

APPENDIX-1

Assumptions for Economic Evaluation

Appendix-1 Assumptions for Economic Evaluation

1. Main Assumptions for Economic Analysis

Items	Assumptions
1. Prices	August of 1998 for cost and benefit
2. Exchange Rate of Real	R\$ 1.18 = US\$ 1.00
3. Opportunity Cost of Capital	10 %
4. Conversion Factor	85 %
5. Time Horizon for Evaluation	50 years
6. Economic Life	
1) Dam	80 years
2) Weir and Well	50 years
1) Other Structures	40 years (to be replaced after life termination)
2) Equipment	15 years (ditto)
7. Benefit	
1) Residential Water	
(1) Rural	3% of the household income of R\$270: R\$1.6/capita
(2) Urban	3% of the household income of R\$650: R\$4.6/capita
2) Commercial Water	Actual water charge base: R\$0.5/capita
3) Public Water	Actual water charge base: R\$0.8/capita
4) Industrial Water	Actual water charge base: R\$2.6/m ³
5) Agriculture Water	Incremental Net Cash Flow under with/ without project

2. Agriculture Products applied for Irrigation Water Project Analysis

Project Name	Agriculture products with project
Quixabeira	fruits (917ha), vegetables (2,751ha)
Jacare-Curitiba	fruits (1,841ha), vegetables (1,840ha)
Sao Francisco	fruits (16,000ha)
Ladeirinhas	fruits (596ha), vegetables (294ha)
Jacarecica II	fruits (550ha), vegetables (550ha)
Vaza Barris	fruits (125ha), vegetables (2,375ha)
Entre Rios	fruits (131ha), vegetables (130ha)
Estancinha	fruits (55ha), vegetables (54ha)

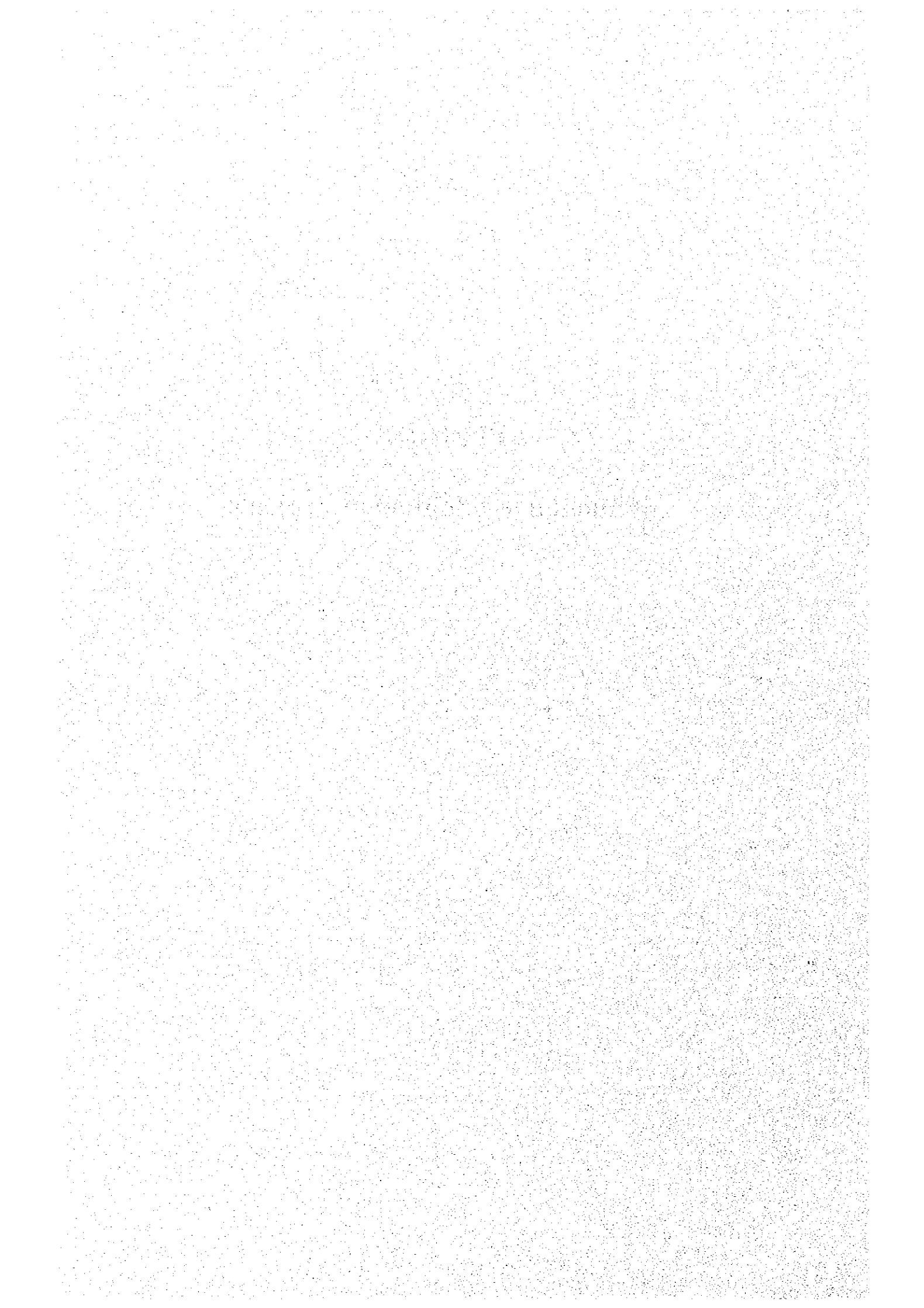
Note: Main fruits are grapes, acerola and banana. Main vegetables are lettuces and carrot. Cassava is used for analysis as a without-project product.

3. Price and Unit Yield of Agriculture Products applied for Analysis

Products	Price (R\$/ton)	Unit Yield (ton/ha)	Source
Grapes (for domestic)	420	13	Project at Petrolina in PE
(for export)	1,400 (US\$)	-	FAO
Acerola	430	7	EMDAGRO (Aug./98)
Banana	410	12	EMDAGRO(Aug./98)
Lettuce	300	15	COHIDRO (Nov./97)
Carrot	300	15	COHIDRO (Nov./97)
Cassava	75	23	EMDAGRO(Aug./98)

APPENDIX-2

Economic Evaluation of Projects



Appendix-2 (1) Economic Evaluation of Integrated System:

1) Project Expansion of Sao Francisco Pipeline System	Project Cost	219,266	(R\$ 000)
	EIRR	11.7	(%)
	NPV	34,308	(R\$ 000)
	B/C	1.15	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	54,816	0	54,816	0	0	0	-54,816
2001	54,816	896	55,712	2,587	703	3,290	-52,422
2002	54,816	1,992	56,809	5,228	2,224	7,452	-49,356
2003	0	3,290	3,290	7,923	4,565	12,488	9,198
2004	0	3,591	3,591	8,003	5,794	13,797	10,206
2005	0	3,892	3,892	8,084	7,022	15,106	11,214
2006	0	4,370	4,370	8,324	8,816	17,140	12,770
2007	0	4,848	4,848	8,565	10,610	19,175	14,327
2008	0	5,326	5,326	8,805	12,404	21,209	15,883
2009	0	5,804	5,804	9,045	14,198	23,243	17,439
2010	0	6,282	6,282	9,286	15,992	25,277	18,995
2011	54,816	8,532	63,349	9,687	18,595	28,282	-35,067
2012	0	10,273	10,273	13,451	28,263	41,715	31,441
2013	0	11,222	11,222	13,986	31,734	45,720	34,499
2014	0	12,170	12,170	14,522	35,205	49,726	37,556
2015	36,799	13,119	49,918	15,057	38,675	53,732	3,814
2016	36,799	14,465	51,264	15,833	43,569	59,402	8,138
2017	36,799	15,812	52,611	16,610	48,462	65,072	12,461
2018	0	17,158	17,158	17,387	53,356	70,742	53,584
2019	0	18,505	18,505	18,163	58,249	76,413	57,908
2020	0	19,851	19,851	18,940	63,143	82,083	62,231
2021	0	19,851	19,851	18,940	63,143	82,083	62,231
2022	0	19,851	19,851	18,940	63,143	82,083	62,231
2023	0	19,851	19,851	18,940	63,143	82,083	62,231
2024	0	19,851	19,851	18,940	63,143	82,083	62,231
2025	0	19,851	19,851	18,940	63,143	82,083	62,231
2026	36,799	19,851	56,650	18,940	63,143	82,083	25,432
2027	0	19,851	19,851	18,940	63,143	82,083	62,231
2028	0	19,851	19,851	18,940	63,143	82,083	62,231
2029	0	19,851	19,851	18,940	63,143	82,083	62,231
2030	36,799	19,851	56,650	18,940	63,143	82,083	25,432
2031	36,799	19,851	56,650	18,940	63,143	82,083	25,432
2032	36,799	19,851	56,650	18,940	63,143	82,083	25,432
2033	0	19,851	19,851	18,940	63,143	82,083	62,231
2034	0	19,851	19,851	18,940	63,143	82,083	62,231
2035	0	19,851	19,851	18,940	63,143	82,083	62,231
2036	0	19,851	19,851	18,940	63,143	82,083	62,231
2037	0	19,851	19,851	18,940	63,143	82,083	62,231
2038	0	19,851	19,851	18,940	63,143	82,083	62,231
2039	0	19,851	19,851	18,940	63,143	82,083	62,231
2040	12,481	19,851	32,332	18,940	63,143	82,083	49,751
2041	49,280	19,851	69,131	18,940	63,143	82,083	12,952
2042	12,481	19,851	32,332	18,940	63,143	82,083	49,751
2043	0	19,851	19,851	18,940	63,143	82,083	62,231
2044	0	19,851	19,851	18,940	63,143	82,083	62,231
2045	36,799	19,851	56,650	18,940	63,143	82,083	25,432
2046	36,799	19,851	56,650	18,940	63,143	82,083	25,432
2047	36,799	19,851	56,650	18,940	63,143	82,083	25,432
2048	0	19,851	19,851	18,940	63,143	82,083	62,231
2049	-126,557	19,851	-106,706	18,940	63,143	82,083	188,789

