OPERATION ADVISOR	0.	0.	0.	0.	1832.	2901.	1913.	924.	0.	0.
DIRECT FIXED COST	0.	0.	0.	0.	16639.	35500.	36467.	37552.	38825.	59395.
CASH FACTORY COST	0.	0.	0.	0.	27247.	68917.	75454.	78488.	81808.	104527.
EQUIPMENT & MATERIAL	0.	0.	0.	0.	9955.	19911.	19911.	19911.	19911.	19911.
BUILDING	0.	0.	0.	0.	1094.	2189.	2189.	2189.	2189.	2189.
CIVIL WORK	0.	0.	0.	0.	625.	1250.	1250.	1250.	1250.	1250.
PRE-OPERATIONAL EXPENSES	0.	0.	0.	0.	510.	1020.	1020.	1020.	1020.	1020.
INTEREST DURING CONSTRUCTION	0.	0.	0.	0.	4630.	9260.	9260.	9260.	9260.	9260.
DEPRECIATION AND AMORTIZATION	0.	0.	0.	0.	16815.	33630.	33630.	33630.	33630.	33630.
TOTAL FACTORY COST	0.	0.	0.	0.	44062.	102547.	109084.	112118.	115438.	138157.
UNIT FACTORY COST	0.0	0.0	0.0	0.0	0.5366	0.4163	0.3986	0.4096	0.4218	0.5048
SALES EXPENSES	0.	0.	0.	0.	500.	1622.	1987.	2104.	2209.	2319.
OPERATING EXPENSES	0.	0.	0.	0.	44562.	104169.	111071.	114222.	117647.	140477.
INTEREST ON LONG TERM DEBT	0.	0.	0.	0.	12312.	51326.	51326.	51326.	45826.	38494.
INTEREST ON SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL PRODUCTION COST	0.	0.	0.	0.	56874.	155495.	162396.	165547.	163474.	178971.
UNIT PRODUCTION COST	0.0	0.0	0.0	0.0	0.6927	0.6312	0.5933	0.6048	0.5973	0.6539

Table VI-4 * * * PULP PROJECT IN URUGUAY * * *

PRODUCTION COST STATEMENTS

CASE 3 - LBKP: 100% (GLOBULUS) - (USD 1000)

YEAR	2001	2002	2003	2004	2005	2006	2007	2008	2009
PRODUCTION (VOLUME)	273700.	273700.	273700.	273700.	273700.	273700.	273700.	273700.	273700.
RAW MATERIAL COST	33065.	34719.	36455.	38277.	40191.	42201.	44311.	46526.	48853.
CHEMICALS	5685.	5969.	6268.	6581.	6910.	7256.	7619.	8000.	8400.
UTILITIES	6235.	6547.	6874.	7218.	7579.	7958.	8356.	8774.	9212.
PACKING MATERIAL	1093.	1148.	1205.	1265.	1329.	1395.	1465.	1538.	1615.
MOBILE FUEL	1309.	1375.	1444.	1516.	1592.	1671.	1755.	1842.	1935.
VARIABLE COST	47388.	49758.	52246.	54858.	57601.	60481.	63505.	66680.	70014.
EMPLOYMENT COST	27968.	29646.	31425.	33310.	35309.	37427.	39673.	42053.	44576.
LABOR COST	19977.	21176.	22446.	23793.	25220.	26734.	28338.	30038.	31840.
OVERHEAD	7991.	8470.	8978.	9517.	10088.	10693.	11335.	12015.	12736.
MAINTENANCE	14163.	15013.	15914.	16868.	17881.	18953.	20091.	21296.	22574.
FOR EQUIPMENT & MATERIAL	12621.	13379.	14181.	15032.	15934.	16890.	17904.	18978.	20117.
FOR BUILDING	1542.	1634.	1732.	1836.	1946.	2063.	2187.	2318.	2457.
INSURANCE	1493.	1583.	1678.	1779.	1885.	1998.	2118.	2246.	2380.
PROPERTY TAX	16727.	15214.	13700.	12187.	10674.	9160.	7647.	6133.	4620.
OPERATION ADVISOR	0.	0.	0.	0.	0.	0.	0.	0.	0.
DIRECT FIXED COST	60351.	61455.	62716.	64144.	65748.	67539.	69529.	71728.	74151.
CASH FACTORY COST	107740.	111213.	114962.	119002.	123349.	128020.	133033.	138408.	144165.
EQUIPMENT & MATERIAL	19911.	19911.	19911.	19911.	19911.	19911.	19911.	19911.	19911.
BUILDING	2189.	2189.	2189.	2189.	2189.	2189.	2189.	2189.	2189.
CIVIL WORK	1250.	1250.	1250.	1250.	1250.	1250.	1250.	1250.	1250.
PRE-OPERATIONAL EXPENSES	1020.	1020.	1020.	1020.	1020.	1020.	1020.	1020.	1020.
INTEREST DURING CONSTRUCTION	9260.	9260.	9260.	9260.	9260.	9260.	9260.	9260.	9260.
DEPRECIATION AND AMORTIZATION	33630.	33630.	33630.	33630.	33630.	33630.	33630.	33630.	33630.
TOTAL FACTORY COST	141370.	144843.	148592.	152632.	156979.	161650.	166663.	172038.	177795.
UNIT FACTORY COST	0.5165	0.5292	0.5429	0.5577	0.5735	0.5906	0.6089	0.6286	0.6496
SALES EXPENSES	2435.	2557.	2685.	2819.	2960.	3108.	3264.	3427.	3598.
OPERATING EXPENSES	143805.	147400.	151277.	155451.	159939.	164758.	169927.	175465.	181393.
INTEREST ON LONG TERM DEBT	31162.	23830.	16497.	9165.	1833.	0.	0.	0.	0.
INTEREST ON SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL PRODUCTION COST	174967.	171230.	167775.	164617.	161772.	164758.	169927.	175465.	181393.
UNIT PRODUCTION COST	0.6393	0.6256	0.6130	0.6014	0.5911	0.6020	0.6209	0.6411	0.6627

Table VI-5 NET PROFIT OR LOSS BEFORE TAX

(Unit: 1,000 US$)

	Base Case	Case 1	Case 2	Case 3
1995			-453	448
1996			4,620	7,907
1997			32,949	36,843
1998	-6,123	-5,631	40,970	45,088
1999	-14,087	-12,291	53,389	57,705
2000	15,019	17,143	50,334	54,869
2001	23,005	25,250	64,093	68,845
2002	36,218	38,568	79,803	84,781
2003	31,388	33,858	95,829	101,045
2004	46,003	48,589	112,186	117,652
2005	62,813	65,520	128,889	134,619
2006	79,920	82,753	140,449	146,461
2007	97,335	100,302	150,553	156,862
2008	115,073	118,180	161,052	167,673
2009	126,758	130,016	171,963	178,911
2010	136,664	140,082		
2011	146,936	150,523		
2012	157,590	161,354		

Table VI-9 * * * PULP PROJECT IN URUGUAY * * * PAGE 1

INCOME STATEMENTS (FOR ENDING DECEMBER 31)

CASE 3 - LBKP: 100% (GLOBULUS) - (USD 1000)

YEAR	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
OPERATING INCOME	0.	0.	0.	0.	49978.	162200.	198695.	210383.	220902.	231947.
TOTAL SALES REVENUE	0.	0.	0.	0.	49978.	162200.	198695.	210383.	220902.	231947.
COST OF SALES	0.	0.	0.	0.	36718.	101345.	108539.	111865.	115161.	136264.
VARIABLE COST	0.	0.	0.	0.	10609.	33417.	38987.	40936.	42983.	45132.
DIRECT FIXED COST	0.	0.	0.	0.	16639.	35500.	36467.	37552.	38825.	59395.
DEPRECIATION AND AMORTIZATION	0.	0.	0.	0.	16815.	33630.	33630.	33630.	33630.	33630.
INC. IN PRODUCT INVENTORY	0.	0.	0.	0.	7344.	1202.	545.	253.	277.	1893.
GROSS PROFIT ON SALES	0.	0.	0.	0.	13259.	60855.	90156.	98518.	105740.	95683.
SALES EXPENSES	0.	0.	0.	0.	500.	1622.	1987.	2104.	2209.	2319.
OPERATING PROFIT	0.	0.	0.	0.	12759.	59233.	88169.	96414.	103531.	93363.
NON-OPERATING EXPENSES	0.	0.	0.	0.	12312.	51326.	51326.	51326.	45826.	38494.
INTEREST ON LONG TERM DEBT	0.	0.	0.	0.	12312.	51326.	51326.	51326.	45826.	38494.
INTEREST ON SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
NET PROFIT OR (LOSS) BEFORE TAX	0.	0.	0.	0.	448.	7907.	36843.	45088.	57705.	54869.
INCOME TAX	0.	0.	0.	0.	134.	2372.	11053.	13527.	17311.	16461.
NON-TAXABLE INCOME	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
NET PROFIT OR (LOSS) AFTER TAX	0.	0.	0.	0.	313.	5535.	25790.	31562.	40393.	38408.
DIVIDENDS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
RETAINED EARNINGS	0.	0.	0.	0.	313.	5535.	25790.	31562.	40393.	38408.

Table VI-9

* * * PULP PROJECT IN URUGUAY * * *

INCOME STATEMENTS (FOR ENDING DECEMBER 31)

CASE 3 - LBKP: 100% (GLOBULUS) - (USD 1000)

YEAR	2001	2002	2003	2004	2005	2006	2007	2008	2009
OPERATING INCOME	243544.	255721.	268507.	281932.	296029.	310830.	326371.	342690.	359824.
TOTAL SALES REVENUE	243544.	255721.	268507.	281932.	296029.	310830.	326371.	342690.	359824.
COST OF SALES	141102.	144554.	148280.	152295.	156617.	161261.	166246.	171590.	177315.
VARIABLE COST	47388.	49758.	52246.	54858.	57601.	60481.	63505.	66680.	70014.
DIRECT FIXED COST	60351.	61455.	62716.	64144.	65748.	67539.	69529.	71728.	74151.
DEPRECIATION AND AMORTIZATION	33630.	33630.	33630.	33630.	33630.	33630.	33630.	33630.	33630.
INC. IN PRODUCT INVENTORY	268.	289.	312.	337.	362.	389.	418.	448.	480.
GROSS PROFIT ON SALES	102442.	111167.	120227.	129637.	139412.	149569.	160126.	171100.	182510.
SALES EXPENSES	2435.	2557.	2685.	2819.	2960.	3108.	3264.	3427.	3598.
OPERATING PROFIT	100007.	108610.	117542.	126818.	136452.	146461.	156862.	167673.	178911.
NON-OPERATING EXPENSES	31162.	23830.	16497.	9165.	1833.	0.	0.	0.	0.
INTEREST ON LONG TERM DEBT	31162.	23830.	16497.	9165.	1833.	0.	0.	0.	0.
INTEREST ON SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.
NET PROFIT OR (LOSS) BEFORE TAX	68845.	84781.	101045.	117652.	134619.	146461.	156862.	167673.	178911.
INCOME TAX	20653.	25434.	30313.	35296.	40386.	43938.	47059.	50302.	53673.
NON-TAXABLE INCOME	0.	0.	0.	0.	0.	0.	0.	0.	0.
NET PROFIT OR (LOSS) AFTER TAX	48191.	59346.	70731.	82357.	94233.	102523.	109803.	117371.	125238.
DIVIDENDS	0.	0.	0.	0.	0.	0.	0.	0.	0.
RETAINED EARNINGS	48191.	59346.	70731.	82357.	94233.	102523.	109803.	117371.	125238.

Table VI-12 FOREIGN CURRENCY EARNINGS (1)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
In-flow										
Disbursement	104,800	160,400	111,200	28,200	23,100	-	-	-	-	-
From Sales	-	-	-	-	49,978	162,200	198,695	210,383	220,902	231,947
In-flow Total	104,800	160,400	111,200	28,200	73,078	162,200	198,695	210,383	220,902	231,947
Out-flow										
Investment for Foreign Currency Portion	94,600	151,400	125,400	61,500	40,200	-	-	-	-	-
Chemicals	-	-	-	-	1,273	4,009	4,677	4,911	5,157	5,414
N. Gas (5%)	-	-	-	-	1,021	3,578	3,757	3,945	4,142	4,350
Spareparts (Maintenance Cost x 50%)	-	-	-	-	2,646	5,292	5,609	5,946	6,303	6,681
Operation Advisor	-	-	-	-	1,832	2,901	1,931	924	-	-
Interest on Foreign Loan	-	-	-	-	11,550	51,326	51,326	51,326	45,826	38,494
Principal Repayment	-	-	-	-	-	-	-	30,551	61,102	61,102
Out-flow Total	94,600	151,400	125,400	61,500	58,522	67,106	67,300	97,603	122,530	116,041
Net In-flow	10,200	9,000	-14,200	-33,300	14,556	95,094	131,395	112,780	98,372	115,906
Accumulated Net In-flow	10,200	19,200	5,000	-28,300	-13,744	81,350	212,745	325,525	423,897	539,803

Table VI-12 FOREIGN CURRENCY EARNINGS (2)

	2001	2002	2003	2004	2005	2006	2007	2008	2009
In-flow									
Disbursement	-	-	-	-	-	-	-	-	-
From Sales	243,544	25,721	268,507	281,932	296,029	310,830	326,371	342,690	359,824
In-flow Total	243,544	25,721	268,507	281,932	296,029	310,830	326,371	342,690	359,824
Out-flow									
Investment for Foreign Currency Portion	-	-	-	-	-	-	-	-	-
Chemicals	5,685	5,969	6,268	6,581	6,910	7,256	7,619	8,000	8,400
N. Gas (5%)	4,567	4,795	5,035	5,287	5,551	5,829	6,120	6,426	6,748
Spareparts (Maintenance Cost x 50%)	7,082	7,507	7,958	8,434	8,941	9,477	10,046	10,648	11,287
Operation Advisor	-	-	-	-	-	-	-	-	-
Interest on Foreign Loan	-	-	-	-	-	-	-	-	-
Principal Repayment	61,102	61,102	61,102	61,102	30,551	-	-	-	-
Out-flow Total	78,436	79,373	80,363	81,404	51,953	22,562	23,785	25,074	26,435
Net In-flow	165,108	176,348	188,144	229,979	244,076	288,268	302,586	317,616	333,389
Accumulated Net In-flow	704,911	801,886	1,069,403	1,299,382	1,543,458	1,809,164	2,111,750	2,429,366	276,755

Table VI-13 * * * PULP PROJECT IN URUGUAY * * *

FINANCIAL RATE OF RETURN (IN CONSTANT PRICE)

BASE CASE - N/L: 50/50 (AVERAGE) - (USD 1000)

YEAR	FIXED CAPITAL EXPEND.	CHANGE IN WORKING CAPITAL	(1) GROSS CAPITAL EXPENDTR	OPERATING PROFIT	DEPRECIATN	(2) GROSS CASH IN-FLOW	(3) INCOME TAX	(4) BFR-TAX NET IN-FLOW (2)-(1)	(5) AFT-TAX NET IN-FLOW (4)-(3)	DEFLATOR
1994	133549.	1818.	135367.	0.	0.	0.	0.	-135367.	-135367.	1.000
1995	174386.	2563.	176949.	0.	0.	0.	0.	-176949.	-176949.	1.050
1996	115150.	1541.	116691.	0.	0.	0.	0.	-116691.	-116691.	1.102
1997	27838.	141.	27979.	0.	0.	0.	0.	-27979.	-27979.	1.158
1998	21692.	31366.	53058.	6731.	16083.	22814.	0.	-30244.	-30244.	1.216
1999	0.	12643.	12643.	35687.	30635.	66322.	0.	53678.	53678.	1.276
2000	0.	5733.	5733.	55707.	29176.	84883.	3362.	79150.	75788.	1.340
2001	0.	129.	129.	58730.	27787.	86516.	4905.	86387.	81483.	1.407
2002	0.	-192.	-192.	60552.	26464.	87015.	7354.	87207.	79853.	1.477
2003	0.	2220.	2220.	49063.	25203.	74266.	6070.	72046.	65977.	1.551
2004	0.	-339.	-339.	50469.	24003.	74472.	8473.	74811.	66339.	1.629
2005	0.	-311.	-311.	52914.	22860.	75774.	11018.	76085.	65068.	1.710
2006	0.	-285.	-285.	55176.	21772.	76948.	13351.	77233.	63882.	1.796
2007	0.	-261.	-261.	57267.	20735.	78001.	15486.	78263.	62777.	1.886
2008	0.	-238.	-238.	59196.	19748.	78943.	17436.	79182.	61746.	1.980
2009	0.	-217.	-217.	60973.	18807.	79780.	18292.	79997.	61705.	2.079
2010	0.	-197.	-197.	62608.	17912.	80519.	18782.	80716.	61934.	2.183
2011	0.	-178.	-178.	64108.	17059.	81167.	19232.	81345.	62113.	2.292
2012	-40168.	-55936.	-96104.	65483.	16246.	81729.	19645.	177833.	158189.	2.407
	432447.	-0.	432446.	794661.	334490.	1129150.	163405.	696704.	533299.	

INTERNAL RATE OF RETURN

ON (4) BFR-TAX NET IN-FLOW (2)-(1) 9.10 PER CENT

ON (5) AFT-TAX NET IN-FLOW (4)-(3) 7.64 PER CENT

Table VI-14 * * * PULP PROJECT IN URUGUAY * * *

FINANCIAL RATE OF RETURN (IN CURRENT PRICE)

BASE CASE - N/L: 50/50 (AVERAGE) - (USD 1000)

YEAR	FIXED CAPITAL EXPEND.	CHANGE IN WORKING CAPITAL	(1) GROSS CAPITAL EXPENDTR	OPERATING PROFIT	DEPRECIATN	(2) GROSS CASH IN-FLOW	(3) INCOME TAX	(4) BFR-TAX NET IN-FLOW (2)-(1)	(5) AFT-TAX NET IN-FLOW (4)-(3)
1994	133549.	1818.	135367.	0.	0.	0.	0.	-135367.	-135367.
1995	183105.	2783.	185888.	0.	0.	0.	0.	-185888.	-185888.
1996	126953.	1929.	128882.	0.	0.	0.	0.	-128882.	-128882.
1997	32226.	490.	32716.	0.	0.	0.	0.	-32716.	-32716.
1998	26367.	38476.	64843.	8181.	19549.	27730.	0.	-37113.	-37113.
1999	0.	18411.	18411.	45546.	39099.	84645.	0.	66234.	66234.
2000	0.	10879.	10879.	74653.	39099.	113751.	4506.	102873.	98367.
2001	0.	3921.	3921.	82638.	39099.	121737.	6902.	117816.	110915.
2002	0.	3652.	3652.	89462.	39099.	128561.	10866.	124909.	114044.
2003	0.	7562.	7562.	76112.	39099.	115211.	9416.	107649.	98233.
2004	0.	3944.	3944.	82209.	39099.	121307.	13801.	117363.	103562.
2005	0.	4161.	4161.	90500.	39099.	129599.	18844.	125438.	106594.
2006	0.	4389.	4389.	99088.	39099.	138186.	23976.	133798.	109822.
2007	0.	4628.	4628.	107984.	39099.	147083.	29201.	142454.	113254.
2008	0.	4880.	4880.	117203.	39099.	156301.	34522.	151421.	116899.
2009	0.	5145.	5145.	126758.	39099.	165856.	38027.	160711.	122684.
2010	0.	5423.	5423.	136664.	39099.	175762.	40999.	170339.	129340.
2011	0.	5716.	5716.	146936.	39099.	186035.	44081.	180319.	136238.
2012	-96669.	-128206.	-224875.	157590.	39099.	196689.	47277.	421564.	374287.
	405530.	-0.	405530.	1441523.	566930.	2008452.	322417.	1602923.	1280506.

INTERNAL RATE OF RETURN

ON (4) BFR-TAX NET IN-FLOW (2)-(1) 14.15 PER CENT

ON (5) AFT-TAX NET IN-FLOW (4)-(3) 12.57 PER CENT

Table VI-15 * * * PULP PROJECT IN URUGUAY * * *

NET PRESENT VALUE (IN CONSTANT PRICE)

BASE CASE - N/L: 50/50 (AVERAGE) - (USD 1000)

YEAR	FIXED CAPITAL EXPEND.	CHANGE IN WORKING CAPITAL	(1) GROSS CAPITAL EXPENDTR	OPERATING PROFIT	DEPRECIATN	(2) GROSS CASH IN-FLOW	(3) INCOME TAX	(4) BFR-TAX NET IN-FLOW (2)-(1)	(5) AFT-TAX NET IN-FLOW (4)-(3)	DISCOUNT RATE
1994	133549.	1818.	135367.	0.	0.	0.	0.	-135367.	-135367.	1.000
1995	158533.	2330.	160863.	0.	0.	0.	0.	-160863.	-160863.	1.100
1996	95165.	1274.	96439.	0.	0.	0.	0.	-96439.	-96439.	1.210
1997	20915.	106.	21021.	0.	0.	0.	0.	-21021.	-21021.	1.331
1998	14816.	21423.	36240.	4597.	10985.	15582.	0.	-20657.	-20657.	1.464
1999	0.	7851.	7851.	22159.	19022.	41181.	0.	33330.	33330.	1.611
2000	0.	3236.	3236.	31445.	16469.	47914.	1898.	44678.	42780.	1.772
2001	0.	66.	66.	30138.	14259.	44397.	2517.	44330.	41814.	1.949
2002	0.	-90.	-90.	28248.	12345.	40593.	3431.	40683.	37252.	2.144
2003	0.	942.	942.	20808.	10689.	31496.	2574.	30555.	27981.	2.358
2004	0.	-131.	-131.	19458.	9254.	28712.	3267.	28843.	25577.	2.594
2005	0.	-109.	-109.	18546.	8012.	26558.	3862.	26668.	22806.	2.853
2006	0.	-91.	-91.	17581.	6937.	24518.	4254.	24609.	20355.	3.138
2007	0.	-76.	-76.	16588.	6006.	22594.	4406.	22670.	18184.	3.452
2008	0.	-63.	-63.	15588.	5200.	20788.	4591.	20851.	16260.	3.797
2009	0.	-52.	-52.	14596.	4502.	19099.	4379.	19151.	14772.	4.177
2010	0.	-43.	-43.	13625.	3898.	17523.	4088.	17566.	13479.	4.595
2011	0.	-35.	-35.	12683.	3375.	16058.	3805.	16094.	12289.	5.054
2012	-7225.	-10061.	-17285.	11778.	2922.	14700.	3533.	31985.	28452.	5.560
	415753.	28297.	444050.	277838.	133877.	411715.	46684.	-32334.	-79018.	

Table VI-16 * * * PULP PROJECT IN URUGUAY * * *

PROFITABILITY AND FINANCIAL INDICATORS

BASE CASE - N/L: 50/50 (AVERAGE) - (USD 1000)

YEAR	(1) AFT TAX PROFIT -TO- SALES REV (PCT)	(2) AFT TAX PROFIT -TO- S/H EQUITY (PCT)	(3) BFR TAX PROFIT -TO- INVESTMENT (PCT)	(4) AFT TAX PROFIT -TO- S/CAPITAL (PCT)	(5) CURRENT RATIO	(6) QUICK RAITO	(7) DEBT SERVICE RATIO	(8) L/T DEBT -TO- S/H EQUITY	(9)* PROFIT B.E.P. CAPACITY UTILIZE (PCT)	(10)* CASH B.E.P. SALES PRICE (PRICE)	(11)* CASH B.E.P. CAPACITY UTILIZE (PCT)
1998	-10.9	-3.0	-0.9	-2.9	6.15	3.88	1.94	71 / 29	42.2	741.7	26.9
1999	-7.7	-7.3	-2.1	-6.6	5.60	3.86	1.42	72 / 28	101.4	731.5	73.6
2000	4.7	5.2	2.3	4.9	1.76	1.25	1.83	69 / 31	91.0	669.7	66.3
2001	6.8	7.3	3.5	7.6	1.09	0.78	1.21	64 / 36	86.5	821.1	84.4
2002	10.2	10.4	5.5	11.9	1.13	0.81	0.95	57 / 43	79.7	1008.1	105.5
2003	8.4	8.2	4.7	10.3	1.21	0.86	0.91	48 / 52	84.3	1082.8	108.9
2004	11.8	10.8	6.9	15.1	1.25	0.89	1.00	37 / 63	76.6	1069.2	100.0
2005	15.3	12.8	9.5	20.6	1.29	0.92	1.12	24 / 76	69.5	1057.0	91.8
2006	18.6	14.0	12.0	26.3	1.34	0.96	1.27	8 / 92	62.9	1046.4	84.2
2007	21.5	14.6	14.7	32.0	2.23	1.59	1.44	0 / 100	57.0	1037.3	77.2
2008	24.2	14.7	17.3	37.8	5.67	4.07	3.24	0 / 100	51.5	837.6	50.0
2009	25.4	13.9	19.1	41.7	5.65	4.06	********	0 / 100	49.2	718.1	33.4
2010	26.1	13.1	20.6	44.9	5.64	4.06	********	0 / 100	47.8	747.8	32.8
2011	26.7	12.3	22.1	48.3	5.62	4.05	********	0 / 100	46.5	779.4	32.3
2012	27.3	11.7	23.7	51.8	5.61	4.05	********	0 / 100	45.4	813.1	31.8
AVERAGE1	13.9	9.3	10.6	22.9	3.42	2.41	********	30 / 70	66.1	877.4	66.6
AVERAGE2	17.4	10.3	9.1	19.4	2.21	1.55	1.91	36 / 64			

(AVERAGE1) : SUM OF ANNUAL FIGURES OF PERCENTAGE AND RATIO IS DIVIDED BY NO. OF YEARS(SIMPLE AVERAGE)
(AVERAGE2) : AVERAGE FIGURES ARE CALCULATED BY ACTUAL VALUES ACCUMULATED OVER THE PROJECT LIFE(WEIGHTED AVERAGE)
* NOTE FOR (9)(10)(11)
WHEN THERE ARE TWO OR MORE PRODUCTS, AND DURING THE YEARS WHEN ALL OF PRODUCTS ARE NOT PRODUCED AT THE SAME RATE OF CAPACITY UTILIZATION, ABOVE BREAK-EVEN-POINTS CANNOT GIVE CORRECT FIGURES.