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (1) Economic Evaluation of Integrated System

2) Aracaju Well Development Project	Project Cost	22,884	(R\$ 000)
	EIRR	13.6	(%)
	NPV	10,037	(R\$ 000)
	B/C	1.28	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	22,884	0	22,884	0	0	0	-22,884
2002	0	912	912	1,607	684	2,290	1,378
2003	0	1,004	1,004	1,623	935	2,559	1,555
2004	0	1,096	1,096	1,640	1,187	2,827	1,731
2005	0	1,188	1,188	1,656	1,439	3,095	1,907
2006	0	1,334	1,334	1,706	1,806	3,512	2,178
2007	0	1,480	1,480	1,755	2,174	3,929	2,449
2008	0	1,625	1,625	1,804	2,541	4,346	2,720
2009	0	1,771	1,771	1,853	2,909	4,762	2,991
2010	0	1,917	1,917	1,903	3,277	5,179	3,262
2011	0	2,134	2,134	1,985	3,810	5,795	3,660
2012	0	2,351	2,351	2,067	4,343	6,410	4,059
2013	0	2,568	2,568	2,149	4,877	7,026	4,457
2014	0	2,786	2,786	2,232	5,410	7,641	4,856
2015	0	3,003	3,003	2,314	5,943	8,257	5,254
2016	6,659	3,311	9,970	2,433	6,695	9,128	-842
2017	0	3,619	3,619	2,552	7,447	10,000	6,381
2018	0	3,927	3,927	2,672	8,199	10,871	6,944
2019	0	4,235	4,235	2,791	8,951	11,742	7,507
2020	0	4,544	4,544	2,910	9,703	12,614	8,070
2021	0	4,544	4,544	2,910	9,703	12,614	8,070
2022	0	4,544	4,544	2,910	9,703	12,614	8,070
2023	0	4,544	4,544	2,910	9,703	12,614	8,070
2024	0	4,544	4,544	2,910	9,703	12,614	8,070
2025	0	4,544	4,544	2,910	9,703	12,614	8,070
2026	0	4,544	4,544	2,910	9,703	12,614	8,070
2027	0	4,544	4,544	2,910	9,703	12,614	8,070
2028	0	4,544	4,544	2,910	9,703	12,614	8,070
2029	0	4,544	4,544	2,910	9,703	12,614	8,070
2030	0	4,544	4,544	2,910	9,703	12,614	8,070
2031	6,659	4,544	11,203	2,910	9,703	12,614	1,411
2032	0	4,544	4,544	2,910	9,703	12,614	8,070
2033	0	4,544	4,544	2,910	9,703	12,614	8,070
2034	0	4,544	4,544	2,910	9,703	12,614	8,070
2035	0	4,544	4,544	2,910	9,703	12,614	8,070
2036	0	4,544	4,544	2,910	9,703	12,614	8,070
2037	0	4,544	4,544	2,910	9,703	12,614	8,070
2038	0	4,544	4,544	2,910	9,703	12,614	8,070
2039	0	4,544	4,544	2,910	9,703	12,614	8,070
2040	0	4,544	4,544	2,910	9,703	12,614	8,070
2041	1,297	4,544	5,840	2,910	9,703	12,614	6,773
2042	0	4,544	4,544	2,910	9,703	12,614	8,070
2043	0	4,544	4,544	2,910	9,703	12,614	8,070
2044	0	4,544	4,544	2,910	9,703	12,614	8,070
2045	0	4,544	4,544	2,910	9,703	12,614	8,070
2046	6,659	4,544	11,203	2,910	9,703	12,614	1,411
2047	0	4,544	4,544	2,910	9,703	12,614	8,070
2048	0	4,544	4,544	2,910	9,703	12,614	8,070
2049	-5,472	4,544	-929	2,910	9,703	12,614	13,542

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (1) Economic Evaluation of Integrated System

3) Project Expansion of Agreste Pipeline System	Project Cost	32,139	(R\$ 000)
	EIRR	8.2	(%)
	NPV	-4,844	(R\$ 000)
	B/C	0.86	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	32,139	0	32,139	0	0	0	-32,139
2003	0	352	352	1,424	164	1,588	1,236
2004	0	406	406	1,566	218	1,784	1,377
2005	0	461	461	1,749	272	2,021	1,560
2006	0	530	530	1,940	388	2,328	1,797
2007	0	600	600	2,130	504	2,634	2,034
2008	0	669	669	2,321	620	2,941	2,272
2009	0	739	739	2,512	736	3,248	2,509
2010	0	808	808	2,702	852	3,554	2,746
2011	0	903	903	2,914	1,069	3,983	3,080
2012	0	998	998	3,125	1,286	4,411	3,413
2013	0	1,093	1,093	3,336	1,504	4,840	3,747
2014	0	1,188	1,188	3,547	1,721	5,268	4,081
2015	0	1,282	1,282	3,758	1,938	5,697	4,414
2016	0	1,416	1,416	4,002	2,310	6,312	4,896
2017	30,023	1,550	31,573	4,246	2,682	6,928	-24,645
2018	0	1,683	1,683	4,490	3,053	7,543	5,860
2019	0	1,817	1,817	4,734	3,425	8,159	6,341
2020	0	1,951	1,951	4,978	3,797	8,774	6,823
2021	0	1,951	1,951	4,978	3,797	8,774	6,823
2022	0	1,951	1,951	4,978	3,797	8,774	6,823
2023	0	1,951	1,951	4,978	3,797	8,774	6,823
2024	0	1,951	1,951	4,978	3,797	8,774	6,823
2025	0	1,951	1,951	4,978	3,797	8,774	6,823
2026	0	1,951	1,951	4,978	3,797	8,774	6,823
2027	0	1,951	1,951	4,978	3,797	8,774	6,823
2028	0	1,951	1,951	4,978	3,797	8,774	6,823
2029	0	1,951	1,951	4,978	3,797	8,774	6,823
2030	0	1,951	1,951	4,978	3,797	8,774	6,823
2031	0	1,951	1,951	4,978	3,797	8,774	6,823
2032	30,023	1,951	31,974	4,978	3,797	8,774	-23,200
2033	0	1,951	1,951	4,978	3,797	8,774	6,823
2034	0	1,951	1,951	4,978	3,797	8,774	6,823
2035	0	1,951	1,951	4,978	3,797	8,774	6,823
2036	0	1,951	1,951	4,978	3,797	8,774	6,823
2037	0	1,951	1,951	4,978	3,797	8,774	6,823
2038	0	1,951	1,951	4,978	3,797	8,774	6,823
2039	0	1,951	1,951	4,978	3,797	8,774	6,823
2040	0	1,951	1,951	4,978	3,797	8,774	6,823
2041	0	1,951	1,951	4,978	3,797	8,774	6,823
2042	2,116	1,951	4,067	4,978	3,797	8,774	4,707
2043	0	1,951	1,951	4,978	3,797	8,774	6,823
2044	0	1,951	1,951	4,978	3,797	8,774	6,823
2045	0	1,951	1,951	4,978	3,797	8,774	6,823
2046	0	1,951	1,951	4,978	3,797	8,774	6,823
2047	30,023	1,951	31,974	4,978	3,797	8,774	-23,200
2048	0	1,951	1,951	4,978	3,797	8,774	6,823
2049	-25,711	1,951	-23,760	4,978	3,797	8,774	32,535

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (1) Economic Evaluation of Integrated System

4) Project Expansion of Piauitinga Pipeline System	Project Cost	7,897	(R\$ 000)
	EIRR	25.6	(%)
	NPV	18,953	(R\$ 000)
	B/C	1.59	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	7,897	0	7,897	0	0	0	-7,897
2003	0	1,111	1,111	1,335	768	2,103	992
2004	0	1,292	1,292	1,442	1,023	2,466	1,173
2005	0	1,474	1,474	1,549	1,279	2,828	1,354
2006	0	1,740	1,740	1,667	1,707	3,374	1,634
2007	0	2,006	2,006	1,785	2,135	3,919	1,913
2008	0	2,272	2,272	1,902	2,563	4,465	2,193
2009	0	2,538	2,538	2,020	2,991	5,011	2,473
2010	0	2,804	2,804	2,138	3,419	5,557	2,753
2011	0	3,220	3,220	2,272	4,156	6,428	3,208
2012	0	3,636	3,636	2,406	4,894	7,300	3,663
2013	0	4,053	4,053	2,540	5,631	8,171	4,119
2014	0	4,469	4,469	2,675	6,368	9,043	4,574
2015	0	4,885	4,885	2,809	7,105	9,914	5,029
2016	0	5,488	5,488	2,966	8,224	11,190	5,702
2017	7,324	6,090	13,414	3,124	9,342	12,466	-949
2018	0	6,693	6,693	3,281	10,460	13,741	7,048
2019	0	7,296	7,296	3,439	11,578	15,017	7,721
2020	0	7,899	7,899	3,597	12,696	16,293	8,394
2021	0	7,899	7,899	3,597	12,696	16,293	8,394
2022	0	7,899	7,899	3,597	12,696	16,293	8,394
2023	0	7,899	7,899	3,597	12,696	16,293	8,394
2024	0	7,899	7,899	3,597	12,696	16,293	8,394
2025	0	7,899	7,899	3,597	12,696	16,293	8,394
2026	0	7,899	7,899	3,597	12,696	16,293	8,394
2027	0	7,899	7,899	3,597	12,696	16,293	8,394
2028	0	7,899	7,899	3,597	12,696	16,293	8,394
2029	0	7,899	7,899	3,597	12,696	16,293	8,394
2030	0	7,899	7,899	3,597	12,696	16,293	8,394
2031	0	7,899	7,899	3,597	12,696	16,293	8,394
2032	7,324	7,899	15,223	3,597	12,696	16,293	1,070
2033	0	7,899	7,899	3,597	12,696	16,293	8,394
2034	0	7,899	7,899	3,597	12,696	16,293	8,394
2035	0	7,899	7,899	3,597	12,696	16,293	8,394
2036	0	7,899	7,899	3,597	12,696	16,293	8,394
2037	0	7,899	7,899	3,597	12,696	16,293	8,394
2038	0	7,899	7,899	3,597	12,696	16,293	8,394
2039	0	7,899	7,899	3,597	12,696	16,293	8,394
2040	0	7,899	7,899	3,597	12,696	16,293	8,394
2041	0	7,899	7,899	3,597	12,696	16,293	8,394
2042	573	7,899	8,471	3,597	12,696	16,293	7,822
2043	0	7,899	7,899	3,597	12,696	16,293	8,394
2044	0	7,899	7,899	3,597	12,696	16,293	8,394
2045	0	7,899	7,899	3,597	12,696	16,293	8,394
2046	0	7,899	7,899	3,597	12,696	16,293	8,394
2047	7,324	7,899	15,223	3,597	12,696	16,293	1,070
2048	0	7,899	7,899	3,597	12,696	16,293	8,394
2049	-6,317	7,899	1,581	3,597	12,696	16,293	14,712

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (1) Economic Evaluation of Integrated System

5) Xingo Dam Pipeline Project	Project Cost	123,777	(R\$ 000)
	EIRR	7.1	(%)
	NPV	-17,666	(R\$ 000)
	B/C	0.76	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	20,630	0	20,630	0	0	0	-20,630
2004	20,630	204	20,834	510	96	606	-20,227
2005	20,630	454	21,083	1,112	239	1,351	-19,732
2006	0	784	784	1,815	717	2,531	1,748
2007	0	886	886	1,961	954	2,916	2,029
2008	0	989	989	2,108	1,192	3,301	2,311
2009	0	1,092	1,092	2,255	1,430	3,685	2,593
2010	20,630	1,195	21,824	2,402	1,668	4,070	-17,755
2011	20,630	1,803	22,432	3,423	2,124	5,546	-16,886
2012	20,630	2,515	23,144	4,554	3,224	7,778	-15,367
2013	0	3,332	3,332	5,795	4,552	10,347	7,015
2014	0	3,646	3,646	6,126	5,235	11,361	7,715
2015	0	3,960	3,960	6,457	5,918	12,374	8,415
2016	0	4,450	4,450	6,843	7,138	13,981	9,531
2017	0	4,941	4,941	7,229	8,358	15,588	10,646
2018	2,656	5,432	8,088	7,616	9,579	17,194	9,107
2019	2,656	5,923	8,578	8,002	10,799	18,801	10,223
2020	2,656	6,413	9,069	8,388	12,019	20,407	11,339
2021	0	6,413	6,413	8,388	12,019	20,407	13,994
2022	0	6,413	6,413	8,388	12,019	20,407	13,994
2023	0	6,413	6,413	8,388	12,019	20,407	13,994
2024	0	6,413	6,413	8,388	12,019	20,407	13,994
2025	2,656	6,413	9,069	8,388	12,019	20,407	11,339
2026	2,656	6,413	9,069	8,388	12,019	20,407	11,339
2027	2,656	6,413	9,069	8,388	12,019	20,407	11,339
2028	0	6,413	6,413	8,388	12,019	20,407	13,994
2029	0	6,413	6,413	8,388	12,019	20,407	13,994
2030	0	6,413	6,413	8,388	12,019	20,407	13,994
2031	0	6,413	6,413	8,388	12,019	20,407	13,994
2032	0	6,413	6,413	8,388	12,019	20,407	13,994
2033	2,656	6,413	9,069	8,388	12,019	20,407	11,339
2034	2,656	6,413	9,069	8,388	12,019	20,407	11,339
2035	2,656	6,413	9,069	8,388	12,019	20,407	11,339
2036	0	6,413	6,413	8,388	12,019	20,407	13,994
2037	0	6,413	6,413	8,388	12,019	20,407	13,994
2038	0	6,413	6,413	8,388	12,019	20,407	13,994
2039	0	6,413	6,413	8,388	12,019	20,407	13,994
2040	2,656	6,413	9,069	8,388	12,019	20,407	11,339
2041	2,656	6,413	9,069	8,388	12,019	20,407	11,339
2042	2,656	6,413	9,069	8,388	12,019	20,407	11,339
2043	4,305	6,413	10,718	8,388	12,019	20,407	9,689
2044	4,305	6,413	10,718	8,388	12,019	20,407	9,689
2045	4,305	6,413	10,718	8,388	12,019	20,407	9,689
2046	0	6,413	6,413	8,388	12,019	20,407	13,994
2047	0	6,413	6,413	8,388	12,019	20,407	13,994
2048	2,656	6,413	9,069	8,388	12,019	20,407	11,339
2049	-28,592	6,413	-22,178	8,388	12,019	20,407	42,586

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (1) Economic Evaluation of Integrated System