Table VI-17

* * * PULP PROJECT IN URUGUAY * * *
FINANCIAL RATE OF RETURN (IN CONSTANT PRICE)
CASE 1 - N/L: 50/50 (GLOBULUS) - (USD 1000)

YEAR	FIXED CAPITAL EXPEND.	CHANGE IN WORKING CAPITAL	(1) GROSS CAPITAL EXPENDTR	OPERATING PROFIT	DEPRECIATN	(2) GROSS CASH IN-FLOW	(3) INCOME TAX	(4) BFR-TAX NET IN-FLOW (2)-(1)	(5) AFT-TAX NET IN-FLOW (4)-(3)	DEFLATOR
1994	133500.	1818.	135318.	0.	0.	0.	0.	-135318.	-135318.	1.000
1995	174314.	2563.	176878.	0.	0.	0.	0.	-176878.	-176878.	1.050
1996	115103.	1541.	116644.	0.	0.	0.	0.	-116644.	-116644.	1.102
1997	27827.	141.	27968.	0.	0.	0.	0.	-27968.	-27968.	1.158
1998	21683.	31364.	53047.	7129.	16072.	23202.	0.	-29846.	-29846.	1.216
1999	0.	12643.	12643.	37067.	30614.	67681.	0.	55038.	55038.	1.276
2000	0.	5733.	5733.	57267.	29156.	86423.	3838.	80690.	76852.	1.340
2001	0.	129.	129.	60301.	27768.	88069.	5383.	87940.	82556.	1.407
2002	0.	-192.	-192.	62122.	26446.	88568.	7831.	88760.	80928.	1.477
2003	0.	2219.	2219.	50639.	25186.	75825.	6548.	73607.	67059.	1.551
2004	0.	-339.	-339.	52044.	23987.	76031.	8949.	76370.	67421.	1.629
2005	0.	-311.	-311.	54487.	22845.	77332.	11492.	77643.	66150.	1.710
2006	0.	-285.	-285.	56748.	21757.	78504.	13824.	78790.	64966.	1.796
2007	0.	-261.	-261.	58836.	20721.	79557.	15958.	79818.	63861.	1.886
2008	0.	-238.	-238.	60764.	19734.	80498.	17907.	80736.	62830.	1.980
2009	0.	-217.	-217.	62540.	18794.	81335.	18762.	81551.	62789.	2.079
2010	0.	-197.	-197.	64174.	17899.	82073.	19252.	82270.	63018.	2.183
2011	0.	-178.	-178.	65673.	17047.	82720.	19702.	82898.	63196.	2.292
2012	-40163.	-55935.	-96098.	67046.	16235.	83282.	20114.	179379.	159265.	2.407
	432264.	-0.	432264.	816838.	334262.	1151099.	169559.	718835.	549275.	

INTERNAL RATE OF RETURN

ON (4) BFR-TAX NET IN-FLOW (2)-(1) 9.33 PER CENT

ON (5) AFT-TAX NET IN-FLOW (4)-(3) 7.83 PER CENT

Table VI-18

* * * PULP PROJECT IN URUGUAY * * *
FINANCIAL RATE OF RETURN (IN CURRENT PRICE)
CASE 1 - N/L: 50/50 (GLOBULUS) - (USD 1000)

YEAR	FIXED CAPITAL EXPEND.	CHANGE IN WORKING CAPITAL	(1) GROSS CAPITAL EXPENDTR	OPERATING PROFIT	DEPRECIATN	(2) GROSS CASH IN-FLOW	(3) INCOME TAX	(4) BFR-TAX NET IN-FLOW (2)-(1)	(5) AFT-TAX NET IN-FLOW (4)-(3)
1994	133500.	1818.	135318.	0.	0.	0.	0.	-135318.	-135318.
1995	183030.	2783.	185813.	0.	0.	0.	0.	-185813.	-185813.
1996	126901.	1929.	128830.	0.	0.	0.	0.	-128830.	-128830.
1997	32213.	490.	32703.	0.	0.	0.	0.	-32703.	-32703.
1998	26356.	38474.	64830.	8666.	19536.	28202.	0.	-36629.	-36629.
1999	0.	10411.	10411.	47308.	39072.	86380.	0.	67969.	67969.
2000	0.	10879.	10879.	76743.	39072.	115815.	5143.	104936.	99793.
2001	0.	3921.	3921.	84849.	39072.	123921.	7575.	120000.	112425.
2002	0.	3652.	3652.	91782.	39072.	130854.	11571.	127203.	115632.
2003	0.	7560.	7560.	78558.	39072.	117630.	10157.	110070.	99912.
2004	0.	3944.	3944.	84774.	39072.	123846.	14577.	119902.	105325.
2005	0.	4161.	4161.	93191.	39072.	132263.	19656.	128102.	108446.
2006	0.	4389.	4389.	101910.	39072.	140982.	24826.	136593.	111767.
2007	0.	4628.	4628.	110944.	39072.	150016.	30070.	145388.	115297.
2008	0.	4880.	4880.	120308.	39072.	159380.	35454.	154500.	119046.
2009	0.	5145.	5145.	130016.	39072.	169088.	39005.	163943.	124938.
2010	0.	5423.	5423.	140082.	39072.	179154.	42025.	173730.	131706.
2011	0.	5716.	5716.	150523.	39072.	189595.	45157.	183878.	138722.
2012	-96656.	-128203.	-224859.	161354.	39072.	200426.	48406.	425285.	376879.
	405344.	-0.	405343.	1481006.	566543.	2047548.	333641.	1642206.	1308566.

INTERNAL RATE OF RETURN

ON (4) BFR-TAX NET IN-FLOW (2)-(1) 14.40 PER CENT

ON (5) AFT-TAX NET IN-FLOW (4)-(3) 12.77 PER CENT

Table VI-19

* * * PULP PROJECT IN URUGUAY * * *
NET PRESENT VALUE (IN CONSTANT PRICE)
CASE 1 - N/L: 50/50 (GLOBULUS) - (USD 1000)

YEAR	FIXED CAPITAL EXPEND.	CHANGE IN WORKING CAPITAL	(1) GROSS CAPITAL EXPENDTR	OPERATING PROFIT	DEPRECIATN	(2) GROSS CASH IN-FLOW	(3) INCOME TAX	(4) BFR-TAX NET IN-FLOW (2)-(1)	(5) AFT-TAX NET IN-FLOW (4)-(3)	DISCOUNT RATE
1994	133500.	1818.	135318.	0.	0.	0.	0.	-135318.	-135318.	1.000
1995	158468.	2330.	160798.	0.	0.	0.	0.	-160798.	-160798.	1.100
1996	95126.	1274.	96400.	0.	0.	0.	0.	-96400.	-96400.	1.210
1997	20907.	106.	21013.	0.	0.	0.	0.	-21013.	-21013.	1.331
1998	14810.	21422.	36232.	4869.	10978.	15847.	0.	-20385.	-20385.	1.464
1999	0.	7851.	7851.	23016.	19009.	42025.	0.	34174.	34174.	1.611
2000	0.	3236.	3236.	32326.	16458.	48784.	2166.	45547.	43381.	1.772
2001	0.	66.	66.	30944.	14249.	45193.	2763.	45127.	42365.	1.949
2002	0.	-90.	-90.	28981.	12337.	41318.	3653.	41407.	37754.	2.144
2003	0.	941.	941.	21476.	10681.	32157.	2777.	31216.	28440.	2.358
2004	0.	-131.	-131.	20065.	9248.	29313.	3450.	29444.	25994.	2.594
2005	0.	-109.	-109.	19097.	8007.	27104.	4028.	27213.	23185.	2.853
2006	0.	-91.	-91.	18082.	6932.	25014.	4405.	25105.	20700.	3.138
2007	0.	-76.	-76.	17043.	6002.	23045.	4622.	23121.	18498.	3.452
2008	0.	-63.	-63.	16001.	5197.	21198.	4715.	21260.	16545.	3.797
2009	0.	-52.	-52.	14972.	4499.	19471.	4491.	19523.	15031.	4.177
2010	0.	-43.	-43.	13966.	3895.	17862.	4190.	17904.	13715.	4.595
2011	0.	-35.	-35.	12993.	3373.	16366.	3898.	16401.	12503.	5.054
2012	-7224.	-10060.	-17284.	12059.	2920.	14979.	3618.	32263.	28645.	5.560
	415587.	28296.	443882.	285890.	133786.	419675.	48777.	-24207.	-72983.	

Table VI-20 * * * PULP PROJECT IN URUGUAY * * *
PROFITABILITY AND FINANCIAL INDICATORS
CASE 1 - N/L: 50/50 (GLOBULUS) - (USD 1000)

YEAR	(1) AFT TAX PROFIT -TO- SALES REV (PCT)	(2) AFT TAX PROFIT -TO- S/H EQUITY (PCT)	(3) BFR TAX PROFIT -TO- INVESTMENT (PCT)	(4) AFT TAX PROFIT -TO- S/CAPITAL (PCT)	(5) CURRENT RATIO	(6) QUICK RATIO	(7) DEBT SERVICE RATIO	(8) L/T DEBT -TO- S/H EQUITY	(9)* PROFIT B.E.P. CAPACITY UTILIZE (PCT)	(10)* CASH B.E.P. SALES PRICE (PRICE)	(11)* CASH B.E.P. CAPACITY UTILIZE (PCT)
1998	-10.0	-2.7	-0.8	-2.6	6.33	4.00	1.97	71 / 29	41.5	733.5	26.5
1999	-6.8	-6.3	-1.9	-5.8	5.75	3.98	1.45	72 / 28	99.9	723.1	72.5
2000	5.4	5.8	2.6	5.6	1.77	1.26	1.86	69 / 31	89.8	661.3	65.4
2001	7.5	7.9	3.8	8.3	1.09	0.78	1.22	63 / 37	85.4	812.3	83.3
2002	10.9	10.7	5.8	12.7	1.13	0.81	0.96	56 / 44	78.6	998.8	104.1
2003	9.1	8.6	5.1	11.1	1.21	0.86	0.93	47 / 53	83.2	1073.1	107.4
2004	12.4	11.0	7.3	16.0	1.25	0.90	1.02	36 / 64	75.5	1059.0	98.7
2005	16.0	12.9	9.9	21.5	1.30	0.93	1.14	23 / 77	68.5	1046.3	90.5
2006	19.2	14.0	12.5	27.2	1.34	0.96	1.29	8 / 92	62.1	1035.2	83.1
2007	22.2	14.5	15.1	33.0	2.24	1.61	1.47	0 / 100	56.2	1025.6	76.2
2008	24.9	14.6	17.8	38.9	5.83	4.19	3.30	0 / 100	50.9	825.4	49.4
2009	26.1	13.9	19.6	42.8	5.81	4.19	********	0 / 100	48.5	705.4	33.0
2010	26.8	13.0	21.1	46.1	5.79	4.18	********	0 / 100	47.2	734.4	32.4
2011	27.4	12.2	22.7	49.5	5.78	4.18	********	0 / 100	45.9	765.4	31.8
2012	28.0	11.6	24.3	53.1	5.76	4.17	********	0 / 100	44.8	798.4	31.4
AVERAGE1	14.6	9.4	11.0	23.8	3.49	2.47	********	30 / 70	65.2	866.5	65.7
AVERAGE2	18.0	10.4	9.5	20.2	2.22	1.57	1.94	36 / 64			

(AVERAGE1) : SUM OF ANNUAL FIGURES OF PERCENTAGE AND RATIO IS DIVIDED BY NO. OF YEARS(SIMPLE AVERAGE)
(AVERAGE2) : AVERAGE FIGURES ARE CALCULATED BY ACTUAL VALUES ACCUMULATED OVER THE PROJECT LIFE(WEIGHTED AVERAGE)
* NOTE FOR (9)(10)(11)
WHEN THERE ARE TWO OR MORE PRODUCTS, AND DURING THE YEARS WHEN ALL OF PRODUCTS ARE NOT PRODUCED AT THE SAME RATE OF CAPACITY UTILIZATION, ABOVE BREAK-EVEN-POINTS CANNOT GIVE CORRECT FIGURES.

Table VI-21 * * * PULP PROJECT IN URUGUAY * * *

FINANCIAL RATE OF RETURN (IN CONSTANT PRICE)

CASE 2 - L8KP: 100% (AVERAGE) - (USD 1000)

YEAR	FIXED CAPITAL EXPEND.	CHANGE IN WORKING CAPITAL	(1) GROSS CAPITAL EXPENDTR	OPERATING PROFIT	DEPRECIATN	(2) GROSS CASH IN-FLOW	(3) INCOME TAX	(4) BFR-TAX NET IN-FLOW (2)-(1)	(5) AFT-TAX NET IN-FLOW (4)-(3)	DEFLATOR
1991	115088.	1572.	116660.	0.	0.	0.	0.	-116660.	-116660.	1.000
1992	150244.	2217.	152461.	0.	0.	0.	0.	-152461.	-152461.	1.050
1993	99209.	1333.	100542.	0.	0.	0.	0.	-100542.	-100542.	1.102
1994	23985.	122.	24107.	0.	0.	0.	0.	-24107.	-24107.	1.158
1995	18689.	27548.	46238.	9765.	13847.	23612.	0.	-22626.	-22626.	1.216
1996	0.	11219.	11219.	43868.	26376.	70244.	1086.	59025.	57939.	1.276
1997	0.	5104.	5104.	62918.	25120.	88038.	7376.	82934.	75558.	1.340
1998	0.	124.	124.	65623.	23924.	89547.	8735.	89423.	80688.	1.407
1999	0.	-163.	-163.	67179.	22785.	89963.	10841.	90127.	79286.	1.477
2000	0.	1912.	1912.	57280.	21700.	78980.	9734.	77068.	67334.	1.551
2001	0.	-292.	-292.	58494.	20666.	79161.	11804.	79453.	67649.	1.629
2002	0.	-269.	-269.	60603.	19682.	80286.	13998.	80554.	66557.	1.710
2003	0.	-246.	-246.	62555.	18745.	81300.	16008.	81547.	65538.	1.796
2004	0.	-226.	-226.	64359.	17852.	82212.	17848.	82437.	64589.	1.886
2005	0.	-206.	-206.	66024.	17002.	83027.	19529.	83233.	63703.	1.980
2006	0.	-188.	-188.	67559.	16193.	83752.	20268.	83939.	63672.	2.079
2007	0.	-170.	-170.	68971.	15422.	84392.	20691.	84563.	63871.	2.183
2008	0.	-154.	-154.	70267.	14687.	84954.	21080.	85108.	64028.	2.292
2009	-34690.	-49237.	-83927.	71455.	13988.	85442.	21436.	169370.	147933.	2.407
	372524.	-0.	372524.	896920.	287990.	1184909.	200435.	812386.	611951.	

INTERNAL RATE OF RETURN

ON (4) BFR-TAX NET IN-FLOW (2)-(1) 11.48 PER CENT

ON (5) AFT-TAX NET IN-FLOW (4)-(3) 9.60 PER CENT

Table VI-22

* * * PULP PROJECT IN URUGUAY * * *
FINANCIAL RATE OF RETURN (IN CURRENT PRICE)
CASE 2 - LBKP: 100% (AVERAGE) - (USD 1000)

YEAR	FIXED CAPITAL EXPEND.	CHANGE IN WORKING CAPITAL	(1) GROSS CAPITAL EXPENDTR	OPERATING PROFIT	DEPRECIATN	(2) GROSS CASH IN-FLOW	(3) INCOME TAX	(4) BFR-TAX NET IN-FLOW (2)-(1)	(5) AFT-TAX NET IN-FLOW (4)-(3)
1991	115088.	1572.	116660.	0.	0.	0.	0.	-116660.	-116660.
1992	157757.	2406.	160163.	0.	0.	0.	0.	-160163.	-160163.
1993	109378.	1668.	111046.	0.	0.	0.	0.	-111046.	-111046.
1994	27765.	423.	28189.	0.	0.	0.	0.	-28189.	-28189.
1995	22717.	33789.	56506.	11869.	16832.	28701.	0.	-27805.	-27805.
1996	0.	16311.	16311.	55987.	33663.	89650.	1386.	73339.	71954.
1997	0.	9649.	9649.	84316.	33663.	117979.	9885.	108331.	98446.
1998	0.	3466.	3466.	92338.	33663.	126001.	12291.	122536.	110244.
1999	0.	3223.	3223.	99253.	33663.	132916.	16017.	129693.	113677.
2000	0.	6592.	6592.	88860.	33663.	122523.	15100.	115931.	100831.
2001	0.	3479.	3479.	95281.	33663.	128944.	19228.	125465.	106237.
2002	0.	3669.	3669.	103652.	33663.	137315.	23941.	133646.	109705.
2003	0.	3870.	3870.	112340.	33663.	146003.	28749.	142133.	113385.
2004	0.	4080.	4080.	121358.	33663.	155022.	33656.	150941.	117286.
2005	0.	4302.	4302.	130723.	33663.	164387.	38667.	160084.	121418.
2006	0.	4535.	4535.	140449.	33663.	174113.	42135.	169578.	127443.
2007	0.	4780.	4780.	150553.	33663.	184217.	45166.	179437.	134271.
2008	0.	5037.	5037.	161052.	33663.	194715.	48316.	189678.	141362.
2009	-83486.	-112851.	-196337.	171963.	33663.	205626.	51589.	401964.	350375.
	349218.	-0.	349218.	1619993.	488117.	2108110.	386123.	1758894.	1372771.

INTERNAL RATE OF RETURN

ON (4) BFR-TAX NET IN-FLOW (2)-(1) 16.68 PER CENT

ON (5) AFT-TAX NET IN-FLOW (4)-(3) 14.66 PER CENT

Table VI-23

* * * PULP PROJECT IN URUGUAY * * *
NET PRESENT VALUE (IN CONSTANT PRICE)
CASE 2 - LBKP: 100% (AVERAGE) - (USD 1000)

YEAR	FIXED CAPITAL EXPEND.	CHANGE IN WORKING CAPITAL	(1) GROSS CAPITAL EXPENDTR	OPERATING PROFIT	DEPRECIATN	(2) GROSS CASH IN-FLOW	(3) INCOME TAX	(4) BFR-TAX NET IN-FLOW (2)-(1)	(5) AFT-TAX NET IN-FLOW (4)-(3)	DISCOUNT RATE
1991	115088.	1572.	116660.	0.	0.	0.	0.	-116660.	-116660.	1.000
1992	136506.	2015.	138601.	0.	0.	0.	0.	-138601.	-138601.	1.100
1993	81991.	1101.	83092.	0.	0.	0.	0.	-83092.	-83092.	1.210
1994	18020.	92.	18112.	0.	0.	0.	0.	-18112.	-18112.	1.331
1995	12765.	18816.	31581.	6669.	9458.	16127.	0.	-15454.	-15454.	1.464
1996	0.	6966.	6966.	27238.	16378.	43616.	674.	36650.	35976.	1.611
1997	0.	2881.	2881.	35516.	14180.	49695.	4164.	46814.	42651.	1.772
1998	0.	64.	64.	33675.	12277.	45952.	4482.	45888.	41406.	1.949
1999	0.	-76.	-76.	31339.	10629.	41969.	5057.	42045.	36987.	2.144
2000	0.	811.	811.	24292.	9203.	33495.	4128.	32684.	28556.	2.358
2001	0.	-113.	-113.	22552.	7968.	30520.	4551.	30633.	26082.	2.594
2002	0.	-94.	-94.	21241.	6899.	28140.	4906.	28234.	23328.	2.853
2003	0.	-79.	-79.	19932.	5973.	25905.	5101.	25983.	20883.	3.138
2004	0.	-65.	-65.	10643.	5171.	23814.	5170.	23879.	18709.	3.452
2005	0.	-54.	-54.	17386.	4477.	21864.	5143.	21918.	16775.	3.797
2006	0.	-45.	-45.	16173.	3876.	20050.	4852.	20094.	15243.	4.177
2007	0.	-37.	-37.	15010.	3356.	18366.	4503.	18403.	13900.	4.595
2008	0.	-30.	-30.	13902.	2906.	16808.	4171.	16838.	12668.	5.054
2009	-6239.	-8856.	-15095.	12852.	2516.	15368.	3856.	30463.	26607.	5.560
	358210.	24869.	383078.	316422.	115266.	431688.	60758.	48610.	-12148.	

Table VI-24

* * * PULP PROJECT IN URUGUAY * * *
PROFITABILITY AND FINANCIAL INDICATORS
CASE 2 - LBKP: 100% (AVERAGE) - (USD 1000)

YEAR	(1) AFT TAX PROFIT -TO- SALES REV (PCT)	(2) AFT TAX PROFIT -TO- S/H EQUITY (PCT)	(3) BFR TAX PROFIT -TO- INVESTMENT (PCT)	(4) AFT TAX PROFIT -TO- S/CAPITAL (PCT)	(5) CURRENT RATIO	(6) QUICK RAITO	(7) DEBT SERVICE RATIO	(8) L/T DEBT -TO- S/H EQUITY	(9)* PROFIT B.E.P. CAPACITY UTILIZE (PCT)	(10)* CASH B.E.P. SALES PRICE (PRICE)	(11)* CASH B.E.P. CAPACITY UTILIZE (PCT)
1995	-0.9	-0.2	-0.1	-0.2	7.84	5.10	2.33	70 / 30	36.2	546.3	23.1
1996	2.0	1.7	0.8	1.8	7.12	5.07	1.72	70 / 30	87.6	538.2	63.5
1997	11.6	11.0	5.8	12.6	1.85	1.36	2.10	66 / 34	79.2	488.8	57.6
1998	13.6	12.1	7.2	15.6	1.11	0.82	1.39	59 / 41	75.4	608.7	73.5
1999	16.9	13.6	9.3	20.4	1.16	0.86	1.09	50 / 50	69.4	756.6	92.0
2000	15.2	11.3	8.8	19.2	1.24	0.91	1.08	41 / 59	73.4	814.0	95.0
2001	18.4	12.6	11.2	24.5	1.29	0.95	1.19	30 / 70	66.7	800.2	87.2
2002	21.8	13.6	14.0	30.4	1.34	0.98	1.33	18 / 82	60.5	787.3	80.0
2003	25.0	14.0	16.8	36.6	1.38	1.02	1.51	6 / 94	54.8	775.6	73.4
2004	27.9	14.1	19.6	42.8	2.39	1.77	1.73	0 / 100	49.5	765.0	67.3
2005	30.5	13.9	22.5	49.2	7.22	5.36	3.88	0 / 100	44.8	600.8	43.5
2006	31.6	13.2	24.6	53.6	7.20	5.35	********	0 / 100	42.7	501.0	28.9
2007	32.3	12.4	26.3	57.4	7.18	5.34	********	0 / 100	41.5	521.0	28.4
2008	32.9	11.7	28.2	61.5	7.16	5.34	********	0 / 100	40.4	542.4	27.9
2009	33.5	11.1	30.1	65.6	7.14	5.33	********	0 / 100	39.4	565.2	27.5
AVERAGE1	20.8	11.1	15.0	32.7	4.17	3.04	********	27 / 73	57.4	640.7	57.9
AVERAGE2	24.0	11.3	12.9	27.7	2.37	1.72	2.26	31 / 69			

(AVERAGE1) : SUM OF ANNUAL FIGURES OF PERCENTAGE AND RATIO IS DIVIDED BY NO. OF YEARS(SIMPLE AVERAGE)
(AVERAGE2) : AVERAGE FIGURES ARE CALCULATED BY ACTUAL VALUES ACCUMULATED OVER THE PROJECT LIFE(WEIGHTED AVERAGE)
* NOTE FOR (9)(10)(11)
WHEN THERE ARE TWO OR MORE PRODUCTS, AND DURING THE YEARS WHEN ALL OF PRODUCTS ARE NOT PRODUCED AT THE SAME RATE OF CAPACITY UTILIZATION, ABOVE BREAK-EVEN-POINTS CANNOT GIVE CORRECT FIGURES.

Table VI-25

* * * PULP PROJECT IN URUGUAY * * *
FINANCIAL RATE OF RETURN (IN CONSTANT PRICE)
CASE 3 - LBKP: 100% (GLOBULUS) - (USD 1000)

YEAR	FIXED CAPITAL EXPEND.	CHANGE IN WORKING CAPITAL	(1) GROSS CAPITAL EXPENDTR	OPERATING PROFIT	DEPRECIATN	(2) GROSS CASH IN-FLOW	(3) INCOME TAX	(4) BFR-TAX NET IN-FLOW (2)-(1)	(5) AFT-TAX NET IN-FLOW (4)-(3)	DEFLATOR
1991	114965.	1572.	116537.	0.	0.	0.	0.	-116537.	-116537.	1.000
1992	150066.	2217.	152282.	0.	0.	0.	0.	-152282.	-152282.	1.050
1993	99091.	1333.	100424.	0.	0.	0.	0.	-100424.	-100424.	1.102
1994	23956.	122.	24078.	0.	0.	0.	0.	-24078.	-24078.	1.158
1995	18667.	27546.	46213.	10497.	13834.	24331.	110.	-21882.	-21993.	1.216
1996	0.	11219.	11219.	46411.	26350.	72761.	1859.	61542.	59683.	1.276
1997	0.	5104.	5104.	65793.	25095.	90889.	8248.	85784.	77536.	1.340
1998	0.	124.	124.	68520.	23900.	92420.	9613.	92296.	82683.	1.407
1999	0.	-163.	-163.	70074.	22762.	92836.	11717.	92999.	81282.	1.477
2000	0.	1911.	1911.	60183.	21678.	81861.	10611.	79950.	69340.	1.551
2001	0.	-292.	-292.	61396.	20646.	82042.	12679.	82334.	69654.	1.629
2002	0.	-268.	-268.	63502.	19663.	83165.	14871.	83434.	68563.	1.710
2003	0.	-246.	-246.	65452.	18727.	84179.	16880.	84425.	67545.	1.796
2004	0.	-225.	-225.	67254.	17835.	85089.	18718.	85315.	66596.	1.886
2005	0.	-206.	-206.	68918.	16986.	85903.	20398.	86109.	65711.	1.980
2006	0.	-187.	-187.	70451.	16177.	86627.	21135.	86815.	65680.	2.079
2007	0.	-170.	-170.	71861.	15406.	87267.	21558.	87437.	65879.	2.183
2008	0.	-154.	-154.	73156.	14673.	87828.	21947.	87982.	66036.	2.292
2009	-34683.	-49236.	-83919.	74342.	13974.	88316.	22303.	172235.	149932.	2.407
	372062.	-0.	372061.	937818.	287705.	1225513.	212646.	853453.	640807.	

INTERNAL RATE OF RETURN

ON (4) BFR-TAX NET IN-FLOW (2)-(1) 11.92 PER CENT

ON (5) AFT-TAX NET IN-FLOW (4)-(3) 9.95 PER CENT

Table VI-26

* * * PULP PROJECT IN URUGUAY * * *
FINANCIAL RATE OF RETURN (IN CURRENT PRICE)
CASE 3 - LBKP: 100% (GLOBULUS) - (USD 1000)

YEAR	FIXED CAPITAL EXPEND.	CHANGE IN WORKING CAPITAL	(1) GROSS CAPITAL EXPENDTR	OPERATING PROFIT	DEPRECIATN	(2) GROSS CASH IN-FLOW	(3) INCOME TAX	(4) BFR-TAX NET IN-FLOW (2)-(1)	(5) AFT-TAX NET IN-FLOW (4)-(3)
1991	114965.	1572.	116537.	0.	0.	0.	0.	-116537.	-116537.
1992	157569.	2406.	159975.	0.	0.	0.	0.	-159975.	-159975.
1993	109248.	1668.	110916.	0.	0.	0.	0.	-110916.	-110916.
1994	27732.	423.	28156.	0.	0.	0.	0.	-28156.	-28156.
1995	22690.	33786.	56476.	12759.	16815.	29574.	134.	-26901.	-27036.
1996	0.	16311.	16311.	59233.	33630.	92863.	2372.	76552.	74180.
1997	0.	9649.	9649.	88169.	33630.	121799.	11053.	112150.	101097.
1998	0.	3466.	3466.	96414.	33630.	130044.	13527.	126578.	113052.
1999	0.	3223.	3223.	103531.	33630.	137161.	17311.	133938.	116627.
2000	0.	6590.	6590.	93363.	33630.	126993.	16461.	120404.	103943.
2001	0.	3479.	3479.	100007.	33630.	133637.	20653.	130158.	109504.
2002	0.	3670.	3670.	108610.	33630.	142240.	25434.	138571.	113137.
2003	0.	3870.	3870.	117542.	33630.	151172.	30313.	147302.	116989.
2004	0.	4081.	4081.	126818.	33630.	160448.	35296.	156367.	121071.
2005	0.	4302.	4302.	136452.	33630.	170082.	40386.	165779.	125394.
2006	0.	4535.	4535.	146461.	33630.	180091.	43938.	175556.	131617.
2007	0.	4780.	4780.	156862.	33630.	190492.	47059.	185712.	138653.
2008	0.	5038.	5038.	167673.	33630.	201303.	50302.	196265.	145963.
2009	-83469.	-112848.	-196318.	178911.	33630.	212541.	53673.	408859.	355185.
	348735.	-0.	348734.	1692804.	487634.	2180436.	407913.	1831704.	1423792.

INTERNAL RATE OF RETURN

ON (4) BFR-TAX NET IN-FLOW (2)-(1) 17.15 PER CENT

ON (5) AFT-TAX NET IN-FLOW (4)-(3) 15.04 PER CENT

Table VI-27

* * * PULP PROJECT IN URUGUAY * * *
NET PRESENT VALUE (IN CONSTANT PRICE)
CASE 3 - LBKP: 100% (GLOBULUS) - (USD 1000)

YEAR	FIXED CAPITAL EXPEND.	CHANGE IN WORKING CAPITAL	(1) GROSS CAPITAL EXPENDTR	OPERATING PROFIT	DEPRECIATN	(2) GROSS CASH IN-FLOW	(3) INCOME TAX	(4) BFR-TAX NET IN-FLOW (2)-(1)	(5) AFT-TAX NET IN-FLOW (4)-(3)	DISCOUNT RATE
1991	114965.	1572.	116537.	0.	0.	0.	0.	-116537.	-116537.	1.000
1992	136424.	2015.	138439.	0.	0.	0.	0.	-138439.	-138439.	1.100
1993	81894.	1101.	82995.	0.	0.	0.	0.	-82995.	-82995.	1.210
1994	17999.	92.	18090.	0.	0.	0.	0.	-18090.	-18090.	1.331
1995	12750.	18814.	31564.	7170.	9449.	16618.	75.	-14946.	-15021.	1.464
1996	0.	6966.	6966.	28817.	16361.	45179.	1154.	38213.	37059.	1.611
1997	0.	2881.	2881.	37139.	14166.	51304.	4656.	48423.	43767.	1.772
1998	0.	64.	64.	35162.	12265.	47426.	4933.	47362.	42429.	1.949
1999	0.	-76.	-76.	32690.	10619.	43309.	5466.	43385.	37919.	2.144
2000	0.	810.	810.	25524.	9194.	34717.	4500.	33907.	29407.	2.358
2001	0.	-113.	-113.	23671.	7960.	31631.	4888.	31743.	26855.	2.594
2002	0.	-94.	-94.	22257.	6892.	29149.	5212.	29243.	24031.	2.853
2003	0.	-78.	-78.	20855.	5967.	26822.	5378.	26900.	21522.	3.138
2004	0.	-65.	-65.	19481.	5166.	24647.	5422.	24713.	19291.	3.452
2005	0.	-54.	-54.	18148.	4473.	22621.	5371.	22675.	17304.	3.797
2006	0.	-45.	-45.	16865.	3873.	20738.	5060.	20783.	15723.	4.177
2007	0.	-37.	-37.	15639.	3353.	18992.	4692.	19029.	14337.	4.595
2008	0.	-30.	-30.	14473.	2903.	17376.	4342.	17407.	13065.	5.054
2009	-6238.	-8855.	-15094.	13371.	2513.	15884.	4011.	30978.	26967.	5.560
	357792.	24867.	382659.	331263.	115152.	446415.	65162.	63755.	-1406.	

Table VI-28 * * * PULP PROJECT IN URUGUAY * * *
PROFITABILITY AND FINANCIAL INDICATORS
CASE 3 - LBKP: 100% (GLOBULUS) - (USD 1000)

YEAR	(1) AFT TAX PROFIT -TO- SALES REV (PCT)	(2) AFT TAX PROFIT -TO- S/H EQUITY (PCT)	(3) BFR TAX PROFIT -TO- INVESTMENT (PCT)	(4) AFT TAX PROFIT -TO- S/CAPITAL (PCT)	(5) CURRENT RATIO	(6) QUICK RAITO	(7) DEBT SERVICE RATIO	(8) L/T DEBT -TO- S/H EQUITY	(9)* PROFIT B.E.P. CAPACITY UTILIZE (PCT)	(10)* CASH B.E.P. SALES PRICE (PRICE)	(11)* CASH B.E.P. CAPACITY UTILIZE (PCT)
1995	0.6	0.2	0.1	0.2	8.51	5.57	2.39	70 / 30	35.3	532.2	22.4
1996	3.4	2.9	1.4	3.0	7.72	5.54	1.76	69 / 31	85.3	523.8	61.8
1997	13.0	12.0	6.5	14.1	1.88	1.39	2.16	65 / 35	77.3	474.4	56.2
1998	15.0	12.8	7.9	17.2	1.11	0.83	1.42	58 / 42	73.5	593.6	71.7
1999	18.3	14.1	10.1	22.0	1.16	0.86	1.12	49 / 51	67.7	740.7	89.8
2000	16.6	11.8	9.6	21.0	1.25	0.92	1.11	40 / 60	71.6	797.3	92.7
2001	19.8	12.9	12.1	26.3	1.29	0.96	1.22	29 / 71	65.0	782.7	85.0
2002	23.2	13.7	14.8	32.4	1.34	1.00	1.38	17 / 83	59.0	769.0	78.0
2003	26.3	14.0	17.7	38.6	1.39	1.03	1.56	6 / 94	53.4	756.4	71.6
2004	29.2	14.1	20.6	44.9	2.44	1.82	1.78	0 / 100	48.3	744.8	65.6
2005	31.8	13.9	23.6	51.4	7.84	5.85	4.00	0 / 100	43.7	579.8	42.4
2006	33.0	13.1	25.6	55.9	7.81	5.84	********	0 / 100	41.7	479.1	28.2
2007	33.6	12.3	27.5	59.9	7.79	5.84	********	0 / 100	40.5	498.0	27.7
2008	34.2	11.6	29.4	64.0	7.77	5.83	********	0 / 100	39.4	518.2	27.2
2009	34.8	11.0	31.3	68.3	7.75	5.83	********	0 / 100	38.4	539.9	26.8
AVERAGE1	22.2	11.4	15.9	34.6	4.47	3.27	********	27 / 73	56.0	622.0	56.5
AVERAGE2	25.3	11.4	13.7	29.4	2.41	1.77	2.33	30 / 70			

(AVERAGE1) : SUM OF ANNUAL FIGURES OF PERCENTAGE AND RATIO IS DIVIDED BY NO. OF YEARS(SIMPLE AVERAGE)
(AVERAGE2) : AVERAGE FIGURES ARE CALCULATED BY ACTUAL VALUES ACCUMULATED OVER THE PROJECT LIFE(WEIGHTED AVERAGE)
* NOTE FOR (9)(10)(11)
WHEN THERE ARE TWO OR MORE PRODUCTS, AND DURING THE YEARS WHEN ALL OF PRODUCTS ARE NOT PRODUCED AT THE SAME RATE OF CAPACITY UTILIZATION, ABOVE BREAK-EVEN-POINTS CANNOT GIVE CORRECT FIGURES.

Table IV-29 * * * PULP PROJECT IN URUGUAY * * *

ECONOMIC RATE OF RETURN (IN CONSTANT PRICE)

ECONOMIC - LBKP: 100% (GLOBULUS) - (USD 1000)

YEAR	FIXED CAPITAL EXPEND.	CHANGE IN WORKING CAPITAL	(1) GROSS CAPITAL EXPENDTR	OPERATING PROFIT	DEPRECIATN	(2) GROSS CASH IN-FLOW	(3) INCOME TAX	(4) BFR-TAX NET IN-FLOW (2)-(1)	(5) AFT-TAX NET IN-FLOW (4)-(3)	DEFLATOR
1991	123369.	1572.	124941.	0.	0.	0.	0.	-124941.	-124941.	1.000
1992	162316.	2217.	164532.	0.	0.	0.	0.	-164532.	-164532.	1.050
1993	107180.	1333.	108513.	0.	0.	0.	0.	-108513.	-108513.	1.102
1994	25912.	122.	26034.	0.	0.	0.	0.	-26034.	-26034.	1.158
1995	20191.	26834.	47025.	15996.	10502.	26497.	0.	-20527.	-20527.	1.216
1996	0.	11209.	11209.	62024.	20003.	82027.	0.	70818.	70818.	1.276
1997	0.	5126.	5126.	82215.	19051.	101266.	0.	96140.	96140.	1.340
1998	0.	147.	147.	84739.	18143.	102882.	0.	102736.	102736.	1.407
1999	0.	-142.	-142.	86030.	17279.	103309.	0.	103451.	103451.	1.477
2000	0.	-29.	-29.	86666.	16457.	103123.	0.	103151.	103151.	1.551
2001	0.	-25.	-25.	87209.	15673.	102882.	0.	102907.	102907.	1.629
2002	0.	-21.	-21.	87712.	14927.	102639.	0.	102660.	102660.	1.710
2003	0.	-18.	-18.	88177.	14216.	102393.	0.	102411.	102411.	1.796
2004	0.	-15.	-15.	88606.	13539.	102145.	0.	102160.	102160.	1.886
2005	0.	-12.	-12.	89001.	12894.	101895.	0.	101907.	101907.	1.980
2006	0.	-9.	-9.	89362.	12280.	101642.	0.	101651.	101651.	2.079
2007	0.	-6.	-6.	89692.	11695.	101387.	0.	101393.	101393.	2.183
2008	0.	-3.	-3.	89992.	11139.	101130.	0.	101133.	101133.	2.292
2009	-40025.	-48279.	-88304.	90262.	10608.	100870.	0.	189174.	189174.	2.407
	398942.	-0.	398941.	1217682.	218406.	1436087.	0.	1037147.	1037147.	

INTERNAL RATE OF RETURN

ON (4) BFR-TAX NET IN-FLOW (2)-(1) 12.99 PER CENT

ON (5) AFT-TAX NET IN-FLOW (4)-(3) 12.99 PER CENT

Table VI-30 * * * PULP PROJECT IN URUGUAY * * *

ECONOMIC RATE OF RETURN (IN CURRENT PRICE)

ECONOMIC - LBKP: 100% (GLOBULUS) - (USD 1000)

YEAR	FIXED CAPITAL EXPEND.	CHANGE IN WORKING CAPITAL	(1) GROSS CAPITAL EXPENDTR	OPERATING PROFIT	DEPRECIATN	(2) GROSS CASH IN-FLOW	(3) INCOME TAX	(4) BFR-TAX NET IN-FLOW (2)-(1)	(5) AFT-TAX NET IN-FLOW (4)-(3)
1991	123369.	1572.	124941.	0.	0.	0.	0.	-124941.	-124941.
1992	170432.	2406.	172838.	0.	0.	0.	0.	-172838.	-172838.
1993	118166.	1668.	119834.	0.	0.	0.	0.	-119834.	-119834.
1994	29996.	423.	30419.	0.	0.	0.	0.	-30419.	-30419.
1995	24542.	32920.	57462.	19443.	12765.	32208.	0.	-25254.	-25254.
1996	0.	16255.	16255.	79160.	25530.	104690.	0.	88434.	88434.
1997	0.	9632.	9632.	110176.	25530.	135706.	0.	126074.	126074.
1998	0.	3450.	3450.	119236.	25530.	144765.	0.	141315.	141315.
1999	0.	3207.	3207.	127105.	25530.	152634.	0.	149428.	149428.
2000	0.	3532.	3532.	134447.	25530.	159977.	0.	156444.	156444.
2001	0.	3713.	3713.	142053.	25530.	167583.	0.	163870.	163870.
2002	0.	3902.	3902.	150016.	25530.	175546.	0.	171644.	171644.
2003	0.	4101.	4101.	158353.	25530.	183882.	0.	179781.	179781.
2004	0.	4311.	4311.	167080.	25530.	192609.	0.	188298.	188298.
2005	0.	4531.	4531.	176214.	25530.	201744.	0.	197213.	197213.
2006	0.	4763.	4763.	185777.	25530.	211306.	0.	206543.	206543.
2007	0.	5006.	5006.	195785.	25530.	221315.	0.	216309.	216309.
2008	0.	5262.	5262.	206261.	25530.	231790.	0.	226528.	226528.
2009	-96325.	-110655.	-206980.	217225.	25530.	242754.	0.	449735.	449735.
	370179.	-0.	370179.	2188327.	370179.	2558506.	0.	2188328.	2188328.

INTERNAL RATE OF RETURN

ON (4) BFR-TAX NET IN-FLOW (2)-(1) 18.33 PER CENT

ON (5) AFT-TAX NET IN-FLOW (4)-(3) 18.33 PER CENT

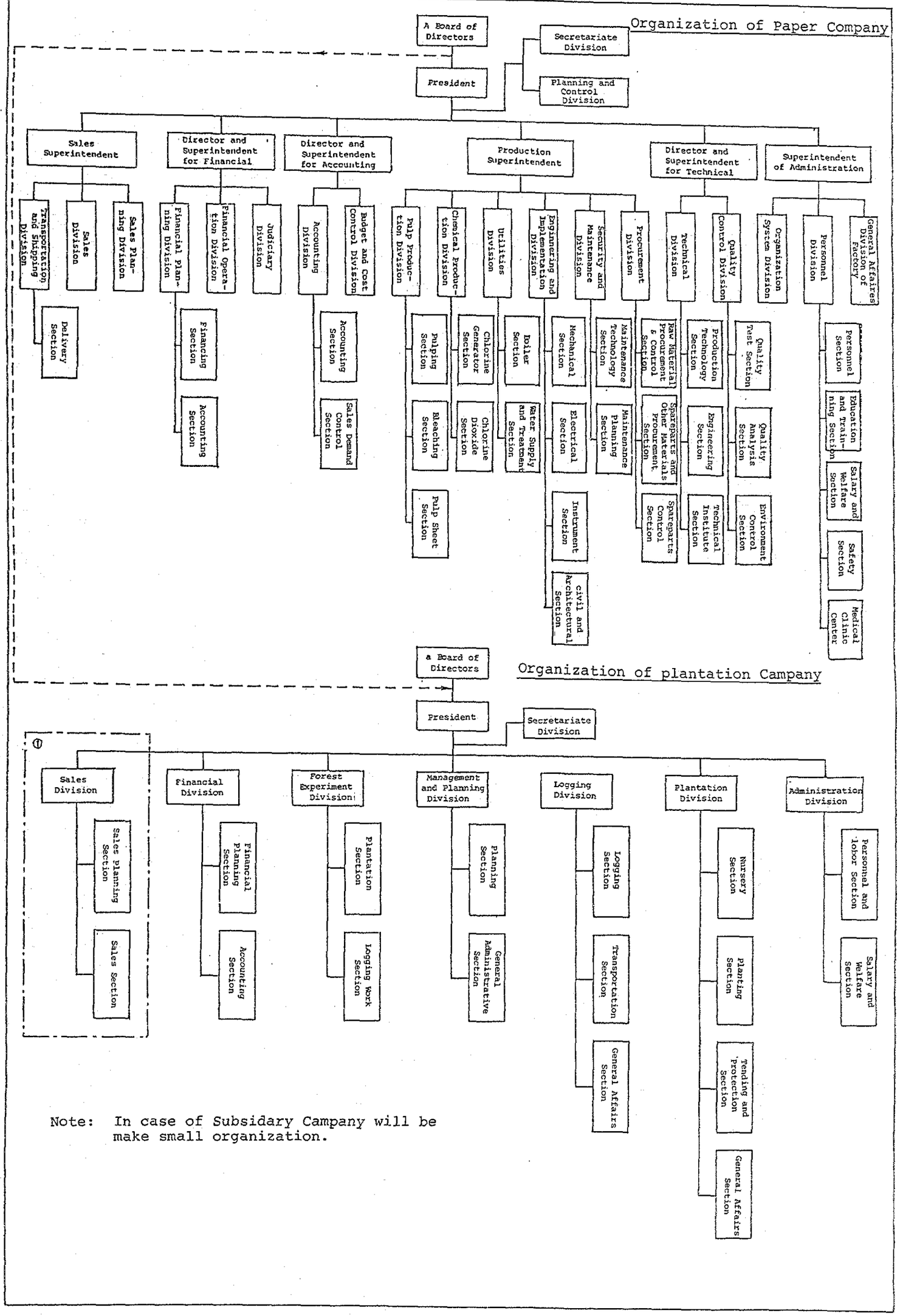
Table VI-31 * * * PULP PROJECT IN URUGUAY * * *

ECONOMIC NET PRESENT VALUE (IN CONSTANT PRICE)

ECONOMIC - LBKP: 100% (GLOBULUS) - (USD 1000)

YEAR	FIXED CAPITAL EXPEND.	CHANGE IN WORKING CAPITAL	(1) GROSS CAPITAL EXPENDTR	OPERATING PROFIT	DEPRECIATN	(2) GROSS CASH IN-FLOW	(3) INCOME TAX	(4) BFR-TAX NET IN-FLOW (2)-(1)	(5) AFT-TAX NET IN-FLOW (4)-(3)	DISCOUNT RATE
1991	123369.	1572.	124941.	0.	0.	0.	0.	-124941.	-124941.	1.000
1992	147560.	2015.	149575.	0.	0.	0.	0.	-149575.	-149575.	1.100
1993	88579.	1101.	89680.	0.	0.	0.	0.	-89680.	-89680.	1.210
1994	19468.	92.	19559.	0.	0.	0.	0.	-19559.	-19559.	1.331
1995	13791.	18328.	32118.	10925.	7173.	18098.	0.	-14020.	-14020.	1.464
1996	0.	6960.	6960.	38512.	12420.	50933.	0.	43973.	43973.	1.611
1997	0.	2894.	2894.	46408.	10754.	57162.	0.	54268.	54268.	1.772
1998	0.	75.	75.	43485.	9310.	52795.	0.	52720.	52720.	1.949
1999	0.	-66.	-66.	40134.	8061.	48195.	0.	48261.	48261.	2.144
2000	0.	-12.	-12.	36755.	6979.	43734.	0.	43746.	43746.	2.358
2001	0.	-10.	-10.	33623.	6043.	39666.	0.	39675.	39675.	2.594
2002	0.	-8.	-8.	30743.	5232.	35974.	0.	35982.	35982.	2.853
2003	0.	-6.	-6.	28096.	4530.	32626.	0.	32631.	32631.	3.138
2004	0.	-4.	-4.	25666.	3922.	29588.	0.	29592.	29592.	3.452
2005	0.	-3.	-3.	23437.	3395.	26832.	0.	26835.	26835.	3.797
2006	0.	-2.	-2.	21393.	2940.	24332.	0.	24335.	24335.	4.177
2007	0.	-1.	-1.	19520.	2545.	22065.	0.	22066.	22066.	4.595
2008	0.	-1.	-1.	17804.	2204.	20008.	0.	20009.	20009.	5.054
2009	-7199.	-8683.	-15882.	16234.	1908.	18142.	0.	34025.	34025.	5.560
	385567.	24240.	409807.	432734.	87415.	520150.	0.	110344.	110344.	

Figure VI-1 ORGANIZATION OF PAPER COMPANY AND PLANTATION COMPANY



Note: In case of Subsidary Campany will be make small organization.