6) Vaza Barris Dam Project

Project Cost	130,901	(R\$ 000)
EIRR	12.1	(%)
NPV	13,088	(R\$ 000)
B/C	1.19	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	8,793	0	8,793	0	0	0	-8,793
2005	8,793	0	8,793	0	0	0	-8,793
2006	33,881	0	33,881	0	0	0	-33,881
2007	0	656	656	1,523	879	2,403	1,747
2008	0	738	738	1,648	1,062	2,710	1,973
2009	27,173	819	27,992	1,773	1,245	3,018	-24,974
2010	0	1,739	1,739	3,794	2,856	6,650	4,911
2011	0	1,973	1,973	4,073	3,502	7,575	5,602
2012	0	2,206	2,206	4,352	4,147	8,499	6,293
2013	25,088	2,439	27,527	4,630	4,793	9,423	-18,104
2014	0	3,959	3,959	7,363	8,158	15,521	11,561
2015	27,173	4,305	31,478	7,781	9,126	16,907	-14,570
2016	0	6,477	6,477	11,020	14,202	25,222	18,745
2017	0	7,144	7,144	11,666	16,235	27,901	20,757
2018	0	7,811	7,811	12,312	18,268	30,580	22,769
2019	0	8,478	8,478	12,957	20,302	33,259	24,781
2020	0	9,145	9,145	13,603	22,335	35,938	26,793
2021	7,183	9,145	16,328	13,603	22,335	35,938	19,610
2022	0	9,145	9,145	13,603	22,335	35,938	26,793
2023	0	9,145	9,145	13,603	22,335	35,938	26,793
2024	5,757	9,145	14,903	13,603	22,335	35,938	21,035
2025	0	9,145	9,145	13,603	22,335	35,938	26,793
2026	0	9,145	9,145	13,603	22,335	35,938	26,793
2027	0	9,145	9,145	13,603	22,335	35,938	26,793
2028	7,183	9,145	16,328	13,603	22,335	35,938	19,610
2029	0	9,145	9,145	13,603	22,335	35,938	26,793
2030	5,757	9,145	14,903	13,603	22,335	35,938	21,035
2031	0	9,145	9,145	13,603	22,335	35,938	26,793
2032	0	9,145	9,145	13,603	22,335	35,938	26,793
2033	0	9,145	9,145	13,603	22,335	35,938	26,793
2034	0	9,145	9,145	13,603	22,335	35,938	26,793
2035	0	9,145	9,145	13,603	22,335	35,938	26,793
2036	7,183	9,145	16,328	13,603	22,335	35,938	19,610
2037	0	9,145	9,145	13,603	22,335	35,938	26,793
2038	0	9,145	9,145	13,603	22,335	35,938	26,793
2039	5,757	9,145	14,903	13,603	22,335	35,938	21,035
2040	0	9,145	9,145	13,603	22,335	35,938	26,793
2041	0	9,145	9,145	13,603	22,335	35,938	26,793
2042	0	9,145	9,145	13,603	22,335	35,938	26,793
2043	7,183	9,145	16,328	13,603	22,335	35,938	19,610
2044	0	9,145	9,145	13,603	22,335	35,938	26,793
2045	5,757	9,145	14,903	13,603	22,335	35,938	21,035
2046	1,222	9,145	10,368	13,603	22,335	35,938	25,571
2047	0	9,145	9,145	13,603	22,335	35,938	26,793
2048	0	9,145	9,145	13,603	22,335	35,938	26,793
2049	-38,921	9,145	-29,775	13,603	22,335	35,938	65,713

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (1) Economic Evaluation of Integrated System

7) Project Expansion of Itabaianinha Pipeline System	Project Cost	29,126	(R\$ 000)
	EIRR	4.7	(%)
	NPV	-6,692	(R\$ 000)
	B/C	0.67	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	9,921	0	9,921	0	0	0	-9,921
2004	0	272	272	474	55	529	257
2005	0	291	291	493	69	562	271
2006	0	314	314	516	89	605	291
2007	9,602	337	9,939	540	109	648	-9,291
2008	0	720	720	1,126	257	1,383	663
2009	0	766	766	1,173	297	1,470	704
2010	0	812	812	1,220	337	1,557	744
2011	0	874	874	1,277	401	1,678	803
2012	9,602	936	10,539	1,334	465	1,799	-8,740
2013	0	1,497	1,497	2,086	793	2,879	1,382
2014	0	1,590	1,590	2,172	889	3,061	1,471
2015	0	1,683	1,683	2,257	985	3,243	1,560
2016	0	1,805	1,805	2,362	1,128	3,490	1,685
2017	0	1,927	1,927	2,466	1,270	3,736	1,810
2018	1,613	2,049	3,662	2,571	1,413	3,983	321
2019	0	2,171	2,171	2,675	1,555	4,230	2,059
2020	0	2,293	2,293	2,780	1,697	4,477	2,184
2021	0	2,293	2,293	2,780	1,697	4,477	2,184
2022	1,613	2,293	3,906	2,780	1,697	4,477	571
2023	0	2,293	2,293	2,780	1,697	4,477	2,184
2024	0	2,293	2,293	2,780	1,697	4,477	2,184
2025	0	2,293	2,293	2,780	1,697	4,477	2,184
2026	0	2,293	2,293	2,780	1,697	4,477	2,184
2027	1,613	2,293	3,906	2,780	1,697	4,477	571
2028	0	2,293	2,293	2,780	1,697	4,477	2,184
2029	0	2,293	2,293	2,780	1,697	4,477	2,184
2030	0	2,293	2,293	2,780	1,697	4,477	2,184
2031	0	2,293	2,293	2,780	1,697	4,477	2,184
2032	0	2,293	2,293	2,780	1,697	4,477	2,184
2033	1,613	2,293	3,906	2,780	1,697	4,477	571
2034	0	2,293	2,293	2,780	1,697	4,477	2,184
2035	0	2,293	2,293	2,780	1,697	4,477	2,184
2036	0	2,293	2,293	2,780	1,697	4,477	2,184
2037	1,613	2,293	3,906	2,780	1,697	4,477	571
2038	0	2,293	2,293	2,780	1,697	4,477	2,184
2039	0	2,293	2,293	2,780	1,697	4,477	2,184
2040	0	2,293	2,293	2,780	1,697	4,477	2,184
2041	0	2,293	2,293	2,780	1,697	4,477	2,184
2042	1,613	2,293	3,906	2,780	1,697	4,477	571
2043	225	2,293	2,518	2,780	1,697	4,477	1,959
2044	0	2,293	2,293	2,780	1,697	4,477	2,184
2045	0	2,293	2,293	2,780	1,697	4,477	2,184
2046	0	2,293	2,293	2,780	1,697	4,477	2,184
2047	0	2,293	2,293	2,780	1,697	4,477	2,184
2048	1,613	2,293	3,906	2,780	1,697	4,477	571
2049	-6,991	2,293	-4,698	2,780	1,697	4,477	9,175

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (1) Economic Evaluation of Integrated System

8) Project Expansion of Propria Pipeline System	Project Cost	4,086	(R\$ 000)
	EIRR	17.8	(%)
	NPV	1,313	(R\$ 000)
	B/C	1.26	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	2,043	0	2,043	0	0	0	-2,043
2008	0	241	241	382	80	462	221
2009	0	259	259	402	96	498	239
2010	0	278	278	422	112	534	256
2011	0	306	306	449	140	589	283
2012	2,043	334	2,377	476	169	644	-1,732
2013	0	723	723	1,005	394	1,399	676
2014	0	779	779	1,058	451	1,509	731
2015	0	834	834	1,111	508	1,619	785
2016	0	921	921	1,181	615	1,795	874
2017	0	1,008	1,008	1,250	721	1,972	963
2018	0	1,095	1,095	1,320	828	2,148	1,053
2019	0	1,182	1,182	1,389	934	2,324	1,142
2020	0	1,269	1,269	1,459	1,041	2,500	1,231
2021	0	1,269	1,269	1,459	1,041	2,500	1,231
2022	1,834	1,269	3,103	1,459	1,041	2,500	-603
2023	0	1,269	1,269	1,459	1,041	2,500	1,231
2024	0	1,269	1,269	1,459	1,041	2,500	1,231
2025	0	1,269	1,269	1,459	1,041	2,500	1,231
2026	0	1,269	1,269	1,459	1,041	2,500	1,231
2027	1,834	1,269	3,103	1,459	1,041	2,500	-603
2028	0	1,269	1,269	1,459	1,041	2,500	1,231
2029	0	1,269	1,269	1,459	1,041	2,500	1,231
2030	0	1,269	1,269	1,459	1,041	2,500	1,231
2031	0	1,269	1,269	1,459	1,041	2,500	1,231
2032	0	1,269	1,269	1,459	1,041	2,500	1,231
2033	0	1,269	1,269	1,459	1,041	2,500	1,231
2034	0	1,269	1,269	1,459	1,041	2,500	1,231
2035	0	1,269	1,269	1,459	1,041	2,500	1,231
2036	0	1,269	1,269	1,459	1,041	2,500	1,231
2037	1,834	1,269	3,103	1,459	1,041	2,500	-603
2038	0	1,269	1,269	1,459	1,041	2,500	1,231
2039	0	1,269	1,269	1,459	1,041	2,500	1,231
2040	0	1,269	1,269	1,459	1,041	2,500	1,231
2041	0	1,269	1,269	1,459	1,041	2,500	1,231
2042	1,834	1,269	3,103	1,459	1,041	2,500	-603
2043	0	1,269	1,269	1,459	1,041	2,500	1,231
2044	0	1,269	1,269	1,459	1,041	2,500	1,231
2045	0	1,269	1,269	1,459	1,041	2,500	1,231
2046	0	1,269	1,269	1,459	1,041	2,500	1,231
2047	209	1,269	1,478	1,459	1,041	2,500	1,022
2048	0	1,269	1,269	1,459	1,041	2,500	1,231
2049	-1,294	1,269	-25	1,459	1,041	2,500	2,525