Figure VI-2 SENSITIVITY ANALYSIS ON THE MAJOR FINANCIAL FACTORS
(AFTER TAX FOR CASE 3)

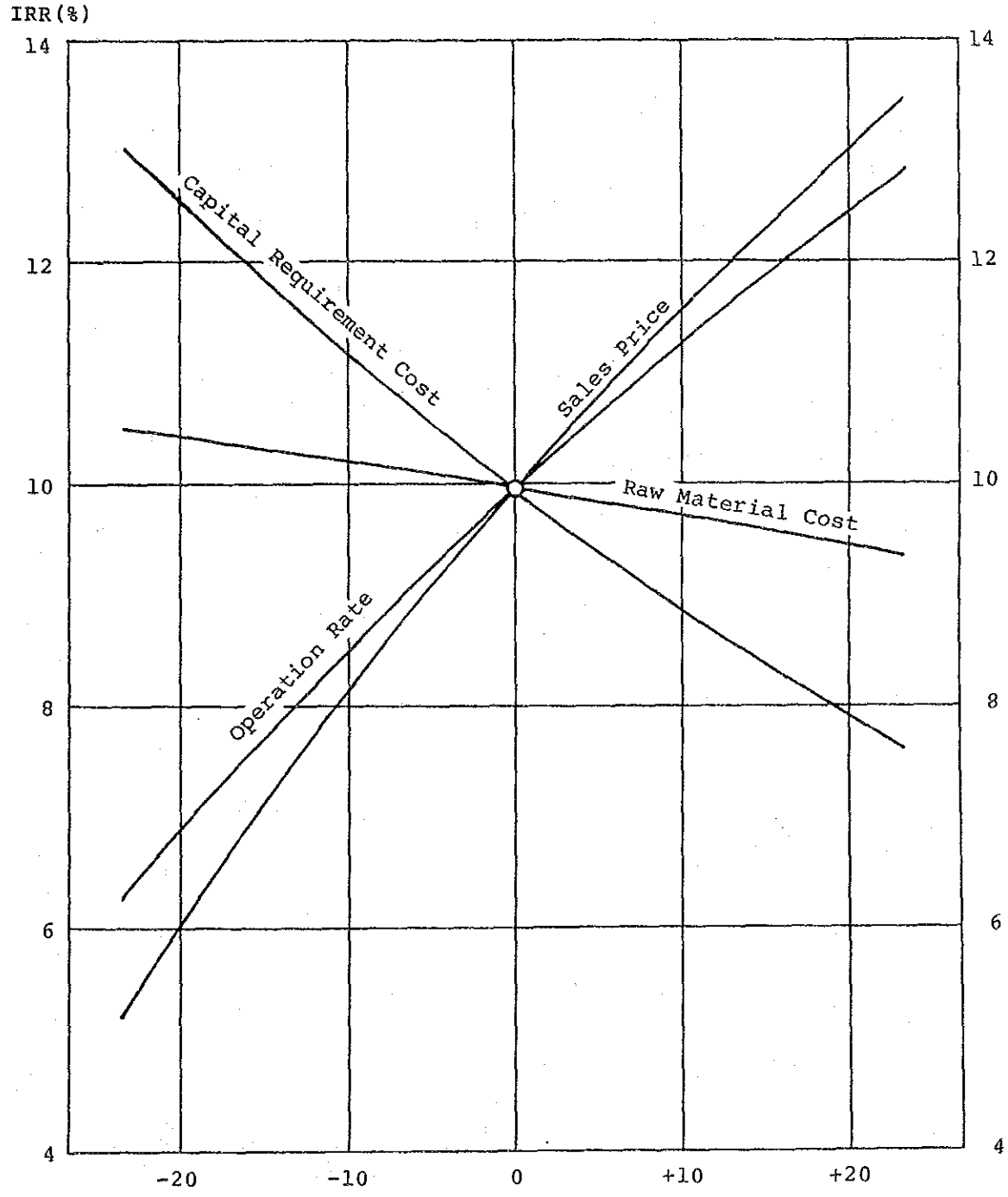
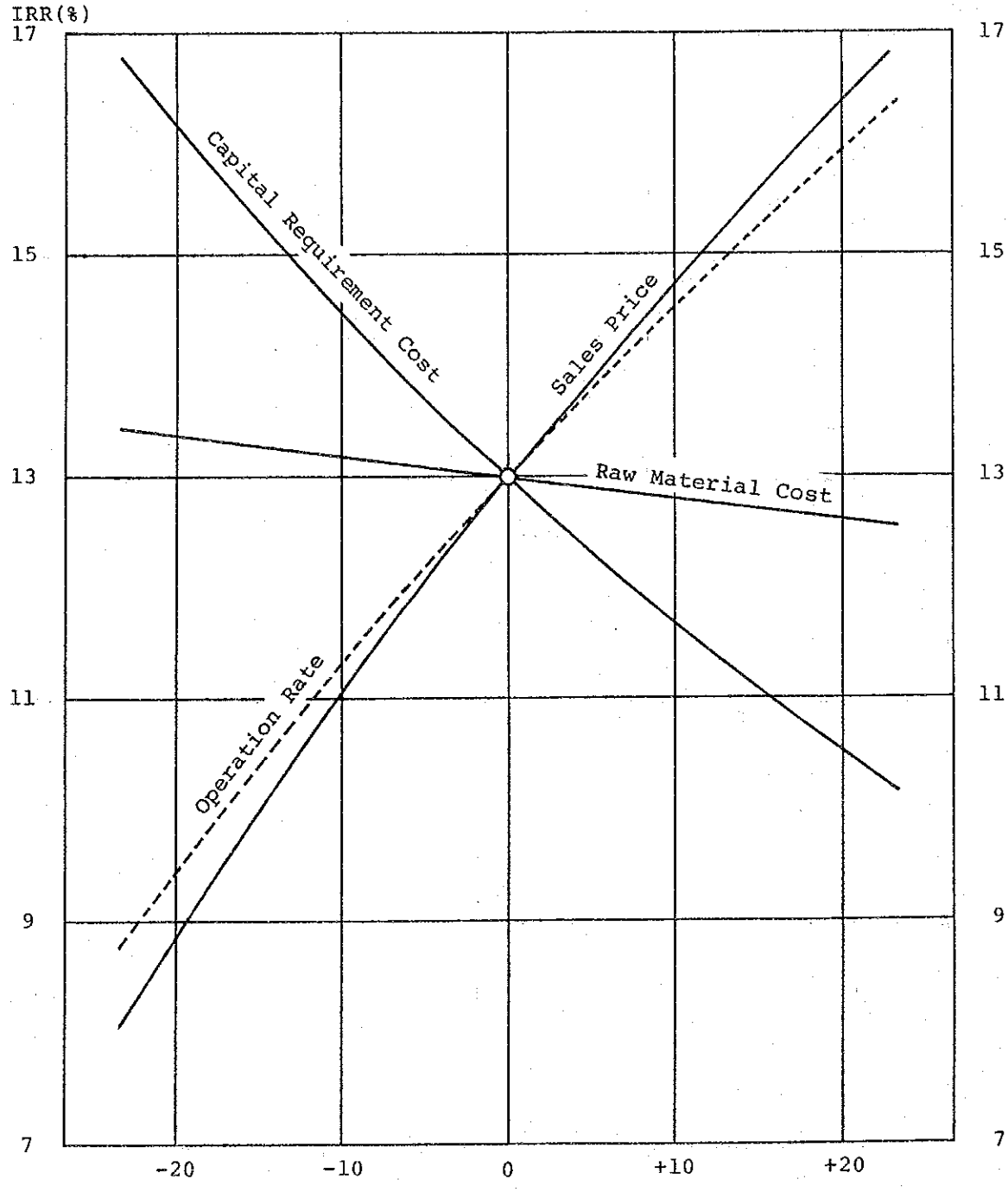


Figure VI-3 SENSITIVITY ANALYSIS ON THE MAJOR ECONOMIC FACTORS
(AFTER TAX FOR CASE 3)



PART VII

CONCLUSION AND RECOMMENDATION

Part VII CONCLUSION AND RECOMMENDATION

In the foregoing Parts of this study report, an analyses on the subjects of market situation, forest resources & supply of pulp wood, the basic design of the mill, the capital requirement & financial planning, and financial & economic analysis are presented. The following are the conclusion and recommendation based on those analysis.

Chapter 1 Conclusion

(1) In view of international conditions of, and outlook for pulp production, the proposed pulp manufacturing project in Uruguay, for supply of its product to international markets, can be considered as feasible.

The proposed production capacity of 750 T/D is reasonable in consideration of international market especially in West Europe, which could absorb the supply of BKP, and also to secure a competitive price in the international market.

(2) The optimum plant site would be at Fray Bentos. The reasons for this selection are convenience in receiving supply of pulp wood, the condition of harbor facilities to export the products and ample area easily available for the mill.

(3) In view of the above circumstances, a Barge-mounted mill has no merit in comparison with conventional on-land construction. A Barge-mounted mill would require higher construction costs. It was, therefore, decided to adopt the conventional method to assemble and to construct machinery and equipment at the site.

(4) Pulping tests to examine six species of trees were performed in Japan. All were found suitable to make pulp. But there are big differences in growth rate, volumetric weight, consumption of chemicals and wood price at-factory as shown below.

	globulus	grandis	Populus	Average of L-wood	Taeda	Elliottii	Average of N-wood	L 50% N 50%
Volumetric Weight t/m^3	0.555	0.410	0.361	0.481	0.375	0.355	0.365	
Price[1] Ex-factory US$/m^3	15.39 (13.64)	15.39 (13.64)	14.59 (12.84)	15.23	20.15 (16.16)	20.15 (16.16)	20.15 (16.16)	
US$/t	27.73	37.54	40.42	31.64	53.73	56.76	55.21	
Production Q'ty AD t/d	805	805	805	805	705	705	705	
Required Q'ty wood BD t/d	1,607	1,607	1,607	1,607	1,672	1,672	1,672	
Unit rate BDt/ADt	2.00	2.00	2.00	2.00	2.37	2.37	2.37	
Required Q'ty wood m^3/d	2,895	3,920	4,451	3,341	4,459	4,710	4,581	
Required Area[2] ha	48,025	63,788	73,938	-	129,938	143,688		95,908

Notes: 1) Figures are with a discount rate of 12%; figures inside parentheses are with a discount rate of 8%. In both cases the cost of land is US$225/ha.

2) Afforestation area is 80% of whole area and the location of it is within 150 km from Fray Bentos in three prefectures, Rio Negro, Soriano and Colonia. Recommendated area for afforestation totals 397,807 ha, and can easily cover the required area for these Q'ty.

(5) Price of pulp in 1985, FOB was taken as US$407/T for LBKP and US$439/T for NBKP.

(6) For the comparison, a study was done for the following four cases; the Base Case is based on the proposal in the report of research for development of paper and pulp industry, (1980), production of BKP 750 T/D (N:L = 50:50).

Base Case: N:L ratio of raw material wood 50:50
(L wood used, 4 species)

Case 1 : N:L ratio = 50:50
(L wood was limited to globulus only)

Case 2 : N:L ratio = 0:100
(L wood used, 4 species)

Case 3 : N:L ratio = 0:100
(L wood limited to globulus only)

The annual production capacities are as follows.

	Production Capacity (ADt/D)	Annual Working Days (days)	Annual Production (ADt/Y)	Pulpwood Volume (M3/D)	Consumption Weight (BDt/D)
Base Case					
N in average	705	181	127,500	4,581	1,672
L in average	805	159	127,500	3,341	1,607
Total	750	340	255,000		
Case 1					
N in average	705	181	127,500	4,581	1,672
L was globulus	805	159	127,500	2,895	1,607
Total	750	340	255,000		
Case 2					
L in average	805	340	273,700	3,341	1,607
Case 3					
L was globulus	805	340	273,700	2,895	1,607

For reference, due to the difference of growth rate in case of L-wood only cutting can be started 8 years after planting and in case of N-wood it can be started 11 years after planting. For this reason if N-wood is included, production of BKP is estimated to start in 1998, while in the case of L-wood only, it can be started in 1995.

(7) Total capital requirement

As shown below there are almost no differences in total capital requirement between the four cases at Base Project Cost. But there are big difference in price contingency and interest during construction between a case of L:N = 50:50 and a case of L = 100%. Such difference is caused by the difference of three years to the start of operation.

Escalated Capital Cost Estimate

(Unit: Million US$)

Case / Product		Base Case N:L = 50:50	Case 1 N:L = 50:50	Case 2 L = 100	Case 3 L = 100
1. Base project cost	F	220.2	220.2	220.2	220.2
	L	68.12	68.02	67.22	66.92
	T	288.32	288.22	287.42	287.12
2. Physical contingency	F	22.1	22.1	22.1	22.1
	L	6.8	6.8	6.8	6.7
	T	28.9	28.9	28.9	28.8
3. Price contingency	F	144.3	144.3	91.9	91.9
	L	48.1	48.0	30.9	30.8
	T	192.4	192.3	122.8	122.7
4. Initial working capital	F	0	0	0	0
	L	38.9	38.9	33.5	33.5
	T	38.9	38.9	33.5	33.5
5. Interest during construction	F	161.4	161.2	138.9	138.9
	L	0	0	0	0
	T	161.4	161.2	138.9	138.9
Total	F	548.0	547.80	473.1	473.1
	L	161.92	161.72	138.42	137.92
	T	709.92	709.52	611.52	611.02

Notes: F = Foreign, L = Local, T = Total

(8) Result of financial analysis

Results of calculations of FRR and NPV of each case are as indicated in Table VI-6 in the Part VI. As is evident Table VI-6, in spite of the fact that LBKP is cheaper than NBKP in terms of price of product, L 100% is the more profitable than a mixture including N50%; especially in the case of globulus 100% is the most profitable. This is due to the cheaper price of L-wood and the influence of higher annual production quantity with the same plant.

In the Base Case and Alternative Case 1 in which L and N are used, the FRR is less than 8% in constant prices after tax and it seems unattractive from the viewpoint of profitability but in the case of L-wood 100% seems in the general range of feasibility, but of course this depends on the cost of financing. From the viewpoint of cash flow, in the case of globulus

100%, after starting of repayment (3 years of grace period) of the long-term loan, for several years, the financial ratio (debt repayment ability 1.11) and quick ratio are low, but there is no problem during the whole life period.

The result of sensitivity analysis is shown in Figure VI-2. From this figure the following matters could be understood. The factor most influencing FRR is selling price, followed by capital cost and capacity utilization rate. Fluctuation of pulp wood cost is not very influential because wood cost is low if compared with other production costs. If operation is exceeds than planed capacity same case as in Brazil, (with design capacity of 750 T/D, 900 T/D was produced), its influence is great but on the contrary if operation is reduced FRR declines by a wide margin. In this study, in order to prevent this, it is assumed that ample measure are taken and expenses are estimated accordingly.

Selling price of products will fluctuate to a considerable extent above and below the assumed price. From the break even point of selling price for cash flow, only in 1999 and 2000 (the former is the first year of repayment of the long-term loan) the ratio is 92% and 94% respectively. But in other years it is less than 80%, and it seems to resist price fluctuation. If it is possible to acquire funds on softer terms (long term, lower interest or both) it is clear to increase stability of cash flow.

(9) Result of economic analysis

Compared to financial analysis, the economic analysis was done on the basis of (1) exclusion of tax such as corporate income tax, (2) the price of pulp wood was estimated at the fuel wood level of US$15/BDt and (3) wages for unskilled labor for construction and operation was estimated as 50% of the figure of financial analysis.

The other hand, construction costs of roads, a hospital and company housing are included. As the result ERR shows 12.99% in constant 1991 prices in the case of 100% globulus.

This ERR 13% is not very high but, nevertheless, it is in the feasible range. In case of a discount rate of 10%, the economic net present value is as high as US$110,300,000 in constant 1991 prices.

If export quantity is estimated as 255,000 T/Y and the unit price is US$369/t in 1983, an export sales are US$94,000,000, approximately 9% of the nations gross exports in 1983. This means the contribution to expansion of exports is remarkable. The net earnings of foreign currency (income - outflow) will reach the cumulative amount of US$1,299,000,000 in the 10 years after the start of commercial operation. It is certain that this project will contribute to improvements of Uruguay's balance of payments for foreign money.

Another effect of this project is promotion of employment. Jobs would be created for 1,021 persons for plant operation, and for approximately 2,000 for afforestation work.

In addition, another 1,450,000 man-days will be needed during the construction period of 3.5 years.

Related industries, and various kinds of service business will be developed in accordance with this project.

Other than these there are other effects such as making good use of land, which otherwise would be low-utilized, prevention of erosion.

Chapter 2 Recommendation

It is clear that this project is feasible financially and economically in case of the mill will produce BKP by 100% L-wood.

The following consideration, however, shall be paid for successful operation.

(1) A pulp plant shall be constructed at the place where ample quantity of pulp wood are available.

In order to ensure stable supply of pulp wood in the future, appropriate part of afforestation (50% in case of Eucalyptus and more than 35% in case of Pinus) shall be desirable to make plantation by the pulp plant owner themselves.

Futhermore, it is absolutely necessary to have the best cooperation of landlords near to the plant for the smooth execution of afforestation and supply of pulp wood to the pulp plant.

Governmental support in taxation, finance and others are also, of course, necessary for promotion of the afforestaion.

(2) A capital investment approx. US$300,000,000 is required as the base project cost. In addition to the sum, another investment is necessary for land 50,000 ha (globulus only) - 100,000 ha (L-50% and N-50%) and expenses of afforestation, maintenance, cutting down and also transportation equipment etc.

As reported in the Chapter of Financial Analysis, even in the case of the most profitable "globulus", the internal profit rate is 11.92% before tax and 9.95% after tax. These figures are not higher rate but suggesting the necessity of soft loan. Since the fluctuation of pulp market price is broader, soft loan is severely desireable, especially for during several years after starting of repayment of long term loan for the prevention of the shortage of fund.

As reported in the Economic Analysis, on the other side, it is quite clear that this project will effect in export promotion, consequential effect of

obtaining of foreign exchange, promotion of employment, utilization and improvement of land, these are very favorable factors for the promotion of National Economy of Uruguay.

Considering from these points, even if the share of investment by the Government is limited less 20%, powerful leadership by the Government is absolutely required for the promotion of this project.

As stated in case of Brazil, the cooperation with other country's Government and or Enterprise or International Organization from the technical, marketing and financial aspect, are desiderable to realize this project.

There are several forms of cooperation with outside organization, but if Joint Venture Form is taken as the method to promote this project, Uruguay Government will be required to prepare the conditions to invite the foreign capital, for example, to establish the forest promotion policy to supply the required quantity of pulp wood with reasonable price and to make guarantee for the equity which will not be nationalized and for the remittance of the principal, interest and profit, etc. to give the security of Invester because this project is profitable but has more favourable impact on the Uruguay Economy.

(3) In the economic evaluation, construction cost for the investment including hospital, road and company residence etc. was added, however, the investment for the harber (charging and discharging of the products and material) was excluded because it is used only 2 times per month. Please, therefore, investigate it as a matter of regional development infrastructure including the benefits of this project also.

(4) For the selection of kind of species of trees, there are not so much difference for economical evaluation if it is L-wood, whether 100% of globulus or mixture with other kind of L-wood. Therefore, it shall be studied from a viewpoint of stable supply of material in the appointed area in the future.

(5) Since this study was performed on the basis of the Uruguayan as well as world's situations of the economic and physical aspects, as the time of

specified month of year in this report, we therefore would like to recommend to conduct another feasibility study for the construction of the mill itself at the appropriate time, beforehand to start it, because the actual construction of the pulp mill will be commenced approx. 3 years after the afforestation in case of LBKP.

ANNEX

ANNEX I

Annex I-1

SCOPE OF WORK FOR THE FEASIBILITY STUDY ON THE ESTABLISHMENT OF PAPER PULP MILL IN THE ORIENTAL REPUBLIC OF URUGUAY

Annex I-1

SCOPE OF WORK
FOR
THE FEASIBILITY STUDY
ON
THE ESTABLISHMENT OF PAPER PULP MILL
IN
THE ORIENTAL REPUBLIC OF URUGUAY
AGREED UPON BETWEEN
PLANNING, COORDINATION AND INFORMATION SECRETARIAT
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

Montevideo, September 6 , 1984

Jorge PELUFO Director of International Cooperation Division Planning, Coordination and Information Secretariat (SEPLACODI)	Fumio WADA Team Leader Preliminary Study Team The Japan International Cooperation Agency (JICA)

I. INTRODUCTION

In response to the request of the Government of the Oriental Republic of Uruguay (hereinafter referred to as URUGUAY), the Government of Japan has decided to implement the feasibility study on the Establishment of Paper Pulp Mill (hereinafter referred to as "the Study") in URUGUAY in accordance with relevent laws and regulations in force in Japan.

The Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programs of the Government of Japan, will extend the Study, in close cooperation with the authorities of URUGUAY.

The present document sets forth the Scope of Work for the Study.

II. OBJECTIVE OF THE STUDY

The objective of the Study is to examine the technical, economic and financial feasibility on establishment of a paper pulp mill for export oriented in URUGUAY.

III. SCOPE OF THE STUDY

In order to achieve the above objective, the Study will cover the following items:

1. The National Policy on the Pulp and Paper Industry
2. Market
   - (1) Present State of Demand and Supply
   - (2) Market Price
   - (3) Forecast of Demand and Supply
3. Forest Resources
   - (1) Field Survey
   - (2) Pulping Test (6 species)
   - (3) Selection of Suitable Trees

4. Evaluation of Forestation Plan
5. Raw Materials
6. Plant Site
   (1) Natural Conditions
   Meteorology, Geology, Topography, Land
   (2) Socio-economic Conditions:
   Labour Force, Wages, Population,
   Supporting Industries
   (3) Infrastructure:
   (3)-1 Port
   (3)-2 Road
   (3)-3 Railways
   (3)-4 Others
   (4) Utilities
   (4)-1 Electric Power
   (4)-2 Water
   (4)-3 Fuel Oil
   (4)-4 Chemical
   (4)-5 Others
   (5) Selection of Site
7. Plant Capacity
8. Conceptual Design
   (1) Design Standard
   (2) Process
   (3) Plant Layout
9. Environmental Impact
10. Organization and Manpower Plan
11. Construction and Operation Plan
12. Capital Requirements
13. Financial Analysis
14. Economic and Social Evaluation
15. Conclusions and Recommendations

IV. STUDY SCHEDULE

The Study will be carried out in accordance with the tentative schedule attached in Annex

V. REPORTS

The following reports will be prepared in English and submitted to the Government of URUGUAY in accordance with the above mentioned Study Schedule

1.	Inception Report	5 copies
2.	Progress Report	10 copies
3.	Draft Final Report (including the Spanish summary)	20 copies
4.	Final Report (including the Spanish summary)	50 copies

VI. UNDERTAKINGS OF THE GOVERNMENT OF URUGUAY

1. The Government of URUGUAY shall take following neccesary measures to facilitate the smooth implementation of the Study:
   (1) to inform the members of the Study team of any existing risk in the study area and (take any measures deemed necessary to) secure the safety of the members of the Team.
   (2) to permit the members of the Team to enter, leave and sojourn in URUGUAY for the duration of their assignment therein, and exempt them from alien registration requirements.
   (3) to exempt the members of the Team from taxes, duties, and other charges on equipment, instrument and other materials brought into URUGUAY for the implementation of the Study.

(4) to exempt the members of the Team from income tax and other charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Team for their services in connection with the implementation of the Study.

(5) to provide necessary facilities to the Team for the remittances as well as utilization of the fund introduced into URUGUAY from Japan in connection with the implementation of the Study.

(6) to make arrangement for entry into private properties for the conduct of the Study.

(7) to secure permission to take all data and documents necessary for the Study (including photographs) out of URUGUAY to Japan by the Team.

(8) to facilitate the quick and smooth customs clearance of the equipment and materials brought into URUGUAY by the Team for their field study.

(9) to arrange the recruitment of local staff such as laborers etc.

(10) to arrange medical services for the Team during its stay in URUGUAY as needed.

2. Planning, Coordination and Information Secretariat (hereinafter referred to as SEPLACODI) shall act as a counterpart agency to the Team and also as a coordinating body in relation with other government and non-governmental organizations concerned with the smooth implementation of the Study.

3. SEPLACODI shall, at its own expense, provide the Team with the following, in cooperation with other relevant organizations.

(1) available data and information related to the Study

(2) counterpart personnel

(3) suitable office space with necessary supplies and equipment in Montevideo.

(4) credentials or identification cards

(5) vehicles with driver necessary for the Study

4. The Government of URUGUAY shall bear claims, if any arises against the members of the Team resulting from, occurring in the course of, or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or wilful misconduct on the part of the members of the Team.

VII. UNDERTAKING OF JICA

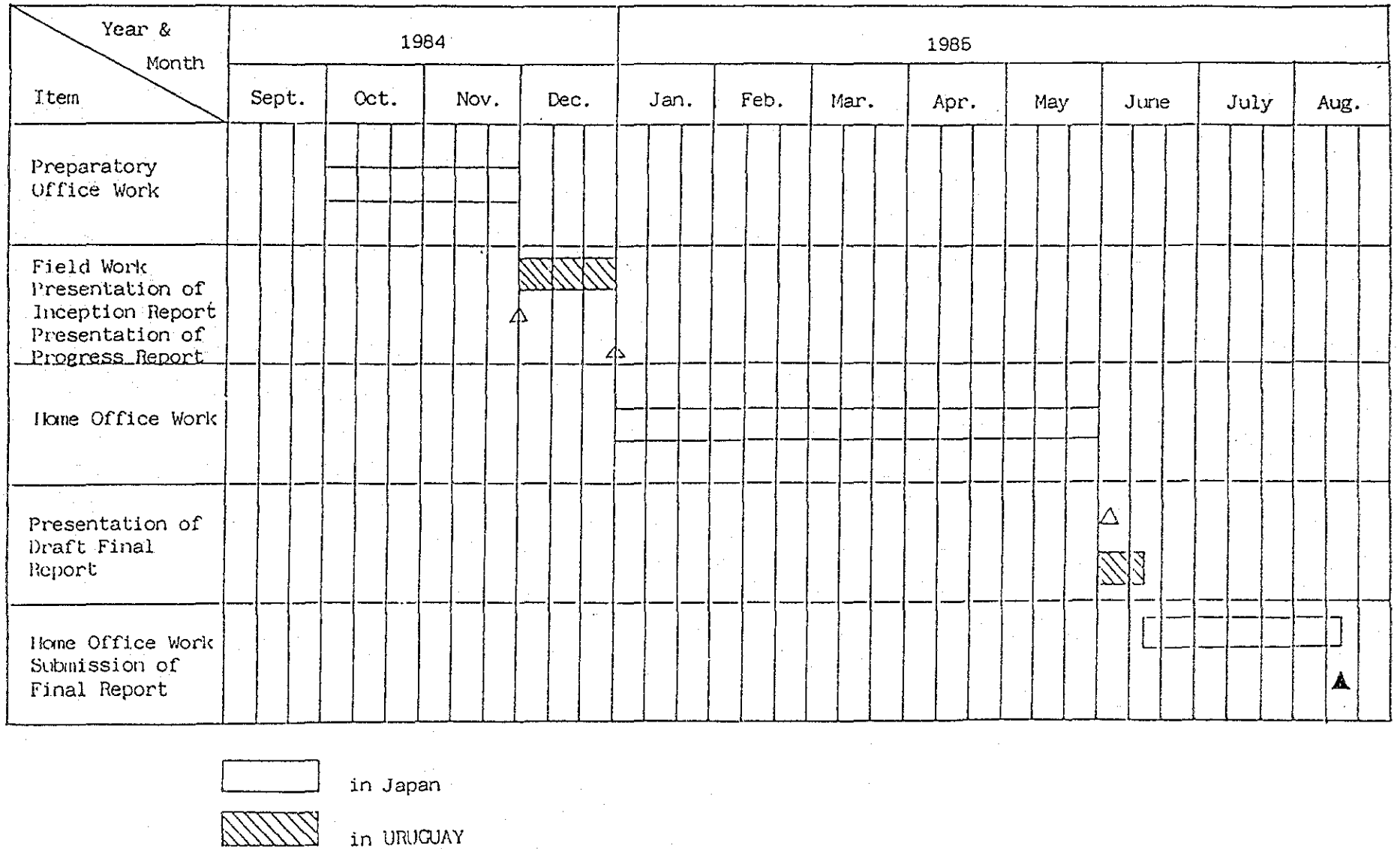
For the implementation of the Study, JICA will take the following measures.