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (1) Economic Evaluation of Integrated System

		Project Cost		17,431	(R\$ 000)		
9) Project Expansion of Alto Sertao Pipeline System		EIRR		—	(%)		
		NPV		-4,886	(R\$ 000)		
		B/C		0.56			
Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0
2008	8,716	0	8,716	0	0	0	-8,716
2009	0	437	437	377	158	535	98
2010	0	456	456	393	180	573	117
2011	0	489	489	414	212	627	138
2012	0	522	522	436	244	680	158
2013	8,716	555	9,270	914	553	1,467	-7,803
2014	0	1,175	1,175	957	617	1,574	399
2015	0	1,240	1,240	999	681	1,681	440
2016	0	1,306	1,306	1,055	779	1,834	528
2017	0	1,372	1,372	1,111	877	1,988	616
2018	0	1,437	1,437	1,167	975	2,141	704
2019	0	1,503	1,503	1,222	1,072	2,295	792
2020	0	1,569	1,569	1,278	1,170	2,448	879
2021	0	1,569	1,569	1,278	1,170	2,448	879
2022	0	1,569	1,569	1,278	1,170	2,448	879
2023	8,410	1,569	9,978	1,278	1,170	2,448	-7,530
2024	0	1,569	1,569	1,278	1,170	2,448	879
2025	0	1,569	1,569	1,278	1,170	2,448	879
2026	0	1,569	1,569	1,278	1,170	2,448	879
2027	0	1,569	1,569	1,278	1,170	2,448	879
2028	8,410	1,569	9,978	1,278	1,170	2,448	-7,530
2029	0	1,569	1,569	1,278	1,170	2,448	879
2030	0	1,569	1,569	1,278	1,170	2,448	879
2031	0	1,569	1,569	1,278	1,170	2,448	879
2032	0	1,569	1,569	1,278	1,170	2,448	879
2033	0	1,569	1,569	1,278	1,170	2,448	879
2034	0	1,569	1,569	1,278	1,170	2,448	879
2035	0	1,569	1,569	1,278	1,170	2,448	879
2036	0	1,569	1,569	1,278	1,170	2,448	879
2037	0	1,569	1,569	1,278	1,170	2,448	879
2038	8,410	1,569	9,978	1,278	1,170	2,448	-7,530
2039	0	1,569	1,569	1,278	1,170	2,448	879
2040	0	1,569	1,569	1,278	1,170	2,448	879
2041	0	1,569	1,569	1,278	1,170	2,448	879
2042	0	1,569	1,569	1,278	1,170	2,448	879
2043	8,410	1,569	9,978	1,278	1,170	2,448	-7,530
2044	0	1,569	1,569	1,278	1,170	2,448	879
2045	0	1,569	1,569	1,278	1,170	2,448	879
2046	0	1,569	1,569	1,278	1,170	2,448	879
2047	0	1,569	1,569	1,278	1,170	2,448	879
2048	306	1,569	1,875	1,278	1,170	2,448	573
2049	-6,458	1,569	-4,889	1,278	1,170	2,448	7,337

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (1) Economic Evaluation of Integrated System

10) Project Expansion of Sertaneja Pipeline System	Project Cost	28,161	(R\$ 000)
	EIRR	—	(%)
	NPV	-10,678	(R\$ 000)
	B/C	0.36	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0
2008	14,081	0	14,081	0	0	0	-14,081
2009	0	804	804	504	84	588	-216
2010	0	845	845	530	95	625	-220
2011	0	901	901	561	113	674	-227
2012	0	956	956	593	131	724	-233
2013	14,081	1,012	15,093	624	149	773	-14,320
2014	0	2,135	2,135	1,312	333	1,645	-491
2015	0	2,246	2,246	1,375	368	1,743	-503
2016	0	2,395	2,395	1,454	421	1,875	-520
2017	0	2,544	2,544	1,532	475	2,007	-538
2018	0	2,693	2,693	1,611	528	2,138	-555
2019	0	2,842	2,842	1,689	581	2,270	-572
2020	0	2,991	2,991	1,768	634	2,402	-589
2021	0	2,991	2,991	1,768	634	2,402	-589
2022	0	2,991	2,991	1,768	634	2,402	-589
2023	1,609	2,991	4,600	1,768	634	2,402	-2,198
2024	0	2,991	2,991	1,768	634	2,402	-589
2025	0	2,991	2,991	1,768	634	2,402	-589
2026	0	2,991	2,991	1,768	634	2,402	-589
2027	0	2,991	2,991	1,768	634	2,402	-589
2028	1,609	2,991	4,600	1,768	634	2,402	-2,198
2029	0	2,991	2,991	1,768	634	2,402	-589
2030	0	2,991	2,991	1,768	634	2,402	-589
2031	0	2,991	2,991	1,768	634	2,402	-589
2032	0	2,991	2,991	1,768	634	2,402	-589
2033	0	2,991	2,991	1,768	634	2,402	-589
2034	0	2,991	2,991	1,768	634	2,402	-589
2035	0	2,991	2,991	1,768	634	2,402	-589
2036	0	2,991	2,991	1,768	634	2,402	-589
2037	0	2,991	2,991	1,768	634	2,402	-589
2038	1,609	2,991	4,600	1,768	634	2,402	-2,198
2039	0	2,991	2,991	1,768	634	2,402	-589
2040	0	2,991	2,991	1,768	634	2,402	-589
2041	0	2,991	2,991	1,768	634	2,402	-589
2042	0	2,991	2,991	1,768	634	2,402	-589
2043	1,609	2,991	4,600	1,768	634	2,402	-2,198
2044	0	2,991	2,991	1,768	634	2,402	-589
2045	0	2,991	2,991	1,768	634	2,402	-589
2046	0	2,991	2,991	1,768	634	2,402	-589
2047	0	2,991	2,991	1,768	634	2,402	-589
2048	431	2,991	3,422	1,768	634	2,402	-1,021
2049	-6,647	2,991	-3,656	1,768	634	2,402	6,057

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (1) Economic Evaluation of Integrated System

Total of Integrated System	Project Cost	615,668	(R\$ 000)
	EIRR	10.8	(%)
	NPV	32,933	(R\$ 000)
	B/C	1.06	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	54,816	0	54,816	0	0	0	-54,816
2001	77,701	896	78,597	2,587	703	3,290	-75,307
2002	94,852	2,904	97,756	6,835	2,908	9,743	-88,014
2003	30,551	5,756	36,306	12,305	6,432	18,737	-17,569
2004	29,423	6,862	36,284	13,635	8,374	22,009	-14,276
2005	29,423	7,759	37,182	14,643	10,320	24,963	-12,218
2006	33,881	9,071	42,952	15,967	13,523	29,490	-13,462
2007	11,645	10,812	22,458	18,259	17,365	35,624	13,166
2008	22,796	12,580	35,376	20,097	20,720	40,817	5,440
2009	27,173	15,030	42,203	21,914	24,144	46,058	3,855
2010	20,630	17,138	37,767	24,789	28,787	53,577	15,809
2011	75,446	21,134	96,580	27,054	34,122	61,176	-35,404
2012	32,275	24,727	57,002	32,793	47,166	79,959	22,957
2013	47,884	28,492	76,377	37,067	54,979	92,045	15,669
2014	0	33,896	33,896	41,962	64,386	106,349	72,453
2015	63,972	36,557	100,529	43,918	71,249	115,167	14,638
2016	43,458	42,034	85,493	49,149	85,080	134,229	48,737
2017	74,146	46,007	120,152	51,787	95,869	147,656	27,503
2018	4,269	49,979	54,248	54,425	106,658	161,082	106,834
2019	2,656	53,952	56,607	57,062	117,446	174,509	117,901
2020	2,656	57,924	60,580	59,700	128,235	187,935	127,355
2021	7,183	57,924	65,107	59,700	128,235	187,935	122,828
2022	3,447	57,924	61,372	59,700	128,235	187,935	126,563
2023	10,019	57,924	67,943	59,700	128,235	187,935	119,992
2024	5,757	57,924	63,682	59,700	128,235	187,935	124,253
2025	2,656	57,924	60,580	59,700	128,235	187,935	127,355
2026	39,455	57,924	97,379	59,700	128,235	187,935	90,556
2027	6,103	57,924	64,027	59,700	128,235	187,935	123,908
2028	17,202	57,924	75,126	59,700	128,235	187,935	112,809
2029	0	57,924	57,924	59,700	128,235	187,935	130,011
2030	42,556	57,924	100,481	59,700	128,235	187,935	87,454
2031	43,458	57,924	101,383	59,700	128,235	187,935	86,552
2032	74,146	57,924	132,070	59,700	128,235	187,935	55,865
2033	4,269	57,924	62,193	59,700	128,235	187,935	125,742
2034	2,656	57,924	60,580	59,700	128,235	187,935	127,355
2035	2,656	57,924	60,580	59,700	128,235	187,935	127,355
2036	7,183	57,924	65,107	59,700	128,235	187,935	122,828
2037	3,447	57,924	61,372	59,700	128,235	187,935	126,563
2038	10,019	57,924	67,943	59,700	128,235	187,935	119,992
2039	5,757	57,924	63,682	59,700	128,235	187,935	124,253
2040	15,136	57,924	73,061	59,700	128,235	187,935	114,874
2041	53,232	57,924	111,157	59,700	128,235	187,935	76,779
2042	21,273	57,924	79,197	59,700	128,235	187,935	108,738
2043	21,731	57,924	79,656	59,700	128,235	187,935	108,279
2044	4,305	57,924	62,229	59,700	128,235	187,935	125,706
2045	46,862	57,924	104,786	59,700	128,235	187,935	83,149
2046	44,681	57,924	102,605	59,700	128,235	187,935	85,330
2047	74,355	57,924	132,279	59,700	128,235	187,935	55,656
2048	5,006	57,924	62,931	59,700	128,235	187,935	125,005
2049	-252,959	57,924	-195,035	59,700	128,235	187,935	382,970

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

		Project Cost	540	(R\$ 000)
1) Gararu:		EIRR	—	(%)
Sao Francisco River Direct Intake		NPV	-758	(R\$ 000)
		B/C	0.39	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0
2009	540	0	540	0	0	0	-540
2010	0	263	263	110	10	119	-144
2011	0	267	267	111	12	122	-145
2012	0	272	272	112	13	125	-146
2013	0	276	276	113	15	128	-148
2014	0	280	280	114	17	131	-149
2015	0	284	284	115	18	134	-150
2016	0	290	290	117	21	139	-152
2017	0	297	297	119	24	143	-154
2018	0	303	303	122	26	148	-155
2019	0	310	310	124	29	153	-157
2020	0	316	316	126	32	157	-159
2021	0	316	316	126	32	157	-159
2022	0	316	316	126	32	157	-159
2023	0	316	316	126	32	157	-159
2024	454	316	770	126	32	157	-613
2025	0	316	316	126	32	157	-159
2026	0	316	316	126	32	157	-159
2027	0	316	316	126	32	157	-159
2028	0	316	316	126	32	157	-159
2029	0	316	316	126	32	157	-159
2030	0	316	316	126	32	157	-159
2031	0	316	316	126	32	157	-159
2032	0	316	316	126	32	157	-159
2033	0	316	316	126	32	157	-159
2034	0	316	316	126	32	157	-159
2035	0	316	316	126	32	157	-159
2036	0	316	316	126	32	157	-159
2037	0	316	316	126	32	157	-159
2038	0	316	316	126	32	157	-159
2039	454	316	770	126	32	157	-613
2040	0	316	316	126	32	157	-159
2041	0	316	316	126	32	157	-159
2042	0	316	316	126	32	157	-159
2043	0	316	316	126	32	157	-159
2044	0	316	316	126	32	157	-159
2045	0	316	316	126	32	157	-159
2046	0	316	316	126	32	157	-159
2047	0	316	316	126	32	157	-159
2048	0	316	316	126	32	157	-159
2049	-119	316	197	126	32	157	-39

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

		Project Cost	596	(R\$ 000)
2) Muribeca:		EIRR	15.0	(%)
Deep Well Development		NPV	75	(R\$ 000)
		B/C	1.28	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	85	0	85	0	0	0	-85
2008	0	4	4	14	0	14	10
2009	85	4	90	14	0	14	-75
2010	0	9	9	30	0	30	21
2011	85	9	94	31	0	31	-63
2012	0	14	14	48	0	48	34
2013	85	14	100	50	0	50	-50
2014	0	20	20	69	0	69	49
2015	85	20	105	71	0	71	-34
2016	0	26	26	93	0	93	67
2017	85	27	112	97	0	97	-15
2018	0	33	33	121	0	121	88
2019	85	34	119	126	0	126	7
2020	0	41	41	153	0	153	112
2021	0	41	41	153	0	153	112
2022	43	41	84	153	0	153	69
2023	0	41	41	153	0	153	112
2024	43	41	84	153	0	153	69
2025	0	41	41	153	0	153	112
2026	43	41	84	153	0	153	69
2027	0	41	41	153	0	153	112
2028	43	41	84	153	0	153	69
2029	0	41	41	153	0	153	112
2030	43	41	84	153	0	153	69
2031	0	41	41	153	0	153	112
2032	43	41	84	153	0	153	69
2033	0	41	41	153	0	153	112
2034	43	41	84	153	0	153	69
2035	0	41	41	153	0	153	112
2036	0	41	41	153	0	153	112
2037	43	41	84	153	0	153	69
2038	0	41	41	153	0	153	112
2039	43	41	84	153	0	153	69
2040	0	41	41	153	0	153	112
2041	43	41	84	153	0	153	69
2042	0	41	41	153	0	153	112
2043	43	41	84	153	0	153	69
2044	0	41	41	153	0	153	112
2045	43	41	84	153	0	153	69
2046	0	41	41	153	0	153	112
2047	60	41	101	153	0	153	51
2048	0	41	41	153	0	153	112
2049	-182	41	-141	153	0	153	294

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

3) Nossa Senhora das Dores:
Pinol River Development

Project Cost	2,438	(R\$ 000)
EIRR	17.1	(%)
NPV	732	(R\$ 000)
B/C	1.27	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	2,438	0	2,438	0	0	0	-2,438
2008	0	253	253	606	18	624	371
2009	0	264	264	627	20	648	384
2010	0	274	274	648	23	671	397
2011	0	287	287	675	27	702	415
2012	0	300	300	701	32	733	433
2013	0	313	313	727	36	763	451
2014	0	326	326	754	41	794	468
2015	0	339	339	780	45	825	486
2016	0	354	354	813	51	864	510
2017	0	370	370	846	58	904	534
2018	0	386	386	878	64	943	557
2019	0	402	402	911	71	982	581
2020	0	417	417	944	77	1,022	604
2021	0	417	417	944	77	1,022	604
2022	2,307	417	2,724	944	77	1,022	-1,702
2023	0	417	417	944	77	1,022	604
2024	0	417	417	944	77	1,022	604
2025	0	417	417	944	77	1,022	604
2026	0	417	417	944	77	1,022	604
2027	0	417	417	944	77	1,022	604
2028	0	417	417	944	77	1,022	604
2029	0	417	417	944	77	1,022	604
2030	0	417	417	944	77	1,022	604
2031	0	417	417	944	77	1,022	604
2032	0	417	417	944	77	1,022	604
2033	0	417	417	944	77	1,022	604
2034	0	417	417	944	77	1,022	604
2035	0	417	417	944	77	1,022	604
2036	0	417	417	944	77	1,022	604
2037	2,307	417	2,724	944	77	1,022	-1,702
2038	0	417	417	944	77	1,022	604
2039	0	417	417	944	77	1,022	604
2040	0	417	417	944	77	1,022	604
2041	0	417	417	944	77	1,022	604
2042	0	417	417	944	77	1,022	604
2043	0	417	417	944	77	1,022	604
2044	0	417	417	944	77	1,022	604
2045	0	417	417	944	77	1,022	604
2046	0	417	417	944	77	1,022	604
2047	131	417	549	944	77	1,022	473
2048	0	417	417	944	77	1,022	604
2049	-429	417	-12	944	77	1,022	1,034