1. To dispatch, at its own expense, Study teams to URUGUAY.
2. To pursue technology transfer to the Uruguayan counterpart personnel in the course of the Study.

VIII. MUTUAL CONSULTATION

JICA and SEPLACODI will consult with each other in respect of any matter that may arise from or in connection with the Study.

Tentative Schedule of the Study



Annex I-2

MINUTES OF MEETING
(SEPTEMBER 6, 1984)

Annex I-2

Minutes of Meeting

The Japanese preliminary Survey Team (the Team) sent by the Japan International Cooperation Agency (JICA) and the Planning, Coordination and Information Secretariat (SEPLACODI) exchanged views and had a series of discussions during the period from August 29th to September 6th, 1984 on the Scope of Work (S/W) for the Feasibility Study on the establishment of a paper pulp mill in the Oriental Republic of Uruguay.
As a result of the discussions, both parties agreed with the S/W attached hereto as ANNEX.
Further, the following points were additionally agreed between JICA and SEPLACODI.

1. Regarding Article 3 of Item III of S/W agreed upon between JICA and SEPLACODI, sampling method will be selected in mutual agreement.
   JICA will, at its own expense, carry out the pulping test necessary for selection of suitable trees, in Japan.
   SEPLACODI will take necessary measures in Uruguay to send the sample logs to Japan for the test.

2. Regarding Article 5 of Item III of S/W , quality, price and quantity of raw materials necessary for cost analysis should be decided by consultation between JICA and SEPLACODI

3. Regarding Article 6 of Item III of S/W , candidate sites are the following
   (1) Juan Lacaze
   (2) Fray Bentos
   (3) Casablanca

4. SEPLACODI requested the training of the counterpart personnel in Japan during the Study period.
The JICA Team promised to convey this request to the authorities concerned in Japan.

5. SEPLACODI strongly requested the technical cooperation for making the forestation plan as an another Project.
The JICA Team promised to convey this request to the authorities concerned in Japan for its favourable consideration.

Montevideo, September 6 , 1984

F. Wada

Fumio WADA
Team Leader
Preliminary Study Team
The Japan International
Cooperation Agency
(JICA)

Jorge PELUFO
Director of International
Cooperation Division
Planning, Coordination and
Information Secretariat
(SEPLACODI)

Annex I-3

INTERIM REPORT FOR THE FEASIBILITY STUDY ON THE ESTABLISHMENT OF A PAPER AND PULP PLANT IN THE ORIENTAL REPUBLIC OF URUGUAY

(DEC. 21, 1984)

INTERIM REPORT FOR THE FEASIBILITY STUDY ON THE ESTABLISHMENT OF A PAPER AND PULP PLANT IN THE

ORIENTAL REPUBLIC OF URUGUAY

DEC. 21, 1984

JAPAN INTERNATIONAL COOPERATION AGENCY

MONTEVIDEO URUGUAY

Montevideo December 21st. 1984

In compliance with the requirement of the Scope of Work dated, September 6, 1984 , exchanged between the goverment of the Oriental Republic of Uruguay and the Japan International Cooperation Agency, the study team has submitted 10 copies of the Interim Report (Progress Report), which shows the results of the feasibility study survey in URUGUAY by the study team, during November 29th. 1984 to December 21st. 1984, on the establishment of paper pulp mill in the Oriental Republic of Uruguay.

The Uruguayan counterpart has received the above Interim Report with thanks and confirmed that the contents of the report was made based on the opinion of the both parties.

Sr. Jorge Pelufo
SEPLACODI

Sr. Y. Mikami
JICA Study Team Leader

C O N T E N T S

CHAPTER I

PREFACE

The study mission team of Japan International Cooperation Agency (JICA) for the feasibility study on the establishment of a paper and pulp plant in Uruguay has started study activities on Nov. 29, 1984 in Montevideo, Uruguay by 1st. Team.

The study activities in Uruguay were carried out in collaboration with the Uruguay counterparts of SEPLACODI.

SEPLACODI assigned the staffs from the following organization for guiding and assisting the study as acting counter parts.

SEPLACODI
MINISTRY OF INDUSTRY AND ENERGY
MINISTRY OF AGRICULTURE AND FISHERY
UNIVERSITY OF AGRICULTURE OF REPUBLIC
LATU

The study team submitted the Inception Report on Nov.30, 1984 at the 1st general meeting to explain the concept of overall study plan.

During 1st and 2nd. General Meeting, basic concept and rough schedule of study in Uruguay were settled.

Then, data and information collection in Montevideo were made in three fields i.e. Economic Analysis including Domestic market, plantation and Plant Construction by 1st Team.

2nd team was arrived on Dec. 8, 1984 and the study team visited various organization and candidate sites of plant and plantations which are out of Montevideo after 3rd. General Meeting Held on Dec 10, 1984.

The study team summarized the result of survey in Uruguay which is the base of works in Tokyo and discussed with counter part on Dec 20th and 21st. 1984 and confirmed the results as follows.

The main points were as follows.

(1) Object of the study is the export oriented paper and pulp plant which is recomended by JICA as phase III in the Master plan.

And phase I (Renovation of Existing plant) and phase II (Newsprint-Domestic Use) are excluded from the study

(2) BKP 750 t/d is recommended by Team as the plant to be studied from the view point of the world market situation and was accepted by Uruguay side however this will be re-checked during the study in consideration of world market, plantation plan and others during the study.

(3) Uruguay side explained and the survey team is agreed that this project is aim for the export oriented plant and the domestic market size is relatively small in comparison with the estimated capacity,therefore the analysis of domestic market is not so important.

(4) In the Market Analysis,the following items should be included.
   (a) Bleached Kraft pulp
   (b) Unbleached Kraft Pulp
   (c) papers
   (d) paper boards
   (e) chips

(5) As the candidate plant site, undermentioned three places have been selected before starting the site survey.

A) CASA BLANCA
B) FRAY BENTOS
C) JUAN LACAZE

After site survey has been completed the result is summerized in chapter No. 8
The study team considers FRAY BENTOS as the most suitable place for the project.

NUEVA PALMIRA is just checked as reference.

(6) The kind of Trees to be tested in Japan was selected by Uruguay side as follows before starting the sampling works.

Kinds of Trees	Location and/or owner
GRANDIS (EUCALYPTUS)	CAJA BANCARIA
GLOBULUS (EUCALYPTUS)	FNP
MAIDENI (EUCALYPTUS)	FNP
TAEDA (PINES)	CAJA BANCARIA
ELLIOTTI (PINES)	CAJA BANCARIA
POPULUS	CAJA BANCARIA

The samples (each about 20 kg) from each kind of trees were satisfactorily collected during site survey and arranged for aim freighting to Japan.

(7) The study team has visited the following locations to see and study the plantation conditions.

A) FNP plantation area
B) PAMER plantation area
C) CAJA BANCARIA plantation area
D) RIVERA
E) TACUAREMBO
F) MELO

The result of local survey is summaried in chapter Nº4

(8) The conditions on the Financial and Economical Analysis are discussed and summarized in chapter Nº9

The study team received various informations and documents which are required to examine the technical, financial and economic feasibility study of the proposed project for which the Study team thanks very much for the cooperation of the URUGUAY side.

The study team expresses sincere apreciation for guidance and assistance extended by SEPLACODI, MINISTRY OF INDUSTRY AND ENERGY, MINISTRY OF AGRICULTURE, UNIVERSITY OF AGRICULTURE and LATU, from the begining to the end of the study survey in URUGUAY.

CHAPTER 2

PROJECT TO BE STUDIED. (Refer to minutes of meeting)

The URUGUAY side confirmed that the object of this study is limited to the export oriented paper and pulp plant which corresponds to the phase III of the Master Plan submitted by JICA on 1981 but is not includes phase I (short-term plan- Naionalization of the existing plants) and phase II (medium-term plan-newspaper plant for domestic market)

The study team explained that 750 t/d BKP plant which was recommended in the Master plan is the most suitable one as the export oriented project.

The URUGUAY side agreed it but requested to be checked from the view point of World Market and the availability of wood.

CHAPTER 3

MARKET STUDY (Refer to minutes of meeting)

Uruguay side requested to study the world market of the following products but not only BKP and the study team has accepted.

(A) unbleached kraft pulp

(B) papers

(C) paper board

(D) chips

Domestic market is assumed as relatively small in comparison with the expected capacity, therefore the study of domestic market will be analyzed by analyzing statictics only but not through interview of clients and manufacturers.
As the reference, marketing situation of pulp (especially in case of Brazil) will be studied.

Chapter 4

Wood Supply

a) Study on plantation (Confirmation of availability of wood to the pulp plant)

According to the master plan made by JICA on February, 1981, it is necessary for the pulp mill to secure about 100.000 ha. of plantation. Soil type 7.8.and 9 have enough areas to allot its land to plantation required by the pulp mill respectively.

On the other hand, since existing plantation areas in soil type 7, 8 and 9 are short of plantation areas required by the pulp plant, it is inevitable to develop new plantation which will be able to supply pulpwood required by the pulp plant.

Although it is recommendable for the pulp plant to have its pulpwood supply sources as near as possible, Study Team will work out a plantation development program as a sample on condition that 50 % of new plantation locates within 100 km form the pulp plant, having average transportation distance of 75 km, and another 50% locates within 150 km from the pulp plant, having average transportation distance of 125 km.

b) Cost and price of pulpwood at the plant site.

Calculation shall be made on the following basis.

i) Price of land: U$S 225/ha

ii) Cost of plantation, cutting age and harvesting volume

Years	Pine	E. and Populus
0	N$ 6.193,50	8.503.50
1	619,40	850,30
2	619,40	850,30
3	619,40	850,30
:	-	-
8	-	500,00 ($25m^3$/ha/year)
:	-	
11	($15m^3$/ha/year)	-
:		
14		500,00 ($30m^3$/ha/year)
:		:
20		500,00 ($30m^3$/ha/year)
:		:
28		500,00 ($25m^3$/ha/year)
:		:
36		: ($25m^3$/ha/year)

iii) Interest rate: according to the agreement between Counterparts and Study Team based on LIBOR.

iv) Logging cost:

Pine : N$ 150/ton, including loading cost, with bark conversion: 0.8 t/m^3

E. and Populus: N$ 250/m^3, including loading cost, without bark. conversion: E = 1, t/m^3, Populus = 0.8 t/m^3

In spite of the above actual logging cost, Study Team would like to increase logging cost in consideration of depreciation cost, and logging road maintenance cost, if necesary, not only because it seems difficult to extract the whole of volume required by the pulp plant by traditional logging method only, but also because it seems necessary to introduce mechanical logging system in order to handle a huge amount of pulpwood volume.

v) Transportation cost

up to 150 km : N$ 3.00/ton/km

more than 150 km : N$ 2.70/ton/km

c) Log samples to be studied in Japan

By the sample collection team, the following six kinds samples collected according to the agreement made by the meeting held on December 10th. 1984

Sample No.	Species	Collected locations
No. 1	Eucalyptus Maideni	FNP
No. 2	Eucalyptus Globulus	FNP
No. 3	Pinus taeda	CAJA BANCARIA
No. 4	Populus	CAJA BANCARIA
No. 5	Pinus, Elliotti	CAJA BANCARIA
No. 6	Eucalyptus Grandis	CAJA BANCARIA

All of the above samples were delivered to Montevideo for the arrangement for airfreighting to Japan.

Upon arrival all of the sample above to Japan, we are scheduled to carry out the pulp test according to the rule of Japanese Industrial Standard (JIS).

The datailed report for above sampling works please refer to the survey report made by the sample collection team.

CHAPTER 5

OTHER RAW MATERIAL THAN WOOD

Pulp factory requires chemicals other than raw woods.

Chemicals	Objective
Salt (NaCl)	Production of caustic soda (NaOH) and chlorine (Cl_2) by electrolysis.
Salt Cake (Na_2SO_4)	Make-up for cooking liquor.
Lime stone ($CaCO_3$)	Used for causticizer process to recover caustic soda.
Sulfuric acid (H_2SO_4)	Production of chloride dioxide (ClO_2).

Above chemicals other than lime stone are imported from other country under the condition of import tax exemption because of export oriented factory.

CHAPTER 6

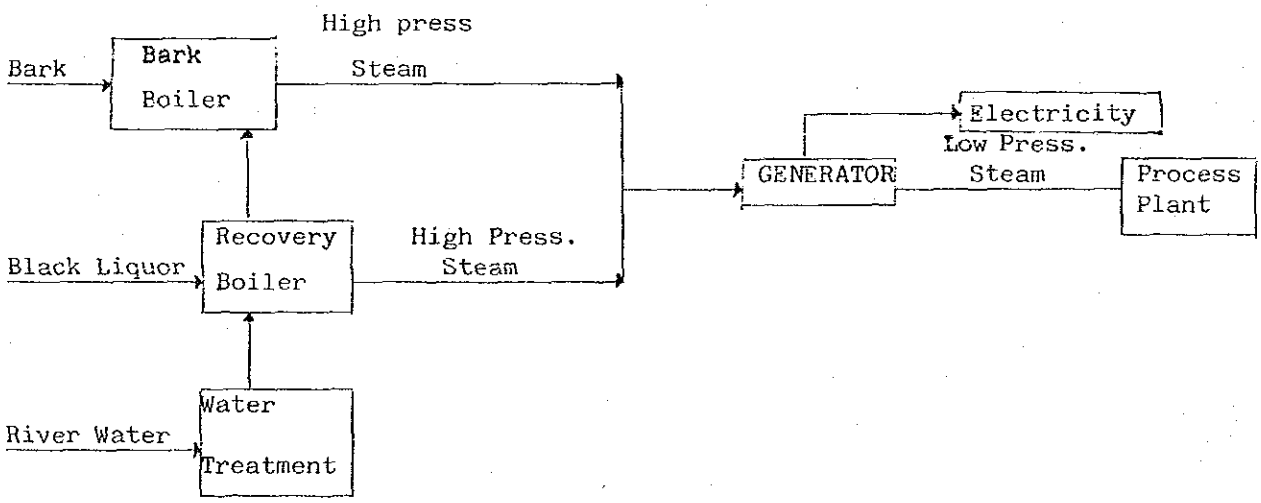
UTILITIES OF PLANT

Pulp factory consumes much utility such as steam, water, electricity and so on.
In general utility of steam and electricity in pulp factory only is almost in balance supplying energy from bark and black liquor.
80% of electricity is possibly generated from above energy and 20% is purchased from outside.

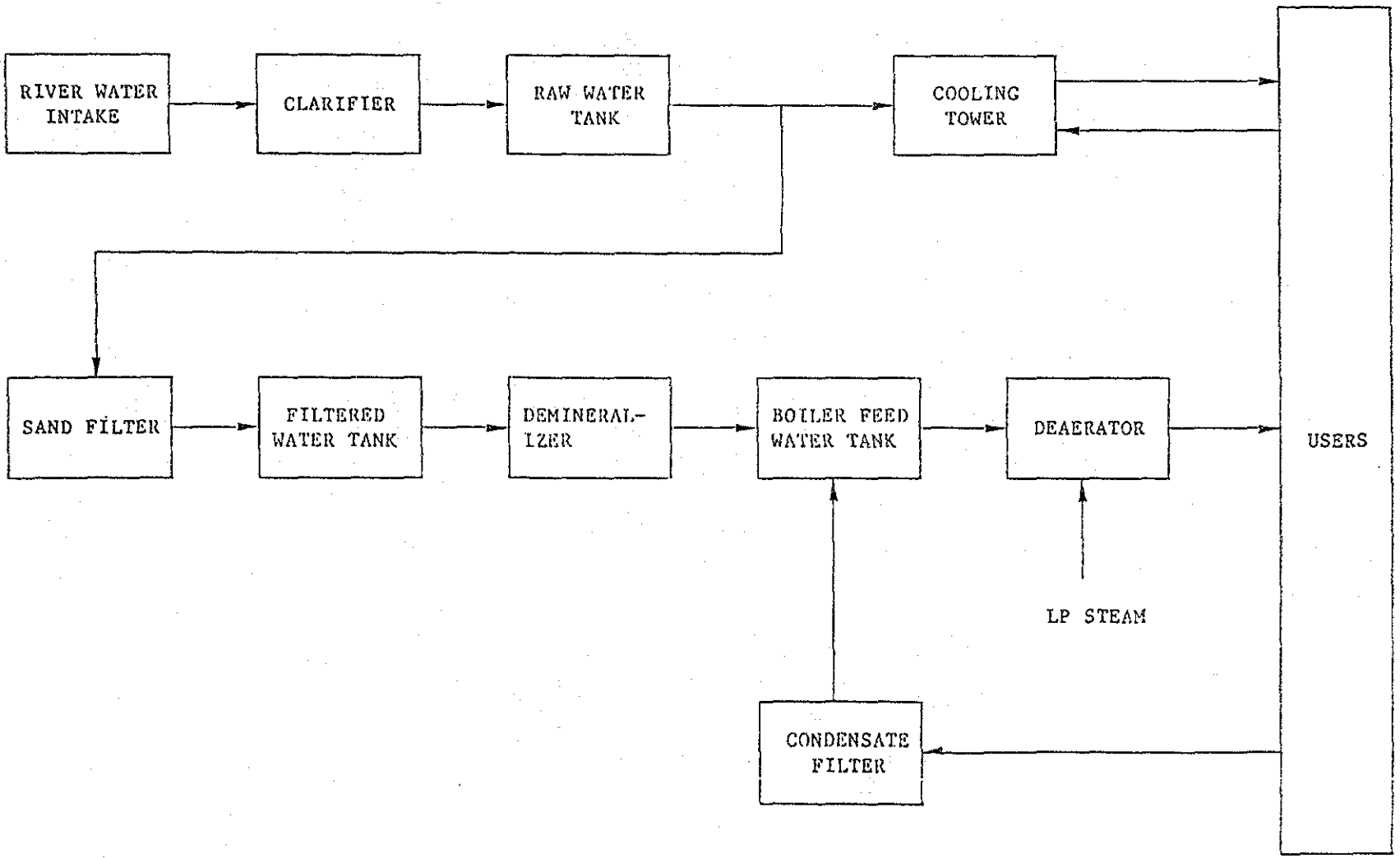
Water treatment method of river water is decided taking into account of raw water quality and however same method adopted in the pulp factories in Uruguay will be applied to this project.

Utility flow diagram for pulp factory is attached:

UTILITY FLOW

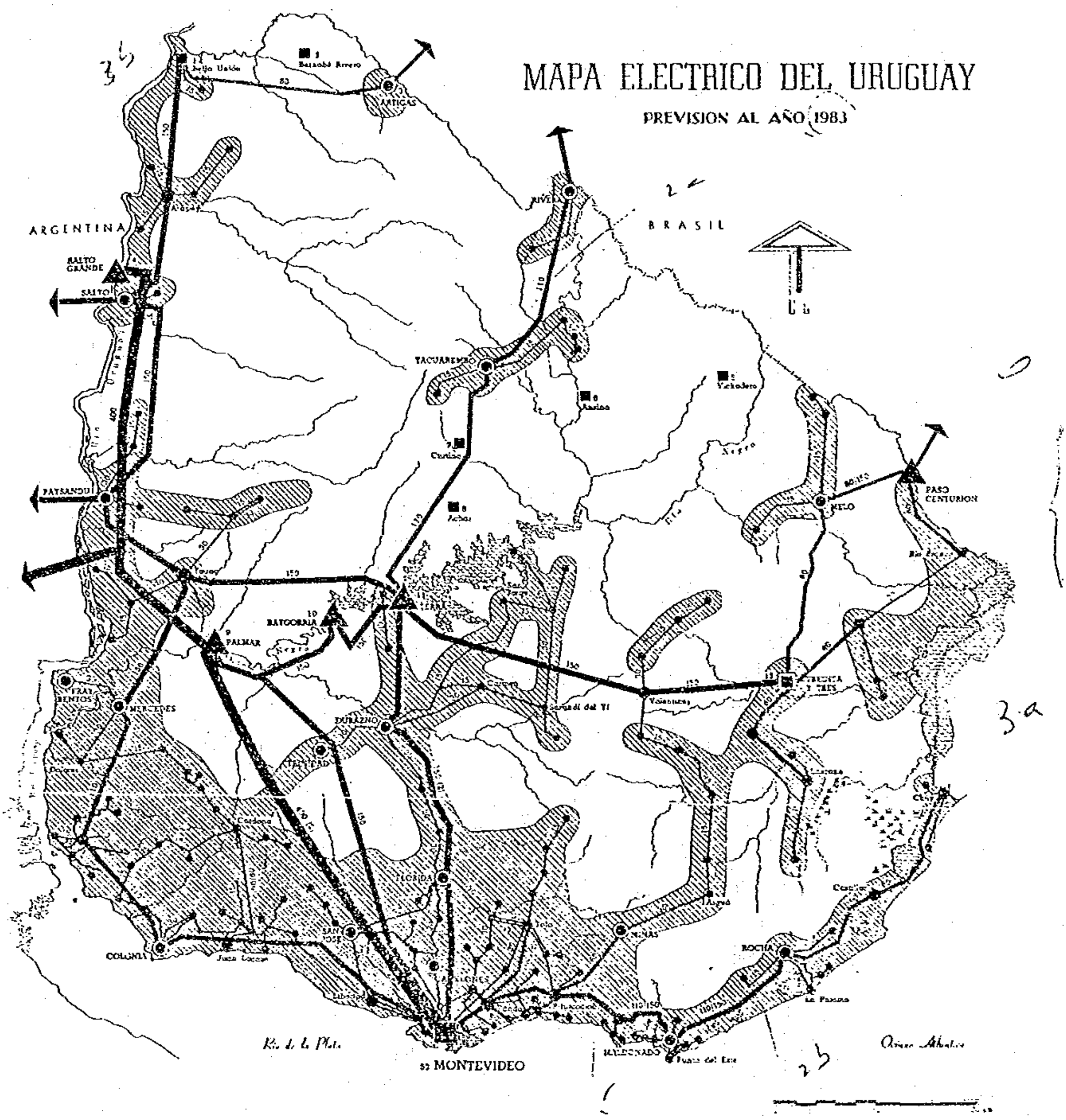


WATER SYSTEM



電力供給図

12/8.
from Mrs. Cazzadori



UNIT. KV.

150 KV → 30 KV
use transformer
30 KV → 15 KV usually.

50 KV. some place

50 cycle
(60) usually.

CHAPTER 7

REGULATION AND CODE

Based upon below-mentioned codes and regulations, the plan for facilities, layout, construction and operation for the pulp factory is provided:

a) Plant location and facilities installation
b) Labor safety, maintenance, fire
c) Insurance and tax
d) Land, road, fishery
e) Industrial standards for facilities and materials
f) Necessary law, standard, regulation code.

In case above codes and regulations are not sufficiently stipulated, in this study international prevailing code and regulation shall be applied.

CHAPTER 8

PROJECT SITE SELECTION AND PLANT CONSTRUCTION

8-1 Project site selection

(1) General Discussion

The selection of the location and site for pulp plant is carried out by the comparison study of three possible candidates, (i) Juan Lacaze (ii) Fray Bentos, and (iii) Casa Blanca. In this study the site selection is to be decided taking into account of following criteria:

(a) General criteria

* Facing to river because of export oriented factory from the viewpoint of products transportation.
* Ample space for plant site considering future expansion.
* Possible utilization of existing infrastructure.
* Accordance with regional development plan.

(b) Special criteria for pulp plant

* Availability of good quality and large amount of water.
* Adjacent to plantation site from the viewpoint of logs transportation, ranging up to 100-150 Km.
* Possibly taking environmental measures against waste effluent, noise, vibration and ordor.

(2) Individual conditions for three candidates

(a) Juan Lacaze

This site is located at west of Montevideo and 120 Km far from it. In this city the biggest paper & pulp factory, FNP, is under operation. However there is no port available for international transportation of products. This city does not have any plan to develop industrial area and there are many residential houses around the FNP Factory. And also this site is far from the promotional plantation area.

(b) Fray Bentos

Fray Bentos is located in north west direction far about 300 Km from Montevideo and faces to the Uruguay River.

They prepare about 140 ha area for future industrial promotion and also closed meat factory area 90 ha which has own berth.