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

4) Malhador: Vermelha River development Deep Well Development	Project Cost	2,242	(R\$ 000)
	EIRR	—	(%)
	NPV	-938	(R\$ 000)
	B/C	0.50	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0
2009	1,792	0	1,792	0	0	0	-1,792
2010	0	188	188	128	26	153	-34
2011	0	201	201	133	30	163	-38
2012	0	214	214	138	35	173	-41
2013	0	227	227	143	40	183	-44
2014	75	240	315	149	44	193	-122
2015	75	258	333	165	53	217	-116
2016	75	281	356	184	64	248	-108
2017	75	304	379	204	76	280	-98
2018	75	328	403	225	90	315	-88
2019	75	352	427	247	104	351	-76
2020	0	377	377	270	120	390	12
2021	0	377	377	270	120	390	12
2022	0	377	377	270	120	390	12
2023	0	377	377	270	120	390	12
2024	1,640	377	2,017	270	120	390	-1,627
2025	0	377	377	270	120	390	12
2026	0	377	377	270	120	390	12
2027	0	377	377	270	120	390	12
2028	0	377	377	270	120	390	12
2029	0	377	377	270	120	390	12
2030	0	377	377	270	120	390	12
2031	0	377	377	270	120	390	12
2032	0	377	377	270	120	390	12
2033	0	377	377	270	120	390	12
2034	0	377	377	270	120	390	12
2035	254	377	631	270	120	390	-241
2036	0	377	377	270	120	390	12
2037	0	377	377	270	120	390	12
2038	0	377	377	270	120	390	12
2039	1,640	377	2,017	270	120	390	-1,627
2040	0	377	377	270	120	390	12
2041	0	377	377	270	120	390	12
2042	0	377	377	270	120	390	12
2043	0	377	377	270	120	390	12
2044	0	377	377	270	120	390	12
2045	0	377	377	270	120	390	12
2046	0	377	377	270	120	390	12
2047	0	377	377	270	120	390	12
2048	0	377	377	270	120	390	12
2049	-437	377	-60	270	120	390	450

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

5) Tobias Barreto: Jabiberi Dam Raising Project	Project Cost	9,063	(R\$ 000)
	EIRR	8.5	(%)
	NPV	-586	(R\$ 000)
	B/C	0.94	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	9,063	0	9,063	0	0	0	-9,063
2007	0	578	578	1,242	48	1,289	711
2008	0	608	608	1,299	57	1,355	748
2009	0	637	637	1,356	66	1,421	784
2010	0	667	667	1,413	75	1,488	821
2011	0	704	704	1,482	89	1,571	868
2012	0	740	740	1,552	103	1,655	915
2013	0	777	777	1,622	117	1,739	962
2014	0	814	814	1,692	131	1,823	1,009
2015	0	850	850	1,762	145	1,907	1,057
2016	0	896	896	1,848	166	2,014	1,118
2017	0	941	941	1,934	186	2,120	1,179
2018	0	987	987	2,020	207	2,227	1,240
2019	0	1,033	1,033	2,107	228	2,334	1,302
2020	0	1,078	1,078	2,193	248	2,441	1,363
2021	8,145	1,078	9,224	2,193	248	2,441	-6,783
2022	0	1,078	1,078	2,193	248	2,441	1,363
2023	0	1,078	1,078	2,193	248	2,441	1,363
2024	0	1,078	1,078	2,193	248	2,441	1,363
2025	0	1,078	1,078	2,193	248	2,441	1,363
2026	0	1,078	1,078	2,193	248	2,441	1,363
2027	0	1,078	1,078	2,193	248	2,441	1,363
2028	0	1,078	1,078	2,193	248	2,441	1,363
2029	0	1,078	1,078	2,193	248	2,441	1,363
2030	0	1,078	1,078	2,193	248	2,441	1,363
2031	0	1,078	1,078	2,193	248	2,441	1,363
2032	0	1,078	1,078	2,193	248	2,441	1,363
2033	0	1,078	1,078	2,193	248	2,441	1,363
2034	0	1,078	1,078	2,193	248	2,441	1,363
2035	0	1,078	1,078	2,193	248	2,441	1,363
2036	8,145	1,078	9,224	2,193	248	2,441	-6,783
2037	0	1,078	1,078	2,193	248	2,441	1,363
2038	0	1,078	1,078	2,193	248	2,441	1,363
2039	0	1,078	1,078	2,193	248	2,441	1,363
2040	0	1,078	1,078	2,193	248	2,441	1,363
2041	0	1,078	1,078	2,193	248	2,441	1,363
2042	0	1,078	1,078	2,193	248	2,441	1,363
2043	0	1,078	1,078	2,193	248	2,441	1,363
2044	0	1,078	1,078	2,193	248	2,441	1,363
2045	0	1,078	1,078	2,193	248	2,441	1,363
2046	769	1,078	1,848	2,193	248	2,441	594
2047	0	1,078	1,078	2,193	248	2,441	1,363
2048	0	1,078	1,078	2,193	248	2,441	1,363
2049	-1,253	1,078	-175	2,193	248	2,441	2,616

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

6) Brejo Grande: Deep Well Development	Project Cost	457	(R\$ 000)
	EIRR	66.5	(%)
	NPV	664	(R\$ 000)
	B/C	2.68	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	236	0	236	0	0	0	-236
2006	0	24	24	176	2	178	153
2007	0	25	25	179	2	181	156
2008	0	25	25	182	2	184	159
2009	0	25	25	184	3	187	162
2010	0	25	25	187	3	190	165
2011	0	26	26	192	3	195	169
2012	0	26	26	196	4	200	174
2013	0	27	27	201	4	205	178
2014	0	27	27	205	5	210	183
2015	222	28	249	210	5	215	-35
2016	0	57	57	215	6	221	164
2017	0	59	59	220	7	227	168
2018	0	60	60	225	8	233	173
2019	0	62	62	230	8	239	177
2020	152	63	216	235	9	245	29
2021	0	63	63	235	9	245	181
2022	0	63	63	235	9	245	181
2023	0	63	63	235	9	245	181
2024	0	63	63	235	9	245	181
2025	0	63	63	235	9	245	181
2026	0	63	63	235	9	245	181
2027	0	63	63	235	9	245	181
2028	0	63	63	235	9	245	181
2029	0	63	63	235	9	245	181
2030	152	63	216	235	9	245	29
2031	0	63	63	235	9	245	181
2032	0	63	63	235	9	245	181
2033	0	63	63	235	9	245	181
2034	0	63	63	235	9	245	181
2035	152	63	216	235	9	245	29
2036	0	63	63	235	9	245	181
2037	0	63	63	235	9	245	181
2038	0	63	63	235	9	245	181
2039	0	63	63	235	9	245	181
2040	0	63	63	235	9	245	181
2041	0	63	63	235	9	245	181
2042	0	63	63	235	9	245	181
2043	0	63	63	235	9	245	181
2044	0	63	63	235	9	245	181
2045	222	63	285	235	9	245	-40
2046	0	63	63	235	9	245	181
2047	0	63	63	235	9	245	181
2048	0	63	63	235	9	245	181
2049	-172	63	-109	235	9	245	354

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

7) Ilha das Flores:
Deep Well Development

Project Cost	482	(R\$ 000)
EIRR	20.8	(%)
NPV	240	(R\$ 000)
B/C	1.54	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	248	0	248	0	0	0	-248
2005	0	20	20	62	0	62	42
2006	0	20	20	64	1	65	45
2007	0	21	21	66	2	67	46
2008	0	22	22	68	2	70	48
2009	0	23	23	70	2	72	49
2010	0	23	23	72	2	74	51
2011	0	24	24	75	3	78	53
2012	0	25	25	78	3	81	56
2013	0	26	26	81	4	84	58
2014	234	27	262	83	4	87	-174
2015	0	57	57	173	4	177	120
2016	0	59	59	180	5	185	126
2017	0	62	62	188	6	193	132
2018	0	64	64	195	6	202	137
2019	163	67	230	203	7	210	-20
2020	0	69	69	210	8	218	149
2021	0	69	69	210	8	218	149
2022	0	69	69	210	8	218	149
2023	0	69	69	210	8	218	149
2024	0	69	69	210	8	218	149
2025	0	69	69	210	8	218	149
2026	0	69	69	210	8	218	149
2027	0	69	69	210	8	218	149
2028	0	69	69	210	8	218	149
2029	163	69	232	210	8	218	-14
2030	0	69	69	210	8	218	149
2031	0	69	69	210	8	218	149
2032	0	69	69	210	8	218	149
2033	0	69	69	210	8	218	149
2034	163	69	232	210	8	218	-14
2035	0	69	69	210	8	218	149
2036	0	69	69	210	8	218	149
2037	0	69	69	210	8	218	149
2038	0	69	69	210	8	218	149
2039	0	69	69	210	8	218	149
2040	0	69	69	210	8	218	149
2041	0	69	69	210	8	218	149
2042	0	69	69	210	8	218	149
2043	163	69	232	210	8	218	-14
2044	71	69	140	210	8	218	78
2045	0	69	69	210	8	218	149
2046	0	69	69	210	8	218	149
2047	0	69	69	210	8	218	149
2048	0	69	69	210	8	218	149
2049	-154	69	-85	210	8	218	303