And the wharf for grain transportation has experience that 52.000 ton of vessel (ship name EUTHALIA) moored there loading 18.350 ton of cargo.

Water depth around the wharf is about 7-8 m.

The planned industrial zone is on the mild slope and its land height averages 5-15 m from the river level.

This area is adjacent from the promotional plantation area and therefore it is advantageous for log gathering and transportation.

With regard to wharf , whether the existing wharf is used or newly instllation of it, shall be contemplated from the idea of newly common wharf for industries or environmental factor of truck transportation from factory to the existing wharf.

According to the industrial development plan, in future the railway is expected to extend to this planned industrial area.

Natural gas from Argentina through the San Martín bridge is expected to introduce to this country and it is also expected to use for industry and household purposes. As clean energy natural gas is possibly used for kiln fuel in causticizer process.

In this industrial area purchasing electricity from outside is also available.

(c) Casa Blanca

This town near Paysandú is located at 70 Km upstream of the Uruguay River from Fray Bentos.

150 ha of industrial area has been planned and however any practical plan for land preparation and road preparation are not provided so far.

Near the planned industrial area, good port construction for international transportation is not expected so far.

At the 60 Km downstream of Casa Blanca, there is San Martín bridge crossing the Uruguay River. As this bridge height from surface of river is about 40m , the restriction of height is taken consideration in case of industrial platform type for pulp plant.

The condition of logs gathering and transportation is same as Fray Bentos.

(3) Selection of project site

Detail comparison study shall be conducted in Japan.

However from the viewpoint of available port construction or utilization of existing port at which is possibly moored at least about 20.000 DWT occean vessel, Fray Bentos is considered as the most favourable site so far. In addition to the above, Fray Bentos has a relatively practical industrial development plan and prepares future industrial area including the space of the closed meat factory which faces to the Rio Uruguay.

8-2 Plant design and construction

To design and construct projected pulp plant, following considerations and steps are taken into consideration:

i) Plant conceptual design

* Set up for design basis such as code /regulation and process design basis
* Selection of suitable pulp manufacturing process and decission of production capacity.
* Basis design of pulping process taking account of kinds of raw material, technology reliability, operational economics, products quality to meet market and flexible production for market demand change, (a) material balance, (b) block flow diagram of pulping process, (c) utility and chemicals consumption are obtained as out put.

ii) Basic plan for plant facilities

In order to estimate plant cost and consider plant layout, transportation plan of equipments and construction plan, the basic plan of plant facilities is prepared as follows:

* On-site facilities (KP plant and chemical production plant)
* Utility facilities (Boiler, receiving of elctricity, water intake, etc)
* Offsite facilities (Loading/unloading, chip yard facilities, hydrants, environmental facilities, etc.)
* Building (Building for pulp machine, administration office, laboratory, control room, warehouse, employees' houses, etc.)

iii) Plant Layout

Plant layout for pulp factory is prepared based upon location condition such as natural conditions, topography, road, railway, port. In this step, following items are contemplated:

WOOD AND CHIP HANDLING

WOOD HARVEST-ING

LOG SORTING

TRANS-PORTATION

STOR-ING

BARK-ING

CHIPP-ING

SCREEN-ING

CHIP BING OR SILOS

PULPING PROCESS

ROLL-ING

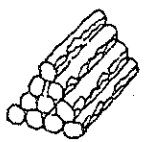
WRAPP-ING

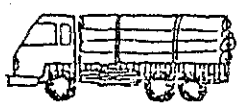
SHIPP-ING

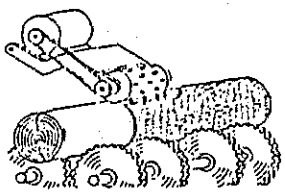
WOOD YARD

WATER OR LAND TRANS-PORTATION

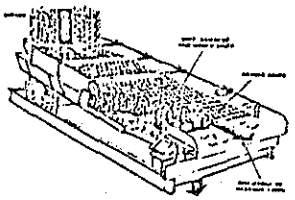
PULP FACTORY



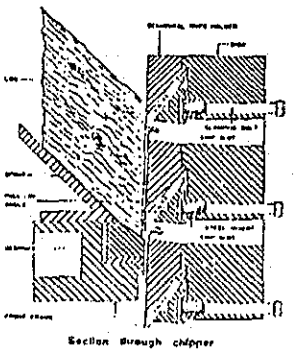




Recessed head barker configuration



Conventional chip screen



Section through chipper

AI-30

(a) To play good performance of process line and auxiliary facilities.
(b) To keep easy maintenance.
(c) To consider construction procedure.
(d) To consider future expansion plan.
(e) To consider efficient material handling such as receiving raw materials (logs, chips, chemicals), discharging products pulp, storing materials.

iv) Construction Method

There are two construction method, one is conventional the other module method (or Barge-mounted method).
The selection of constructions method depends on following factors:
(a) Characteristics of plant
(b) Site conditions
(c) Project schedule, etc.

This study illustrates pros and cons of two construction methods considering above mentioned factors.

v) Environmental conservation

According to the factories survey, they flow out their waste water almost directly to river.
In this study based upon Uruguay's envirnmental regulations and refering Japanese regulations which is believed as the most severe in the world, environmental facilities are planned.

Chapter 9

Basis for financial and Economic Analysis for proposed project

1) Scope of investment

In the Financial Analysis, Processing plant, utilities facilities and Maintenance shop will be considered but infrastructure (Expansion or improvement of Port or load) and Housing Colony are excluded

In the Economical Analysis, investment on the infrastructure and Housing Colony are considered.

2) Object of F/S of the export oriented pulp plant is to give the indication to the plantation plant, about the possibility of use of wood to pulp plant.

Therefore, in this study location of plantation will not be definitly mentioned.

3) Investment Body

The export oriented pulp plant is a huge plant which is necessary to be supported by the government and also the project involved Government investment has the possibility to get soft loan from abroad.

However, in general, the government own factory is not operated economically, therefore even Goverment Investment is required, the share of Goverment should be limited within 20%.

The investment of the existing paper and pulp company to the export oriented pulp plant is desireable to utilize their experience, however 5% will be the limit in consideration of the required investment amount and financial status of the existing companies.

There is no restriction in Uruguay to the Investment by the Foreign Companies, therefore at the stage of realization of project, it must be considered.

4) Debt Equity Ratio

Equity Ratio is assumed as 30%

5) Project Financing Schedule

For the Foreign Currency, Consultant will study the possibility of several finance resources.

The following banks are there in Uruguay, but Banco República and Foreign Banks are considered as the source of finance

- Central Bank
- Banco República (BROU)
- Banco Comercial
- Banco Caja Obrera
- Foreign banks

*1)

The rate of interest of Banco República could be LIBOR + 2 or 2.5%

6) Project Life span

This will be decided by consultant

7) Depreciation and Amortization

Building 50 years: negotiable to reduce to 25 years

Machine and Equipment 10 - 20 years

Patents and other amortization: 5 years

8) Taxes and Levies

Corporate Income Tax	30%
Value Added Tax	20% but not over exports
Commodity Tax	0% in the case of export of product
Import duty of Machine and material	10% but 0% if National Investment project but the following charge will be adopted

6.25% in case use port (by ship) but not if used plane or truck
1.00% Bank (private)
0.75% Exchange Agent (private)
0.75% Port Agent (private)
1.00% Other charge
9.75% ≒ 10%

Tax on Net Assets 4% Tax holiday (5 years)

Local Tax

i) Building Tax 1.5% Tax holiday (5 years)

ii) Revenue Tax -

iii) Stamp Duty -

No other tax is charged

* 2)

9) Escalation and Exchange rate

In order to keep the competitiveness, Cpi ratio between Uruguay and World should be less or equal to the changing ratio of foreign currency exchange rate.

10) Shadow price

At present, shadow price is not applied in Uruguay.

* 1) List of Bank is received

* 2) Tax on the revenue of employment should be considered

11) Project Financing Schedule

(1) Long term loan

1) Possible financial conditions for long term credit will be applied for the foreingn currency portion which may be consisting of imported equipment and materials, licence and know how fee, engineering service, construction supervision, commissioning and start-up, etc.
As a security for such long term credit, guarantee by the goverment authorities will be provided.

2) The rest of required loan portion will be assumed to be financial by local financial institutes such as BROU and Foreign Banks.
Major conditions by local financiers for long term credit are as follows:

Grace period : 3 years
Total period : 10
Repayment : 7 years (14 times)
Interest rate: Libor + 2 or 2,5%+0,25%

12) Short term loan

If it caused shortage in the cash flow during the operation of the plant, such shortage will be maintained by short term credit by local financiers of which financial conditions are assumed to be as follows:

Period: less than 12 months
Interest rate: Libor + 3 or 3,5% p.a.

Currency and Exchange rate

All financial and economic analysis and evaluations are made U.S. Dollar basis, and its exchange rate applicable for conversion from the local currency is assumed as follows.

All costs and expenses incurred in Uruguay pesos are converted into US. Dollars at an exchange rate on Dec. 20, 1984 or the date of the information given is new pesos.

13) Escalation Rates used in the Study

(1) For imported supplies and services
Escalation rate for the imported goods and services are assumed based on the price escalation data of industrial products for export from Japan or U.S.A. in the recent years which may be in the range of 4 to 6 percent annum.

(2) For domestic supplies and services
In consideration of item 9, escalation rates for domestic supplies and services in term of U.S. is assumed as same as for imported supplies.

(3) For pulp price for export
It will be studied in Japan by analysis of the past record.

(14) Account Payable & Account Receivable.

(1) Account payable for major items are assumed as follows
a) Domestic supplies: 30 days
b) Imported supplied: D/p 90 days

(2) Account receivable for the products from the plant is assumed as follows
a) Exported good: D/p 90 days
b) Domestic market: 30 days

(15) Sales Expences
0,2% of the total revenues is assumed to be the sales.

	Charge on the enterprise	Charge on the employee
Social Benefits contributions	10%	13%
Social health contributions	4%	3%
Tax on salaries	1%	1%
		2%

LIST OF BANKING INSTITUTIONS

Name and Address	Telephones
BANCO LA CAJA OBRERA 25 de Mayo 500	95 95 01 95 41 14
BANCO COMERCIAL Cerrito 400	95 31 74 95 08 01 95 32 01
BANCO FINANCIERO SUDAMERICANO-BAFISUD Rincón 550	91 76 31
BANCO DE CREDITO 18 de Julio 1451	40 41 41 40 41 40 40 91 80
BANCO DE MONTEVIDEO Misiones 1393	95 52 00 95 41 26 95 04 60
TRADE DEVELOPMENT BANK (URUGUAY) Constituyente 1402	98 62 14
BANCO EXTERIOR S.A. (URUGUAY) Sarandí 402	95 05 55
DISCOUNT BANK (LATIN AMERICA) Rincón 390	95 05 07 95 14 00
BANCO DE SANTANDER S.A. (BANSANDER) 18 de Julio 1271	90 78 07 90 48 06
BANCO PAN DE AZUCAR Rincón 518	91 09 21 91 22 41 91 19 28 90 05 00
BANCO DEL PLATA Zabala 1427	95 69 02 95 69 52 95 02 11
BANCO REAL DEL URUGUAY 18 de Julio 999	91 90 17

UNION DE BANCOS DEL URUGUAY 25 de Mayo 401	95 15 19 95 19 79 95 23 47 95 30 20 95 63 68
BANCO DO BRASIL Río Negro 1396	91 66 81 91 66 82 91 66 83 91 66 84
CITY BANK Cerrito 455	95 03 71 95 11 49 95 26 79
BANCO SUDAMERIS Rincón 500	95 12 50 95 05 16 95 33 27
Aguada	29 70 85
BANCO HOLANDES UNIDO 25 de Mayo 501	91 42 31 91 42 32 91 42 33 91 42 34
THE FIRST NATIONAL BANK OF BOSTON Zabala 1463	95 60 38 95 58 91
BANCO DE LONDRES Y AMERICA DEL SUD Zabala 1500	95 11 48 95 13 48 95 13 84 95 21 39 95 14 84
CENTROBANCO 25 de Mayo 528	98 47 38 90 26 60 98 59 24
BANK OF AMERICA 25 de Mayo 552	98 69 61 98 69 62 98 69 63 98 69 64
BANCO DE LA NACION ARGENTINA Juan Carlos Gómez 1372	91 96 12 91 96 13 91 96 14
FINACORP CASA BANCARIA S.A. Ituzaingó 1419	90 00 49 91 08 14
INVEST BANCA S.A. CASA BANCARIA Treinta y Tres 1383	95 51 05 95 24 05 95 14 11

HAPOALIM (LATIN AMERICA) CASA BANCARIA S.A. Florida 1251	98 68 08
HISPANO AMERICA CASA BANCARIA S.A. 18 de Julio 985 P. 1 Esc. 101	91 77 15 91 77 16 91 77 17
LEUMI LE ISRAEL (LATIN AMERICA) CASA BANCARIA 25 de Mayo 549	90 35 50 90 22 43 91 49 23 90 38 80
COMPAÑIA GENERAL DE NEGOCIOS CASA BANCARIA S.A. Plaza Independencia 811 P.B.	98 79 87 91 45 00
EISA CASA BANCARIA S.A. 25 de Mayo 553	98 76 15 98 77 17 90 34 58
EXTERBANCA CASA BANCARIA S.A. Plaza Independencia 743	98 10 80 90 08 90
ITALSUD S.A. CASA BANCARIA Misiones 1472	95 48 83 95 64 31 95 64 95 95 67 14
CASA BANCARIA RIVER TRADE Zabala 1377	95 52 52 95 32 00
CASA BANCARIA INTERCONTINENTAL Colonia 999	91 22 20 90 60 60
TRANSAMERICA CASA BANCARIA S.A. Misiones 1373	95 59 06 95 54 07 95 15 79
EXPRINTER CASA BANCARIA S.A. Sarandí 700	90 45 97 90 14 40
UNITED MIZRAJI CASA BANCARIA - UMB 25 de Mayo 471	95 33 05 95 33 93 95 33 94
CASA BANCARIA DE LA PROVINCIA DE BS. AIRES Misiones 1375	95 55 63 95 55 29 95 48 28
SURINVEST CASA BANCARIA S.A. Piedras 450	95 41 87 95 41 41 95 50 86

COLUMBIA CASA BANCARIA S.A. Plaza Independencia 822 Esc. 801	98 71 60 91 63 51
CASA BANCARIA FINANCIERA INTERNAC. S.A. Juncal 1327 D. Ap. 901	91 05 50

Reference data received from the URUGUAY side

(1) Canto Nacional de tecnología y productividad industrial
Actualización del diagnóstico inter-empresarial de la rama de fabricación de rastra para papel, papel y cartón (1983)

(2) Encuesta Anual de Actividad Económica
Industrias Manufactureras Año 1983

(3) Uruguay 1983 - Anuario Estadístico

(4) Ley de inversiones extranjeras, Ley 14.179

(5) List of Banking institutions

(6) Invertir en Uruguay 1984

(7) La leña como combustible en calderas

Chapter 10

COST AND PRICES

1) Equipment and Machinery to be imported on the assumption of that this plant will be approved by the Uruguay government as a National project, import duty on equipment and machinery is estimated to be exempted but approximate 10% on CIF VALUE will be added to cover the port charge, bank charge and others.

2) Material to be imported
Chemicals such as salt, salt cake, sulphuric acid will be imported. The price at the plant site will be estimated as CIF value plus 10 - 15% which includes unloading charge, transportation cost and financial cost but not import duty because main part of product will be exported.
Attached chemicals prices is at the factory in this country as of December 1984.

3) Material obtained in Uruguay
Lime stone is produced in this country, Minas.
Prices are also shown in attached table.

4) Electric power cost as of Dec. 1st. 1984

Range monthly	Cost N$/KW
- 10.000 KW	2.81
10.000 - 50.000 KW	2.14
50.000 -	1.81
Fixed cost	11.280 N$
Plus	10% tax

For example (80.000 KW)

10.000 x 2.81 =	28.100	N$
40.000 x 2.14 =	85.600	N$
30.000 x 1.81 =	54.300	N$
Fixed cost =	11.280	N$
Tax 10 % =	17.930	N$
	197.210	N$

5) Water cost as of Dec 1st. 1984

Range (monthly)	Cost N$/$m^3$
- 1000 m^3	19.0
1000 -	15.7
Fixed cost (>1" tube)	1957 N$

6) Land Cost

225 U$S/ha

7) Construction material as of Dec. 1984

Sand and stone required for construction is available in Uruguay and their cost are shown below.

Prices other construction materials such as cement, re-bar etc. are base on "CAMARA DE LA CONSTRUCCION DEL URUGUAY" .

Price of some construction materials

	U$S/m^3
Granitic sand	7.22
Gravel size 0.5 - 1°cm	11.97
size 1° - 2°cm	11.02
size 2° - 3°cm	9.47
size 3° - 5°cm	9.47

Broken stone for breakwater 5.10 U$S/Ton

Broken stone for breakwater 5-15 cm 8,55 U$S/m^3

Ballast 0.95 U$S/m^3

8) Petroleum product prices

Kind	N$/litre
1) Heavy fuel oil	15.01
2) Gas oil (diesel)	26.50
3) Kerosene	26.61
4) Super gasoline	47.30
5) Regular gasoline	39.20

Purchase Price of chemicals — December 1984

a) Salt	-	U$S 100/ton
Supplier - Deambrosis		
b) Sulphuric acid 98%	-	U$S 114/ton
Supplier - ISUSA		Trucks of 4,8 or 12 tons (U$S 5 per truck for unloading chig)
c) Salt cake	-	BROU - U$S 167/ton
Na_2SO_4		1983
d) Limestone		U$S 71.6/ton
Supplier: Calera Minas	-	Price doesn't include freight from Minas to Montevideo

Temporary Import

International Price CIF + 10-15%

9) Labor wage

a) Factory operational wage* (in June 1984)

Class	Man hour cost (N$/h)		
	Minimun	Average	Maximun
Operator	38.77	65.43	99.09
Foreman	49.20	76.58	127.54
Storekeeper	61.14	93.77	197.91
Sales-man	100.86	238.81	394.66
Chief of labo	139.18	232.43	298.89
Production manager	233.68	345.96	577.47

* Gross payment and 197 hours/month

Source: "SALARIOS" published by PRESIDENCIA DE LA REPUBLICA ORIENTAL DEL URUGUAY SECRETARIA DE PLANEAMIENTO, COORDINACION Y DIFUSION.

b) Construction labor wage.
Construction labor wage is referred to the information from the sub-contractor in Uruguay.
Those are attached hereafter.

LOCAL LABOR COST INFORMATION

(As of _____)

Date : _____

Reported by : _____

COUNTRY : _____ DISTRICT : _____

AGENT : (Indicate if applicable)

_____

DATA SOURCE : [Check (√) the appropriate item.]

☐ Actual wage data for _____ Project

☐ Information obtained by site survey for _____ Project

☐ Wage level information in _____ District

☐ _____

1. WAGES

1.1 Working Conditions

- Work period : 11,3 months (Indicate basic period.)
- Workweek : 8 to 10 hours a day/ 6 workdays a week basis

1.2 Monthly Wage

Indicate below the monthly wage which is the actual amount paid to each local worker. It includes paid leave, personal income tax, social insurance, and other applicable levies for each individual.

(Do not include bonus and completion pay, if required, in the monthly wage. Indicate in item 2.1.)

It doesn't include social insurance in both cases. It's about 70% and it's payed by our clients, except for indirect workers.

Direct Worker

Unit : US$/Man–month

(1)	Foreman	500
(2)	Pipe Welder (Qualified)	
(3)	Plate Welder (Qualified)	
(4)	Pipe Fitter	
(5)	Rigger	
(6)	Ironworker	
(7)	Mechanic	250
(8)	Electrician	250
(9)	Instrument Worker	
(10)	Insulation Worker	
(11)	Tinsmith	
(12)	Painter	
(13)	Carpenter	150
(14)	Rebar Worker	
(15)	Concrete Worker	130
(16)	Bricklayer, Mason	130
(17)	Plasterer	
(18)	Operator (Heavy Equipment)	200
(19)	Truck Driver	130
(20)	Semiskilled Worker	100
(21)	Unskilled Worker	80
(22)	Other ( )	
	( )	
	( )	

Indirect Worker

Unit : US$/Man-month

(1)	Accountant	800
(2)	Secretary	200
(3)	Clerk	
(4)	Typist	150
(5)	Telex Operator	150
(6)	Office Boy	80
(7)	Doctor	
(8)	Nurse	
(9)	Safety Supervisor	
(10)	Security Supervisor	
(11)	Security Personnel	
(12)	Storekeeper	250
(13)	Car Driver	120
(14)	Car Mechanic	200
(15)	Camp Administrator	
(16)	Cook	
(17)	Kitchen Boy	
(18)	Laundry Man	
(19)	House Boy	
(20)	Maid	
(21)	Other ( )	
	( )	
	( )	

1.3 Paid Leave

Indicate the number of days allowed for the following paid leave periods :

(1) Annual leave : 20 days a year + 1 day each 4 years

(2) Sick leave : not fixed days a year

(3) National holidays : 5 days a year

The above paid leave periods are covered by the monthly wage stated in item 1.2.

2. ADDITIONAL PAY

2.1 Bonus and Completion Pay

If bonus or completion pay or both are given in addition to the monthly wage stated in item 1.2, indicate below :

Bonus _____ days a year

Completion pay _____ days a year

2.2 Overtime Premium

Indicate the overtime premium on a percentage basis.

(1) Overtime work after regular working hours :

double ~~percent of monthly wage X 1/25 X 1/8~~

(2) Work on weekly holiday :

double percent of monthly wage X 1/25 X 1/8

(3) Work on national holiday :

triple ~~percent of monthly wage X 1/25 X 1/8~~

2.3 Items to be borne by Chiyoda [Check (√) the appropriate item(s)].

- ☐ Mobilization/Demobilization cost
- ☐ Camp facilities
- ☐ Food and consumables
- ☐ Kitchen facilities with utilities
- ☐ Actual cost and expense at jobsite
- ☐ Daily transportation to and from jobsite
- ☐ _____
- ☐ _____

Chapter II PROJECT SCHEDULE

The Study team explained to the Uruguay side that the most essential factor for this project is to assure the sufficient supply of pulpwood to the mill. The Uruguay side, of course, understood the essential factor of this project and, therefore, the construction schedule of the mill will be accelerated or modified according to the Plantation schedule which will be promoted by the Uruguay side. Moreover, the study team would dare to stay that the construction of the mill shall be started after confirmed that the plantation has been effectively progressed as per the schedule.

Under the above circunstances, the study team submitted to the Uruguay side the following two schedules, one is an expected construction schedule and the other is the study schedule which the study team is now engaging in.

(1) Expected construction schedule for 750 T/D BKP plant in the Oriental Republic of Uruguay.
(Including the progress schedule for the plantation)

(2) Work schedule for the feasibility study on the establishment of paper pulp mill in the Oriental Republic of Uruguay.

The followings are brief explanation of the expected construction schedule, as per attached, for the reference to the Uruguay side for their plaming.

(1) The project preparation for the construction of the mill is better to start at the 5th year after the plantation for the project. It means that the necessary arrangement and or preparation for the construction of the mill shall be started after confirmed that the plantation has been effectively progressed as per schedule and assured the sufficient supply of pulpwood to the mill.

(2) The project preparation is consists of the following factors

1 - Feasibility study (at the final stage)
2 - Basic design for BKP factory
3 - Financing arrangement
4 - International tender document for the purchasing of the entire plant
5 - Proposal by the bidder for the above
6 - Proposal evaluation by the Owner's Consultant
7 - Contract negotiation with the contractor and award of the contract

The above works will be completed within two and half years after the starting of the project preparation

(3) The construction of the project will consists of the following factors:

1 - Detailed engineering
2 - Site development
3 - Equipment procurement
4 - Equipment transportation
5 - Civil and structural works
6 - Installation of equipment

The above works will be completed in around four years after the contract awarded to the contractor.

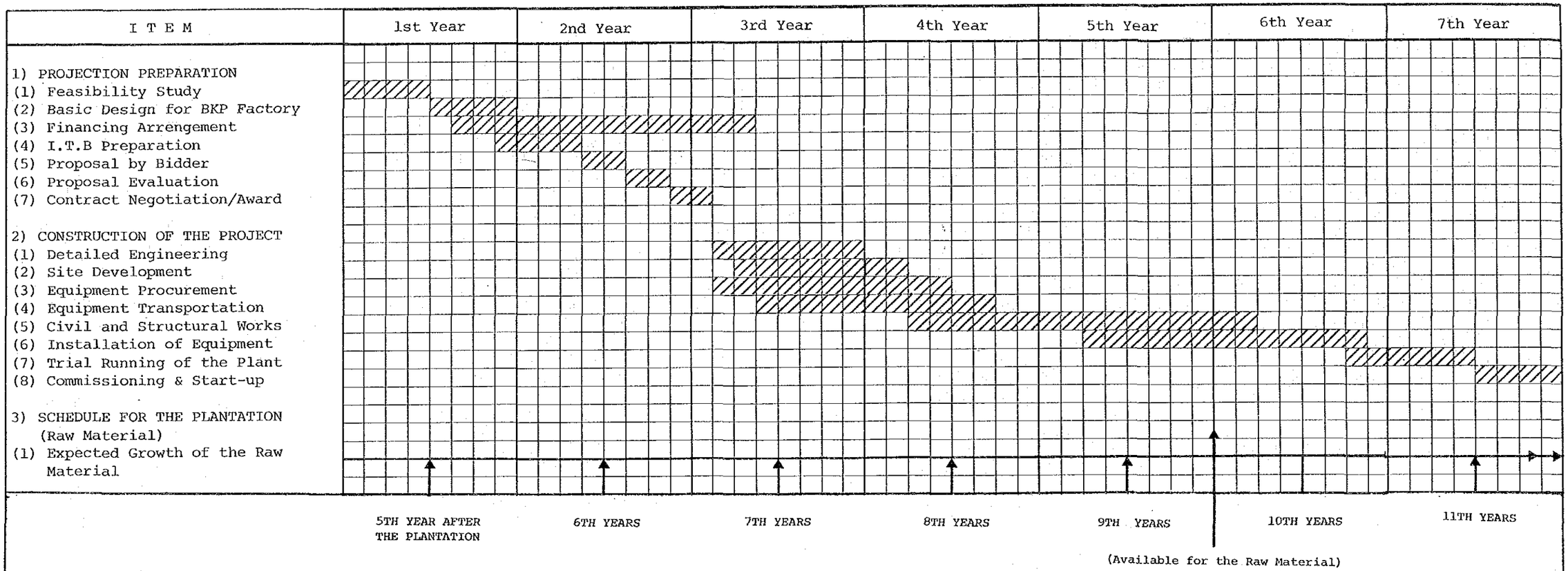
(4) Trial ruming of the plant will be started around the end of the 6th. years after the project preparation was started or around the end of the 4th. years after the contract awarded to the contractor.

(5) The commissioning and the start-up of the plant will be executed around the mid. of the seventh years after the project preparation has been started, or around the mid. of the fifth years after the commencement of the construction of the project.
As the study team mentioned as above, the above schedule will be re-studied and modified as soon as the concrete idea for the project has been finalized.

EXPECTED CONSTRUCTION SCHEDULE FOR 750 T/D BKP INDUSTRY
IN THE ORIENTAL REPUBLIC OF URUGUAY

(Inculdings the Progress Schedule for the Plantation)

DATE December 20th, 1984



Remarks: An essential factor for this projects is to assure the sufficient supply of pulpwood to the mill. The construction of the mill shall be started after confirmed that the plantation has been effectively progressed as per the schedule.

The Feasibility Study on the Establishment of Paper Pulp Mill
In The Oriental Republic of Uruguay

UNICO International Corporation
Oji Paper Co., Ltd.
Hokuetsu Engineering Co., Ltd.

WORK SCHEDULE

Description	1984		1985									
	11	12	1	2	3	4	5	6	7	8	9	10
(A) Industrial development plan and investment (Financial terms) condition in Uruguay												
(1) Background of the project												
(2) Market study of paper pulp products (BKP)												
(3) Study on forest resources and the plantation												
(4) Study on law material												
(5) Study for the plant site (6) Study for the environment conditions												
(B) Summerize of the study in Uruguay												
(7) Pulp test												
(C) Basic planning and conceptional designing												
(D) Engineering study (E) Project management												
(F) Estimate of cost breakdown and project cost												
(G) Discussion with counterpart in Japan												
(8) Financial analysis												
(9) Economic and social impact												
(10) Conclusion and recommendation												
Preparation of Report		▲ Inception Report Draft JICA		▲ Rroqress Report Minutes URGUAY				▲ Draft Report JICA		△ final report		

Ex: ——— Pre-arrangement, ▒▒ Site Survey, ▭ Works in Japan, ▲——▲ Reporting.

A N N E X - 1

URUGUAYAN Counterparts and Interviewes

The Uruguayan Government designated the Technological Laboratory of Uruguay (LATU) of the Ministry of Industry and Energy to be incharge of liaison office with the Japanese Study team, and several officials were attended from the government authorities concerned to become the counterparts under LATU.

The followings are the persons we met during we stayed in URUGUAY for the meetings, discussions and interviews:

Name	Authorities
Sr. Raúl H.Villardino (General Director)	The Ministry of Industry and Energy in Uruguay
Srta. Rosario Pou Ferrari (Technical Advisor)	The Ministry of Industry and Energy in Uruguay
Sr. Roberto Ramponi (Presidente Unidad Asesora de Prom. Industrial)	The Ministry of Industry and Energy in Uruguay
Sr. Jorge Pelufo	SEPLACODI
Sra. Ing. Ana Cazzadori (Technical Advisor)	SEPLACODI
Sr. Gustavo Cola Cancela (Accountant)	SEPLACODI
Srta. Ilda Silva Porro (Direction Forestal)	The Ministry of Agriculture and Fishery
Eng. Agr. Daniel San Roman	The Ministry of Agriculture and Fishery
Sr. Ing.Agr. Pedro Senyzsyn	The Faculty of Agriculture, the University of the Oriental Republic of URUGUAY
Sr. Enrique D.Bía (President)	The Technological Laboratory of Uruguay (LATU)

Sr. Ing.Fernando Stotz	The Technological Laboratory of Uruguay (LATU)
Chem.Eng. Raúl de Castro	The Technological Laboratory of Uruguay (LATU)
Dr. Mario H. Carminatti	New Governor Fray Bentos
Julio Alvarez Borges	Jefe de la 5d. Circunscripcion p.N.N. Fray Bentos

The Association of Paper Industry in Uruguay

Ing.Agr. Raúl Menendez Rampa	FNP (Fábrica Nacional de Papel S.A.)
Ing. Norberto F. Cassella (Director Técnico)	FNP (Fábrica Nacional de Papel S.A.)
Dr. Angel Cantoni (Director Delegado)	PAMER

Departamento Forestal Fabrica Nacional de Papel S.A.

Ing.Agr. Raúl Menendez Rampa
Ing.Agr. Oscar R.Arca Regueira

PAMER

Ing.Agr. Luis Soria
Sr. Elims Fegueroa

CAJA BANCARIA

Sr. Santos Ronchete

Forestadora y maderera del norte S.A.

Sr. Lorenzo Balerio

INDUSTRIAS FORESTALES

Presidente Alberto Voulminot

Estación Experimental Bañados de Medina

Ing.Agr. Fernando Martínez (Profesor)

URUGUAYAN COUNTERPARTS AND INTERVIEWS MET BY THE SITE SURVEY TEAM

1984

December 11 - Juan Lacaze - F.N.P. (Paper Mill)
Mr. Norberto Cassella - Technical Director
Mr. Faedo - Laboratory Head.

December 12 - Mercedes - PAMER (Paper Mill)
Dr. Angel Cantoni - Manager
Mr. Luis Alvarez - Laboratory Head

December 13 - Fray Bentos - Rio Negro Intendancy
Dr. Carminatti - Recently elect. Intendant
Mr. Julio Cesar Amaral - Secretary
Mr. Julio Alvarez - Fray Bentos Port Prefect

December 14 - Fray Bentos Port Prefecture (Fray Bentos)
Mr. Julio Alvarez - Fray Bentos Port Prefect
Dr. Carminatti - Recently elect Rio Negro Intendant
Mr. Luis Panzl - National Ports Administration (A.N.P.)

December 15 - Fray Bentos - Río Negro Intendancy
Dr. Carminatti - Recently elect Intendant
Mr. Carminatti - Brother of elect Intendant
Mr. Artigas Pereyra - Friend and adviser of Dr.Carminatti
Mr. Julio Alvarez - Fray Bentos Port Prefect

December 17 - Paysandú - Paysandú Intendancy
Arq. Alberto Zinno - Paysandú Intendant
Mr. Ricardo Molinelli - Secretary

December 17 - Casablanca Port and land for industrial usage
Mr. Piaggio - Land-surveyor, Paysandú Intendency

Annex - 2 - STUDY ITINERARY IN URUGUAY

November, 1984

29 (THU) Ar. Montevideo (1st Mission)
1st. general discussion whith Mr. T. MIKAMI
Japanese Embassy

30 (FRI) Courtesy call to the Ambassador at the Japanese Embassy.
Establishment of the study team office in the Technological Laboratory of Uruguay (LATU).
Courtesy call to the President, Sr. Enrique Bía, at LATU.
1st. meeting with Counterpart at LATU.
Courtesy call to Sr. Jorge Pelufo at SEPLACODI.

December, 1984

1st. (SAT) General discussion whith Mar. T. MIKAMI, JICA paper expert, stationed at LATU, Discussion with Mr. Y.ASAI, Kambara (URUGUAY)

2nd. (SUN) Discussion whith Mr. T.MIKAMI, above and Mr. Y.ASAI, Kambara (URUGUAY) for general information concerning Uruguay.

3rd. (MON) The 2nd meeting with the counterpart.
Visit to collection general information;
Mr. Rodolfo Kubota
Ministry of Industry and Energy (MIE)
Ministry of Finance and Economy

4th (TUE) Separate meetings with the counterparts.
The plantation group.
The site survey group.
The market survey group (including economic and financial analysis)
Visits to collection of general information;
The Port Authority of Montevideo
Ministry of Industry and Energy
SEPLACODI

5th (WED) Separate meeting with the counterparts.
Visits to collection of general information;
M/S KAMBARA (URUGUAY) Ltd
The Ministry of Agriculture and Fishery
The Japanese Embassy

6th (THU) Separate meeting with the counterparts.
Visits to collection of general information;
M/S KAMBARA (URUGUAY) Ltd.
M/S Rodolfo Kubota
Ministry of Industry and Energy
Thermal Power Plant, Montevideo
Shipyard, Montevideo

7th (FRI) Separate meeting with the counterparts
Visits to collection of general information;
SEPLACODI
The Ministry of Agriculture and Fishery
Mr. HISAO YAMAMOTO

8th (SAT) Ar. Montevideo (2nd. Mission)
General discussion inside the study team.

9th (SUN) General discussion inside the study team.

10th (MON) Courtesy visit of 2nd. Mission:
The Japanese Embassy .
SEPLACODI
The Ministry of Industry and Energy
The Ministry of Agriculture and Fishery
The 3rd. general discussion with the counterparts.

11th (TUE) (A group , B group, C group) Move to up-countries.
Survey on the paper manufacturing .
Mills and plantations, and for sample collection.

A - group : Site survey team
Mr. Y. MIKAMI
Mr. M. ONOZUKA
Mr. K. MATSUBARA
Mr. T. SENTOKU
Mr. T. SATO

B - group: Test sampling team
Mr. F. SAKABE

C - group: Mr. T. USHIJIMA
Mr. J. MOROKUMA

A - group: Visit FNP paper factory and JUAN LACAZE
B - group: Visit FNP plantation
C - group: Visit FNP plantation

12th (WED) A - group: Visit PAMER paper factory and hydro power plant
B - group: Visit PAMER paper factory and hydro power plant
C - group: Visit PAMER plantation

13th (THU) A - group: Visit FRAY BENTOS, Port Authority, Municipality, electric authority
B - group: Visit CAJA BANCARIA and FRAY BENTOS
C - group: Visit CAJA BANCARIA and PAYSANDU

14th (FRI) A - group: Survey on plant site at FRAY BENTOS
B - group: Join to the above survey
C - group: Proceeding to RIVERA

15th (SAT) A - group: Survey on plant site at FRAY BENTOS
B - group: Join to the above survey and returning to Montevideo
C - group: Survey on the plantation in RIVERA

16th (SUN) A-group: Visit to NUEVA PALMIRA
B-group: Returns to MONTEVIDEO
c-group: Move to MELO, survey on the plantation owned by Sr Michel Acle (project 23)

17th (MON) A-group: Moves to PAYSANDU
C-group: Survery on the Estación Experimental Bañados de Medina

18th (TUE) A-group: Return to MONTEVIDEO
C-group: Return to MONTEVIDEO

19th (WED) General discussion within the study team
Visits to the authorities concerned for the field survey for the data collection promissed during the field survey

20th (THU) General discussion with the counterparts
Visits to the several authorities for the data collection

21st (FRI) General discussion whith the counterport
Signing on the interior report.

22nd (SAT) General discussion whithin the study team

23rd (SUN) General discussion whithin the study team

24th (MON) Leaving for Japan.

A N N E X 3

(1) Minutes of Meeting, dated November 30, 1984

(2) Minutes of Meeting, dated December 3, 1984

(3) Minutes of Meeting (Sectional Meeting)

Dec. 4th - Dec 7th 1984

(4) Minutes of Meeting, (dated December 10, 1984)

MINUTES OF MEETING

1) Date: November 30 1984/14.30 - 16.50 PM
2) Place: LATU/Montevideo
3) Attendant:

URUGUAY SIDE

Sra. Ana Cazzadori: SEPLACODI (Technical advisor)
Srta. Rosario Pou Ferrari: Ministerio de Industria y Energía (Technical advisor)
Srta. Ilda Silva Porro: Ministerio de Agricultura y Pesca (Direction Forestal)
Eng. Pedro Senyszyn: Facultad de Agronomía Universidad de la República
Sr. Fernando Stotz: LATU

STUDY MISSION SIDE

JICA TEAM

Mr. Y. MIKAMI , Study Team Leader
Mr. M. ONOZUKA, Engineer
Mr. K. MATSUBARA, Engineer
Mr. K. NAGAI, Coordinator

The Japanese Embassy in URUGUAY

Mr. IMAZU

Consultante de JICA (Stationed in URUGUAY)

Ing. Takahito Mikami

4) Main Topics discussed

1) The Study Mission explained that the objectives of the Study Team is to study and examine the technical, economical and financial feasibility on establishment of a paper pulp mill (phase III) , for export oriented in URUGUAY as a servies of study based on the master plan made by JICA on February 1981.

The URUGUAY side agreed above objects of the study mission and confirmed that the study mission is no concern about the projects mentioned in the above master plan , phase I (short-term plan) and phase II (medium-term project).

2) Production capacity

The Study Mission explained that the daily production capacity of 750 tons BKP is the standard size in the world for an export oriented pulp mill at present. The Study Mission also explained that since the project is aimed for export purpose, the product should be internationally competitive, and in order to the advantage of the scale economy also, the study shall be based on fundamenta lly a daily production capacity of 750 tons BKP.

The Study Mission also explained that, the production capacity mentioned above shall be examined and reviewed in accordance with the market situation and plant site conditions.

The Uruguay side commented that the plant capacity of 750 T/D BKP was recommended by Japanese side at the time of discussion on the presentation of the master plan on February 1981. The Uruguay side has no objection for the above recommendation, however, 750 T/D capacity shall be the maximum one and the final capacity shall be decided after the through study and examination both on the market situation and plant site conditions, since the paper pulp industry require huge amount of money.

3) Product Item

The Study Mission explained that in accordance with the recommendation made by the master plan of February, 1981 , the study shall be fundamentally concentrated into the BKP (bleached kraft pulp) as product item for the proposed paper pulp mill, under the reason that BKP seems more favorable product in international market and easy plantation in Uruguay.

The Uruguay side commented that the above product of BKP was recommended by Japanese team , visited here on August, 1980.

The Uruguay side has no objection basically for the above recommendation at this stage, since the main purpose of the project is to increase the exports and to contribute to the regional development , The Uruguay side has no objection to select the product item as BKP for the establishment of the paper pulp mill.

The Uruguay side requested to make market study for the following items in adition to the BKP mentioned above.

(A) unbleached kraft paper pulp

(B) papers

(C) chips

(D) paper board

The Study Mission agreed to make above study during they stay in Uruguay.

4) Locations of the plant site

The Uruguay side commented that regarding to the plant site the following three nominated sites shall be survived and make recommendation the most suitable location for the plant sites.

CASA BLANCA

FRAY BENTOS

and JUAN LACAZE

The both parties has reached agreement also that any other sites besides above three is not required for any survey.

5) Pulp Test Sample

Uruguay side has selected under the consultation with the team the following six kinds of trees for the suitable material for the test sample to be sent to Japan.

(A) GRANDIS (EUCALYPTUS)
(B) GLOBULUS (EUCALYPTUS)
(C) MAIDENI (EUCALYPTUS)
(D) TAEDA (PINUS)
(E) ELLIOTTI (PINUS)
(F) POPULUS

The cutting of above test sample shall be carried out under the presence of both parties after hte Japanese experts has arrived in Uruguay in December 8 1984. The necessary measures in URUGUAY to air mail the sample logs to Japan for the test shall be arranged by the SEPLACODI however the team will bear the transportation cost, customs clearance expenses and the air freight charges to Japan for the test logs.

6) The Study Team suggested to have a general meeting on December 3rd. again at LATU with the same member today and proceed to the separate meeting from december 4th. into three groups, market study group, site survey group and plantation group.

The Uruguay side have no objection for above suggestion and agreed.

Confirmed.

SEPLACODI	Y. MIKAMI (Team Leader) JICA

MINUTES OF MEETING

1) Date: December 3, 1984. 15ºº - 17 ºº PM
2) Place: LATU/Montevideo
3) Attendant:

URUGUAY SIDE

Sra. Ana Cazzadori : SEPLACODI (Technical advisor)
Sr. Gustavo Cola Cancela : SEPLACODI (Accountant)
Sra. Rosario Pou Ferrari : Ministerio de Industria y Energía (Technical advisor)
Srta. Ilda Silva Porro : Ministerio de Agricultura y Pesca (Direction Forestal)
Eng. Pedro Senyszyn : Facultad de Agronomía Universidad de la República
Sr. Fernando Stotz : LATU

STUDY MISSION SIDE

JICA TEAM

Mr. Y. MIKAMI, Study Team Leader
Mr. M. ONOZUKA, Engineer
Mr. K. MATSUBARA, Engineer
Mr. K. NAGAI, Coordinator

The Japanese Embassy in URUGUAY

Mr. IMAZU

Consultante de JICA (Stationed in URUGUAY)

Ing. TAKAHITO MIKAMI

1) The Study Mission submitted "Minutes of Meeting" to the Uruguay for the confirmation of discussion held at LATU on November 30, 1984. The URUGUAY side has no objection for the above contents.

2) The Study Mission submitted "The Study Schedule of 750 T/D BKP Project (Field Survey outside Montevideo)" to the URUGUAY side and explained the detailed field survey schedule in URUGUAY. The main points which the Study Mission explained were as follows:

(1) The Study Mission divided into four groups as follows:

- Site Survey Team
  MR. M.ONOZUKA, MR. K.MATSUBARA
  MR. T.SENTOKU, MR. T.SATO
- Test Sample Team
  MR. F.SAKABE
  MR. T.USHIJIMA
- Plantation Survey Team
  MR. Y.MIKAMI, MR. J.MOROKUMA
- Market Study Team
  MR. K.NAGAI

(2) The detailed schedule were explained as per attached, however, the following is the basic events for the trips:

11th/Dec (Tue) All Team, except Market Study Team, will leave Montevideo for Mercedes.

To Visit: FNP Factory
FNP Plantation JUAN LACAZE one of the nominated plant site.

12th/Dec (Wed) All Team will visit following sites

To Visit: PAMER Factory

PAMER plantation

13th/Dec (The) All Team will leave for Fray Bentos

14th/Dec (Fri) Site survey team. Will visit area of FRAY BENTOS such as natural condition (geographical condition, location and climates), infrastructure (port,road, railway), utilities (power, water, oil,chamical), and local conditions.

Test sample team: will visit to the plantation area (CAJA BANCARIA) for the collection of the test sample to be sent to Japan.

Plantation survey team: Will accompany together with the above sample team for the attendance and selection of the test sample to be cut at the plantation.

15th/Dec (Sat) - 18th/Dec (Tue)

Site Survey team: Same as above but not limited to visit PAYSANDU for the site survey of CASA BLANCA (one of the nominated plant site), during the above survey, and also may visit PAMER Hydro Power Station.

Test sample team: Wil arrange collection of the sample and bring back the sample to MONTEVIDEO for the shipment to Japan

Plantation survey team: whill move to the up country for the survey of plantation and checking of raw material availability. The following is the tentative schedule

15th PAYSANDU - TACUAREMBO - RIVERA
16th RIVERA - TACUAREMBO
17th TACUAREMBO - MELO
18th MELO - MONTEVIDEO

However,all above schedule will be modified according to the condition visited.

19th/Dec (Wed) General discussion among the team and summerize the result of survey at MONTEVIDEO

20th/Dec (The) General discussion with the URUGUAY side for summerizing the survey report at MONTEVIDEO

21st/Dec (Fri) Signing on Interim Report between the URUGUAY side and the Study Mission.

22nd -23rd/Dec
The final checking of all the survey rewet.

24th/Dec (Mon) The Study Mission will leave for Japan

(3) The Study Mission requested to the URUGUAY side to arrange the representative persons to be accompanied to the above each team for the smooth field study in up country.
The study mission committed to bear the actual expenses during the trip of Uruguay persons.
The URUGUAY side agreed to the proposal and promised to give the name of representative on the next meeting.

(4) A formal courtesy call to the municipality at FRAY BENTOS is included in the programm and Mr. IMAZU japanese embassy, is requested to attend the courtesy call, in order to avoide any trouble with the related authorities and industries (private or public) for the smooth execution of the survey.

3) The URUGUAY side explained that the following sites has decided the selected area to have cut sample logs to be sent bach to Japan.

Name of tree	Sample cut location
GRANDIS (EUCALYPTUS)	CAJA BANCARIA
GLOBULUS(")	FNP
MAIDENI (")	FNP
TAEDA (PINES)	CAJA BANCARIA
ELLIOTTI (PINES)	CAJA BANCARIA
POPULUS	near CAJA BANCARIA

4) The Study Mission explained that through the analysis and through the study of the market situation, especially in Europe, the BKP (Bleached kraft pulp) as product item for the proposed pulp will be more saleable than any other products in international market. The Study Mission submitted the data for the above result (attached herewith a copy of data) and the URUGUAY side agreed to select the BKP as Product item for the Proposed Paper Mill.

Regarding to the plant capacity, the Study Mission also explained that the daily production capacity of 750T/D BKP is the standard size in the world for an export oriented pulp mill in order to advantage of the scale economy.
The URUGUAY side understood the above explanation.

5) The URUGUAY side asked wheter the Study is included the marketing survey (Market Mechanism of imported countries, distribution mechanism, customer's name, special policies to be taken by the government of importation of the products etc.) or not.

The Study Mission explained that the Marketing survey, proposed by the URUGUAY side, is not included in the scope of work for the study, but the Marketing survey should be carried out at the stage when the URUGUAY side has decided the basic policy for the project and the formation of the new company (Detailed investment etc.) and, therefore, the Study, will be concentrated into the Market possibility, such as whether the BKP will be sold to EC, then how much its price together with salable quantity etc.

The Study Mission, however, promised to study and report the some cases especially in Brazil as reference.

6) Regarding to the Market survey in URUGUAY, the URUGUAY side requested that in order to avoide any confliction with the existing paper mills, distributor and/or dealers, it is suggested to study and examine by the data available in LATU and SEPLACODI, not for the field interview in URUGUAY , since the product is aimed for export in its majority. The Study Mission agreed above comment given by the URUGUAY side.

7) The both parties agreed to proceed to the separate meetings from December 4th. into three groups , market study groups (including economical and financial analysis), site survey group and plantation group as we agreed upon already through the meeting held on November 30, 1984.

SEPLACODI	Y.MIKAMI (Team Leader) JICA

THE SELECTION OF THE PLANT

The plant should have competitiveness especially for the export orientated plant in price wise and qualitywise and also have the stable market.

In the Master plan, they have selected 750 t/d BKP plant as the export oriented plant as phase 3 Long-term project.

The situation is the same as mentioned below, therefore,consultant will take the BKP plant having a capasity of 750 t/d as standard case. And if there is some constrain on the above capacity, the other capacity will be studied.

1) Kind of product

Market of pulp and papar in the world is mentioned in table 1 which shows the following result.

Mass Trade commodity

Bleached sulphate pulp, News print, other paper & paper board

Quasi Trade commodity

Bleached Sulphite, un bleached sulphate, dissolved wood pulp, printing + writing paper, wrap + pack paper.

In the chemical wood pulp, trade of bleached sulphate pulp is not only biggest but also is expanded rapidly however other pulp trade is almostly stagnated.

The main reason why BKP trade is expanded is that user of pulp (paper company) wants to use the BLP which is cheaper than BNP and the market of BLP is rather tight in comparison with BNP.

Uruguay has not enough wood resources but paper and pulp plant to be studies is the export oriented plant based on the domestic resource (even in future, after plantation)

Table I

	Import Quantity		World Total	(1000 MT)
	1971	1976	1979	1981
Mechanical Wood pulp	1135		1436	1179
Semi-chemical pulp	140		145	156
Chemical wood pulp	11834		16980	16693
Unbleached sulphite pulp		499	517	503
Bleached sulphite pulp		2173	2325	2264
Unbleached sulphate pulp		1614	1661	1423
Bleached sulphate pulp		8972	11832	11836
Dissolv wood pulp	1481		1498	1458
Other fibre pulp	130		217	193
Paper + paper board	23867		32332	33353
News print	10729		12253	12519
Printing + writing paper	3432		6651	6638
Other paper + paper board	9701		13427	14196
Housh + sanit paper		255	323	363
Wrap + pack paper		6386	7266	8167
Paper + paper BD NES	3728		4923	4325

Source: UN statistics

Mass Trade : Bleached sulphate pulp, news print, other papers + paper board.

Quasi : Bleached sulphite, unbleached sulphate dissolve wood pulp, printing + writing, wrap + pack paper

Table 2 shows that EEC is the biggest market of pulp and Asia (biggest is Japan) is also importation area but other areas are the net exporting areas. The rank of exporting area is North America, North Europe, Latin America and Africa.

In consideration of distance in addition to the above, EEC should be considered as main market of Uruguay pulp plant and North America, North Europe and Latin America should be considered as competitor.

In the Latin America recently, Brasil has constructed the BKP plant and News paper plant, Argentine has constructed also Market BKP plant and New paper plant and Guatemala has built Market BKP plant.

Table 2 Capacity, Production and consumption

in 1982 (1000 MT)

	Paper board Capacity	Pulp Capacity	Paper board production		Pulp production		Pulp Comsumption		Net import of pulp		Paper board comsuption		Net import paper	
			1981	1982	1981	1982	1931	1982	1981	1982	1981	1982	1981	1982
EEC	27385	6580	24385	23653	5502	5338	13333	12669	7831	7331	32830	32361	8445	8708
North Europe	15740	20175	13644	13127	17468	15942	12918	12007	-4550	-3935	3583	3313	-10061	-9814
Other Europe	6846	4348	5750	5861	3765	3797	3585	3579	- 180	- 218	5068	5251	- 682	- 499
West Europe Sub Total	49971	31103	43779	42641	26735	25077	30836	28255	4101	3178	41481	40925	- 2298	-1716
East Europe	15594	12466	15361	15576	13210	13500	12569	13642	- 641	142	15336	15667	- 25	91
Europe Total	65565	43569	59140	58217	39945	38577	43405	41897	3460	3320	56817	56602	- 2325	-1615
North America	63683	50966	70098	66539	66496	61774	60404	56288	-6092	-5486	65171	62276	- 4927	-4263
Asia	39034	22627	20933	30134	14581	14856	17816	17870	3235	3014	32299	32822	3266	2688
Oceania	2546	2376	2164	2198	1823	1755	1569	1572	- 254	- 183	2485	2545	381	347
Latin America	10181	7347	7583	7582	5166	5162	4671	4470	- 495	- 692	9413	9021	1830	1439
Africa	2250	1924	1843	1848	1648	1698	1284	1159	- 364	- 539	2572	2500	729	652
World Total	198.528	151.924	169.809	166.518	130.902	125.065	130,497	124,604	-	-	168,757	165,766	-	-

Source: Pulp and Paper International

The export oriented plant based on the domestic resources (wood, natural gas, crude oil and others) is selected from the view of transportation cost of product in each stages (log, chip, pulp and paper), production cost and market situation.

Export opportunity of log and chip is not included in this study and will be studied separately.

In generally speaking, for the export oriented plant based on domestic resources, pulp plant is selected because paper plant has already built in major consuming country and production cost of paper will be higher in new plant especially in the country in which plant cost and maintenance cost will be high because paper plant is one of the capital incentive one.

And also with the following reasons, the BKP is considered as the most suitable project to be studied.

From mass trade commodity, news paper and other paper, and paper board are not suitable as export oriented project because International grade of news print should be made mainly from Spruce and Fir which are whiter and more fitted for producing mechanical pulp than the other soft wood and kraft paper based on the domestic pulp wood in Uruguay who have the inferior quality.

2) Capacity at the plant

Because pulp plant is the capital intensive plant, therefore the bigger size plant has the stronger competitiveness if there is no constrain.

750 t/d BKP plant has already constructed and are under smooth operation, therefore 750 t/d should be taken as the base case and the other capacity will be studied if necessary.

Any way, the experiences of Japan in Brazil will be useful for this study because it is the mile stone of the historical current of the South America becomes to the suppling area of pulp to the world.

MINUTES OF MEETING

(Section Meeting)

1) Date : Dec. 4th - Dec. 7th. 1984
2) Place: LATU/MONTEVIDEO
3) Attendant

URUGUAY SIDE

Srta. Rosario Pou Ferrari	: Ministerio de Industria y Energía (Technical advisor) (attended on Dec. 4th and 6th)
Srta. Ilda Silva Porro	: Ministerio de Agricultura y Pesca (Direction Forestal)
Ing. Pedro Senyzyn	: Facultad de Agronomía Universidad de la República

Study Mission Side

JICA Team

Mr. M. ONOZUKA, Engineer
Mr. K. NAGAI, Coordinator

1) The Study Mission has submitted the dailed questionnaire (a copy appached herewith) for forest plantation (planta tion and row material), background information and all other informations, required for the study of the esta- blishment of the 750 t/D BKP mill in the Oriental Republic of URUGUAY.

2) The both parties has discussed each items of the above questionnaire for four days and as the result the Study Mission received the following data from the URUGUAY side, which were made by them as the reply for above questionnaire.

DESCRIPTION (Written in Spanish)

1) Cost of plantation at 1984
(Including the price of land for the plantation)

2) Evaluation/breakdown cost of the plantation for last ten years (1974 - 1984)

3) Estimation for breakdown of the plantation in 1983-1984

4) Costo De forestación/HAS (density)

5) Lista de Precios de Mercadería a Levantar en el Centro forestal.

6) Forestación en el URUGUAY

7) Registered plantations area from 1975 - 1983

8) Annual cutting of forests for industry purposes (results of six years)

9) Wood volume estimation per distance and age of plantations

10) Present purchase price of major machinery agricultural tractors, gradors, prouphs, seeders, pumps and gasoline, kerosene etc.

11) Direccion forestal, División Planeamiento y Desarrollo Forestal, Ministerio de Agricultura y Pesca

12) Cost of Major Operations

13) Efficiency of Major Operations for sawlogs

14) Cost of preparing pine round wood for the sawmill in the forest.

15) Reply to the questionnaire Nº 12-3
(period of Operation and annual production)

16) Transportes Carreteros
Transportes Ferroviarios

17) Weather data including monthly mean temperature, and rainfalls in the major districts of URUGUAY

18) Factory capacity and actual production for plywood, particle board and fibreboard.

19) Costo de flete de Madera en rollo

20) Densidad Básica (kg/m^3) de Maderas de especies

21) Pulp and paper industry

22) Carta forestal actualizada y suelos de interes forestal
(Map of forestation)

(23) El manejo de plantaciones forestales en Uruguay

(24) Mediciones en forestaciones de Pino en el Uruguay.
El manejo de explotaciones forestales en Uruguay.
Poder calorífico de maderas secas.
Precios de maquinaria importada

(25) Precios de maquinaria importada

(26) Poder calorífico de maderas secas determinado en laboratorio con bomba calorimétrica.

(27) Situacion actual de la forestación en el Uruguay

(28) F.Y.M.N.S.A.
Forestadora y maderera del norte S.A.
Diciembre de 1984

MINISTERIO DE AGRICULTURA Y PESCA DIRECCION FORESTAL

3) QUESTIONNAIRE FOR FOREST RELATION
(Plantation and raw material)

I. Background Information

1. Forest type map of the projected area (Distribution of species, ages m^3/ha etc.) or acreage classified by vegetation type (woods, ranch, etc.)

2. Land prices for plantation classified by vegetation type.

3. Plantation results of annual growth of the stem, and standard yield table of major species (number of tree, volume of stem/ha; D.B.H. of standard tree, etc., by age)

4. Results in the past five years and projection for succeeding year of log production, demand for logs.

5. Density (BD kg/m^3) of each species.

6. Plantation results in the past ten years and present schedule of planting species, its location and planting acreage.

7. Cost of plantation with breakdown in major operation on a yearly basis. ($/ha)

8. Weather data including monthly mean temperature, and rainfalls in the major districts of Uruguay.

9. Production of exsisting sawmills and wood processing mills around the projected pulp and paper mill and their utilization of wood waste.

10. Governmental policy and incentives on afforestation, forest management.

11. Stumpage and price of pulpwood at mill or roadside.

12. Data of operations at typical logging site.

1) Typical operations ..... Operation flow, required machinery and labor, actual working days per year and working hours per shift.

2) Efficiency (m^3/machine/day, m^3/head/day) and cost ($/$m^3$, $/$m^3$/Km) of major operations (felling & bucking, forwarding transportation etc.) and logging conditions such as density of standing timber (m^3/ha), average D.B.H., topography, road density (m/ha), average yarding and hauling distance and method of logging, etc.

3) Period of operations and annual production.

4) Direct management or by contractors, method of inviting labors, wage and fringe benefit.

5) Present purchase price and operation cost ($/Hr/machine) of major machinery and major specification.

   (a) Tractor
   (b) Yarder or skidder
   (c) Crawler crane
   (d) Log Truck
   (e) Price of kerosene, gasoline and engine oil.

6) Present purchase price of chemicals
   (a) Salt ($NaCl$)
   (b) Suphuric acid (H_2SO_4)
   (c) Salt Cake (Na_2SO_4)
   (d) Lime Stone

MINUTES OF MEETING

1) Date: December 10, 1984 15.oo - 17.oo PM

2) Place: LATU/Montevideo

3) Attendant:

URUGUAY SIDE

Eng. Ana Cazzadori:	SEPLACODI (Technical advisor)
Eng. Agr. Rosario Pou Ferrari:	Ministerio de Industria y Energía (Technical advisor)
Eng. Agr. Ilda Silva Porro:	Ministerio de Agricultura y Pesca (Direction Forestal
Eng. Pedro Senyszyn:	Facultad de Agronomía Universidad de la República
Eng. Agr. Daniel San Roman:	Ministerio de Agricultura y Pesca Direction Forestal)
Eng. Fernando Stotz:	LATU
Chem. Eng. Raúl de Castro:	LATU

STUDY MISSION SIDE

JICA TEAM

Mr. Y. MIKAMI , Study Team Leader

Mr. M. ONOSUKA, Engineer

Mr.K.MATSUBARA, Engineer

Mr.J.MOROKUMA ,

Mr. F. SAKABE ,

Mr. T. SATO ,

Mr. T.SENTOKU ,

Mr.T.USHIJIMA ,

Mr. K. NAGAI , Coordinator

The Japanese Embassy in URUGUAY

Mr. T. IMAZU
Consultante de JICA (Stationed in URUGUAY)

Eng. T. MIKAMI

The discussion was started based on the "Main Topics" to be discussed on December 10th (MON) , as per attached, prepared by the study team.

1) Sample logs collection

The Uruguay side confirmed that the all sample logs shall be selected at FNP and CAJA BANCARIA instead of NEAR CAJA BANCARIA, once they proposed at the 1st. Meeting held on November 30 , 1984.

The Uruguay side confirmed that the permission for the above sample collection has been obtained from the authorities concerned.

2) The final organization of the survey team and its schedule

The Study Mission introduced to the Uruguay side all the study mission members arrived December 8th. as 2nd. mission and explained revised schedule of the field survey for the up country, starting from December 11th. (Revised schedule is attached hereto)
Members of the field survey team were fixed finally as follows:

Site Survey team : JICA
Mr. Y.MIKAMI
Mr. K.MATSUBARA , Mr. M.ONOZUKA
Mr. T.SATO , Mr. T.SENTOKU

URUGUAY

Chem. Eng. Raúl de Castro

Sampling team: JICA

Mr. F.SAKABE

URUGUAY

Eng. Agr. Daniel San Roman

Plantation team: JICA

Mr. J.MOROKUMA, Mr. T.USHIJIMA

URUGUAY

Eng. Agr. Daniel San Roman

Remarks:

(1) Mr. T. IMAZU , Japanese Embassy, will join to the site survey team on December 13th (THU) for the courtesy call at Municipality - FRAY BENTOS , at 14.oo PM on the same day.

(2) Mr. Y. MIKAMI, will return to Montevideo with Mr. T. IMAZU for the final arrangement of the Interim Report, which will be expected to be signed on December 21st. 1984.

(3) Eng. Agr. Daniel San Roman will be proceeded to the plantation team after the attendance of the sample collection at CAJA BANCARIA has been completed.

(4) The both parties confirmed that the above schedule will be modified according to the travelling conditions at the destination.

3) Organization to be visited at

The Uruguay side explained to the Study Mission that the followings are the person or organization to be visited for the field survey (plantation team)

at RIVERA : Sr. Balerio Fymmsa

at MELO : Estación Experimental Bañados de Merina
Eng. Fernando Martinez

4) Location of sampling of logs

The Uruguay side commented that concerning the locations of sellection of sample logs , though they once decided the location of sampling at FNP and CAJA BANCARIA, Rivera is also seems recommentable location for the sampling of Eucalyptus in addition to CAJA BANCARIA , since Rivera seems more favourable productivity area for Eucalyptus.
The study team explained that from the technical view point quality and characteristics of the paper and or pulp is not so affected by the material selected, any plantation sites, in case the material selected remains same kinds. It will be affected a little bit on the process of bleaching, however, it is not so important factor at this study stage that we would like to recommend to select the samples at the locations as we agreed on the 2nd. Meeting, held on December 3rd 1984.

The Uruguay side agreed tha above explanation made by the study team and finally confirmed that the collected locations of samples are same places as agreed on December 3rd. Meeting.

5) The both parties confirmed that the following are the meeting schedules to be proceeded from now on.

(1) Dec. 20th (THU) 10.oo AM at LATU

General discussion for the result of field survey

- reporting on the result of field survey by 3 teams separately.
- general discussion with both parties.

(2) Dec. 21st (FRI) at 10.oo AM at LATU
final settlement on the draft of Interim Report for the signing by both parties.

(3) Dec. 21st (FRI) at 17.oo PM at SEPLACODI
signing on the Interim Report with Mr. Pelufo, SEPLACODI and Mr. Y. MIKAMI , JICA

THE STUDY SCHEDULE OF 750 T/D BKP PROJECT (REVISED ON DEC/10. 1984)

3/DEC/84

FIELDO SURVEY OUTSIDE MONTEVIDEO

DATE	SITE SURVEY TEAM	TEST SAMPLING TEAM	PLANTATION SURVEY TEAM	
	JICA TEAM: MR Y.MIKAMI Mr. M.ONOZUKA K.MATSUBARA T. SENTOKU T. SATO SEPLACODI: DECA (LATU)	JICA: MR. F. SAKABE SEPLACODI: ING.AGR.DANIEL SAN ROMAN	JICA MR.T.USHIJIMA J. MOROKUMA SEPLACODI:	COORDINATION MR. K. NAGAI SEPLACODI :
10/DEC(MON)	20.30 PARTY			
11/DEC(TUE)	LV 8.00 MONTEVIDEO→JUAN L.LACAZE, (FNP)→ MERCEDES	(HOTEL = MERCEDES)		MONTEVIDEO
	REMARKS 1) TO VISIT = FNP FACTORY 2) TO VISIT = FNP PLANTATION			
12/DEC(WED)	AM: MERCEDES PAMER PM: PAMER MERCEDES	(HOTEL=MERCEDES)		MONTEVIDEO
	REMARK 1) TO VISIT : PAMER FACTORY 2) TO VISIT : PAMER PLANTATION			
12/DEC(THU)	AM: MERCEDES FRAY BENTOS		PAYSANDU : SAMPLING AT	MONTEVIDEO/FRAY BENTOS
	PM: FRAY BENTOS		CAJA BANCARIA	With Mr. IMAZU, Japanese Embassy
		(HOTEL=PAYSANDU)		FRAY BENTOS →
14/DEC(FRI)	AM/PM: FRAY BENTOS	AM:FRAY BENTOS SAMPLING		MONTEVIDEO(With Mr.Y. MIKAMI)
	REMARK 1) TO VISIT FRAY BENTOS SITE FORT (HOTEL : FRAY BENTOS)	AREA (CAJA BANCARIA) REMARK 1) TO ARRANCE SAMPLE LOGS (HOTEL PAYSANDU)	PAYSANDU→ RIVERA (HOTEL RIVERA)	

DATE	SITE SURVEY TEAM	TEST SAMPLING TEAM	PLANTATION SURVEY TEAM	COORDINATION
15/DEC(SAT)	STAY AT FRAY BENTOS (HOTEL : FRAY BENTOS)	ARRANGEMENT FOR SAMPLING LOGS (HOTEL PAYSANDU)	 RIVERA (HOTEL RIVERA)	 MONTEVIDEO
16/DEC(SUN)	REMARK 1) VISIT TO PAMER 2) HYDRAULICS DAM	BRING BACK SAMPLE LOGS TO MONTEVIDEO	RIVERA→TACUAREMBO (HOTEL: MELO)	MONTEVIDEO
17/DEC(MON)	FRAY BENTOS→PAYSANDU (CASA BLANCA)		MELO (HOTEL MELO)	MONTEVIDEO
18/DEC(TUE)	MONTEVIDEO	MONTEVIDEO (ARRANGEMENT FOR AIR FREIGHTING)	MELO→MONTEVIDEO	MONTEVIDEO
19/DEC(WED)	GENERAL DISCUSSION AND SUMMARIZE SURVEY RESULT			MONTEVIDEO
20/DEC(THE)	GENERAL DISCUSSION WITH URUGUAY MEMBERS			
21/DEC(FRI)	17.00 PM SIGNING ON INTERIM REPORT 20.30 PM PARTY WITH ALL TEAM MEMBERS			
22nd-23rd	SUMMARIZING ALL STUDY RESULTS			
24/DEC(MON)	LV. FOR JAPAN			

Main points to be discussed on December 10th (MON). 1984

1) Sample logs collection

(A) at FNP on Dec/11 (TUE)

(B) at CAJA BANCARIA on Dec 13th (THU)

	CAJA BANCARIA	Others
To whom and where we have to meet ,		
Name of Person:		
Address:		
Tele. No.:		

2) Final Organization of Survey Team and its schedule.(Especially plantation groups)

3) A general Meeting with URUGUAY side after the field survey.

Dec. 20th (THU) 10.oo AM at LATU

Dec. 20th (TH) 15.oo PM with Sra. Ana Cazzadori

(A) Reporting the result of survey by each three teams.

(B) General discussion with both parties

(C) Final settlement on draft of Interim Report, for signing on Dec. 21st. (FRI)

4) Signing on the Interim Report

Dec. 21st. (FRI) at 10.oo AM at LATU

(signed by Mr. Y.MIKAMI by JICA Team)

(signed by Mr. PERUFFO by URUGUAY side)

5) Organization to be visited at

Rivera

Tacuarembó

Melo

6) Name and title of persons to be invited to the Party on Dec 21st 1984 and method at despatching invitation card

7) Delivery method of sample logs to Japan.

(1) A field report by Sample Collection Team

Dec. 11 th. (TUE) We have visited the forestal deparment, located about 2 Km N-W of FNP around 11,oo AM with plantation team and met Mr. Raúl Menendez Rampa and Mr. Oscar R. Arca Regviera.

Two kinds of Samle logs, according to the discussion with URUGUAY side on Dec. 10th., Eucalyptus Globulus and Eucalyptus Maideni, which they have prepared by themselves yesteraday and were collected by us. Both of the sample collected were informed that they are four years grade. We put the sample No. 1 for Eucalyptus Maideni and No.2 for Eucalyptus Globulus. All of the above samples were barked already and were cut into about 25 cm length each already, therefore, we collected 8 pcs each (about 20 kgs) and total 16 pcs for 2 kinds (about 40 kgs).

Dec. 12th. (WED) 8.oo AM left for MERCEDES with plantation survey team.

11.20 AM arrived at plantation office, CAJA BANCARIA.

According to the instruction given by the plantation office above, we have proceeded to the plantation area under the guidance by the plantation office and collected 4 kinds of wood samples under the attendance of Eng. Agr. Daniel San Roman and the plantation survey team.

The samples which we have received in two days were as follows:

Sample No.	Species	Collected locations
No. 1	Eucalyptus,Maideni	FNP
No. 2	Eucalyptus, Globulus	FNP
No. 3	Pinus, taeda	CAJA BANCARIA
No. 4	Populus	CAJA BANCARIA
No. 5	Pinus, Elliotti	CAJA BANCARIA
No. 6	Eucalyptus,Grandis	CAJA BANCARIA

All of the above samples were delivered to Montevideo for the arrangement for airfreighting to Japan.

(2) Pulp test in Japan

Upon arrival all of the sample above to Japan, we are scheduled to carry out the pulp test according to the rule of Japanese Industrial Standard (JIS).

Firstly, the above sample woods will be cut into chips and will prepare the chips size about 10 mm x 10 mm for the test.

The following process for the test will be carried out for all six kinds of samples collected.

(1) Unbleached yield

We will select cooking condition for unbleached pulp for the KAPP No. 13 for Hard wood and KAPPA No. 20 for soft wood and will determine unbleached yield.

(2) Bleached yield

We will set our target brigthness 90 GE while using the same bleaching condition on each sample and will compare the brightness of each sample and will determine bleached pulp yield from the unbleached pulp.

(3) Though the economical evaluation of the samples as pulp material we decided by the appearance (colour) of bleached pulp and the yield, the Viscosity, which is required generally for the quality evaluation, will be measured and will report for your reference.

(4) After completed all the above test, we will summerize the data obtained and will put priority making each for H.W. and S.W. for suitability of making pulp for all six kinds of wood samples.

Montevideo, Dec. 14 de 1984

PACKING LIST OF SAMPLE LOGS

CASE Nº	CONTENTS		NET WEIGHT
Nº 1	Eucalyptus Maideni (Sample Nº1, FNP)	8 pcs.	28kgs. (Cartón box)
Nº 2	Eucalyptus globulus (Sample Nº2 FNP)	8 pcs.	16Kgs. (Carton box)
Nº 3	Pinus toeda (Sample Nº3 CAJA BANCARIA)	1 pcs.	15Kgs. (Wooden crate)
	Populas (Sample Nº4 CAJA BANCARIA)	1 pcs	30Kgs.
Nº 4	Pinus elliotti (Sample Nº5, CAJA BANCARIA)	1 pcs	30 Kgs. (Wooden crate)
	Eucalyptus, grandis (Sample Nº6, CAJA BANCARIA)	1 pcs	25 Kgs.

(2) Site survey report by SITE SURVEY TEAM

MINUTES OF MEETING

(Factory Survey)

I. Fábrica Nacional de Papel S.A. (FNP)

1) Date : December 11 1984 (11 AM - 14:30 PM)
2) Place : FNP
3) Attendants

FNP SIDE

ING. NORBERTO F. CASSELLA
(Director Técnico)

INGENIERO QUIMICO HORACIO FAEDO
CERIOTTI (JEFE DEPARTAMENTO DE PAPEL)

STUDY MISSION SIDE

Mr. Y. MIKAMI, Study Team Leader
Mr. M. ONOZUKA, Engineer
Mr. K. MATSUBARA, Engineer
Mr. T. SENTOKU, Engineer
Mr. T. SATO, Engineer

LATU

Sr. RAUL DE CASTRO, Chemical
Eng. Pulp and paper Section- LATU

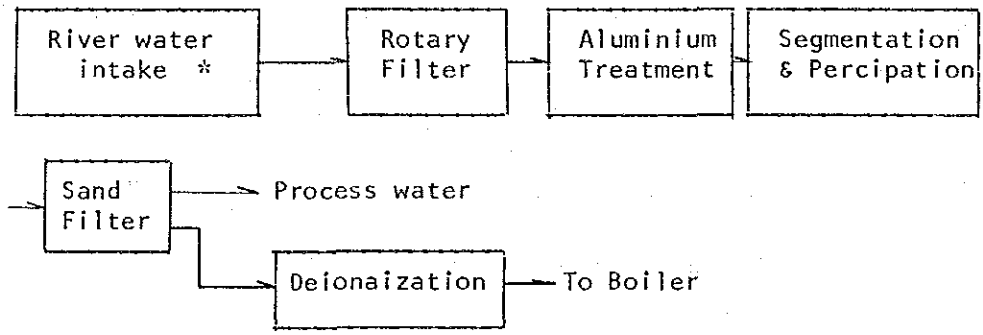
4) Outline of the factory survey
After the factory trip, they kindly accepted our questions and then we were invited to luncheon party at the their guest house.
This factory has ,75 T/D BKP Plant and paper machine mainly for printing & writing paper production.
(40% of their products are exported to Argentina)

5) Major Topics of the discussion

a) Facility of factory

Since major facilities and equipment were described in the Master plan study and preliminary mission's study, they are deleted here.

i) Water Treatment for process water



ii) Waste water

Although water control by the regulation is stipulated, it is not effective.

The factory considers future installation of these facilities.

iii) Sludge

This factory does not have kiln for caustic process and therefore waste $CaCO_3$ is discharged as land disposal.

iv) Electricity

They consume 3,000kw of electricity and 80% of them is self-generated.

* River water chemical analysis was obtained here.

b) Construction way

. Engineering & Layout ---------- Jaakko Pöyry

. Electrical

consultant ---------- Montevideo

construction ---------- Local

. Civil/Architectual

consultant ---------- Montevideo

construction ---------- Local

. Mechanical

Recovery boiler ---------- Brazil company

Some of them are done by themselves.

. Construction management is done by themsalves

. Heavy machine transportation was done using the Route Nº 101 from Montevideo port.

c) Price and cost

Wood (8 - 10 years woods and all Eucalytus)for pulp at the Mill ---------- 10 U$S/cu-m

Wood for fuel at the Mill -------- 8 U$S/cu-m

Wood prices purchased from outside plantation and prices from own plantation are almost equivalent at the mill because tree's prices as stand in outside plantation are cheaper than in own plantation.

However, transportation cost from outside is higer than from own plantation. Average transportation distance from own plantation is about 30 km from mill.

d) Inventory

i) Wood for pulp (logs)---------- 3 Months

ii) Chips for pulp ---------- 3 days

iii) Wood for fuel ---------- 6 Months (including dry)