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

8) Neopolis:
Sao Francisco River Direct Intake

Project Cost	7,063	(R\$ 000)
EIRR	37.1	(%)
NPV	13,931	(R\$ 000)
B/C	2.94	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	2,354	0	2,354	324	77	401	-1,953
2004	0	79	79	378	102	479	400
2005	0	92	92	431	126	557	466
2006	2,354	107	2,462	970	338	1,308	-1,154
2007	0	245	245	1,078	423	1,501	1,256
2008	0	276	276	1,186	508	1,695	1,418
2009	0	307	307	1,294	594	1,888	1,581
2010	0	339	339	1,403	679	2,082	1,743
2011	0	377	377	1,519	804	2,323	1,946
2012	0	416	416	1,635	929	2,564	2,148
2013	0	454	454	1,752	1,053	2,805	2,351
2014	2,354	493	2,847	1,868	1,178	3,047	199
2015	0	797	797	2,977	1,954	4,932	4,135
2016	0	879	879	3,174	2,273	5,447	4,568
2017	0	961	961	3,371	2,591	5,961	5,001
2018	2,035	1,043	3,078	3,568	2,909	6,476	3,399
2019	0	1,125	1,125	3,764	3,227	6,991	5,866
2020	0	1,207	1,207	3,961	3,545	7,506	6,299
2021	2,035	1,207	3,241	3,961	3,545	7,506	4,265
2022	0	1,207	1,207	3,961	3,545	7,506	6,299
2023	0	1,207	1,207	3,961	3,545	7,506	6,299
2024	0	1,207	1,207	3,961	3,545	7,506	6,299
2025	0	1,207	1,207	3,961	3,545	7,506	6,299
2026	0	1,207	1,207	3,961	3,545	7,506	6,299
2027	0	1,207	1,207	3,961	3,545	7,506	6,299
2028	0	1,207	1,207	3,961	3,545	7,506	6,299
2029	2,035	1,207	3,241	3,961	3,545	7,506	4,265
2030	0	1,207	1,207	3,961	3,545	7,506	6,299
2031	0	1,207	1,207	3,961	3,545	7,506	6,299
2032	0	1,207	1,207	3,961	3,545	7,506	6,299
2033	2,035	1,207	3,241	3,961	3,545	7,506	4,265
2034	0	1,207	1,207	3,961	3,545	7,506	6,299
2035	0	1,207	1,207	3,961	3,545	7,506	6,299
2036	2,035	1,207	3,241	3,961	3,545	7,506	4,265
2037	0	1,207	1,207	3,961	3,545	7,506	6,299
2038	0	1,207	1,207	3,961	3,545	7,506	6,299
2039	0	1,207	1,207	3,961	3,545	7,506	6,299
2040	0	1,207	1,207	3,961	3,545	7,506	6,299
2041	0	1,207	1,207	3,961	3,545	7,506	6,299
2042	0	1,207	1,207	3,961	3,545	7,506	6,299
2043	320	1,207	1,526	3,961	3,545	7,506	5,980
2044	2,035	1,207	3,241	3,961	3,545	7,506	4,265
2045	0	1,207	1,207	3,961	3,545	7,506	6,299
2046	2,354	1,207	3,561	3,961	3,545	7,506	3,945
2047	0	1,207	1,207	3,961	3,545	7,506	6,299
2048	0	1,207	1,207	3,961	3,545	7,506	6,299
2049	-3,568	1,207	-2,361	3,961	3,545	7,506	9,867

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

9) Santana do Sao Francisco: S. Francisco R. Direct Intake (Exp.)	Project Cost	1,581	(R\$ 000)
	EIRR	29.8	(%)
	NPV	1,769	(R\$ 000)
	B/C	1.82	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	790	0	790	0	0	0	-790
2006	0	85	85	250	1	251	166
2007	0	93	93	274	2	276	182
2008	0	102	102	298	2	300	199
2009	0	110	110	323	2	325	215
2010	790	118	909	347	2	349	-559
2011	0	255	255	747	6	753	498
2012	0	273	273	800	6	807	534
2013	0	292	292	854	7	861	570
2014	0	310	310	907	8	915	605
2015	0	328	328	961	9	970	641
2016	0	349	349	1,022	10	1,032	683
2017	0	371	371	1,083	11	1,095	724
2018	0	392	392	1,145	13	1,158	766
2019	0	413	413	1,206	14	1,220	807
2020	730	434	1,164	1,268	15	1,283	119
2021	0	434	434	1,268	15	1,283	849
2022	0	434	434	1,268	15	1,283	849
2023	0	434	434	1,268	15	1,283	849
2024	0	434	434	1,268	15	1,283	849
2025	730	434	1,164	1,268	15	1,283	119
2026	0	434	434	1,268	15	1,283	849
2027	0	434	434	1,268	15	1,283	849
2028	0	434	434	1,268	15	1,283	849
2029	0	434	434	1,268	15	1,283	849
2030	0	434	434	1,268	15	1,283	849
2031	0	434	434	1,268	15	1,283	849
2032	0	434	434	1,268	15	1,283	849
2033	0	434	434	1,268	15	1,283	849
2034	0	434	434	1,268	15	1,283	849
2035	730	434	1,164	1,268	15	1,283	119
2036	0	434	434	1,268	15	1,283	849
2037	0	434	434	1,268	15	1,283	849
2038	0	434	434	1,268	15	1,283	849
2039	0	434	434	1,268	15	1,283	849
2040	730	434	1,164	1,268	15	1,283	119
2041	0	434	434	1,268	15	1,283	849
2042	0	434	434	1,268	15	1,283	849
2043	0	434	434	1,268	15	1,283	849
2044	0	434	434	1,268	15	1,283	849
2045	0	434	434	1,268	15	1,283	849
2046	61	434	495	1,268	15	1,283	788
2047	0	434	434	1,268	15	1,283	849
2048	0	434	434	1,268	15	1,283	849
2049	-287	434	147	1,268	15	1,283	1,136

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

10) Capela: Siriri River Development Adeira River Development	Project Cost	5,895	(R\$ 000)
	EIRR	20.8	(%)
	NPV	3,100	(R\$ 000)
	B/C	1.59	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	3,093	0	3,093	0	0	0	-3,093
2006	0	151	151	420	144	564	413
2007	0	169	169	446	189	635	467
2008	0	186	186	473	234	707	521
2009	0	203	203	499	279	778	575
2010	0	220	220	526	324	849	629
2011	0	245	245	558	397	954	709
2012	0	270	270	590	470	1,060	789
2013	0	295	295	622	543	1,165	869
2014	2,801	321	3,122	654	616	1,270	-1,852
2015	0	597	597	979	985	1,964	1,368
2016	0	662	662	1,036	1,157	2,192	1,531
2017	0	727	727	1,092	1,329	2,420	1,693
2018	2,768	792	3,561	1,148	1,501	2,649	-912
2019	0	858	858	1,204	1,673	2,877	2,019
2020	0	923	923	1,260	1,845	3,105	2,182
2021	0	923	923	1,260	1,845	3,105	2,182
2022	0	923	923	1,260	1,845	3,105	2,182
2023	0	923	923	1,260	1,845	3,105	2,182
2024	0	923	923	1,260	1,845	3,105	2,182
2025	0	923	923	1,260	1,845	3,105	2,182
2026	0	923	923	1,260	1,845	3,105	2,182
2027	0	923	923	1,260	1,845	3,105	2,182
2028	0	923	923	1,260	1,845	3,105	2,182
2029	2,668	923	3,591	1,260	1,845	3,105	-486
2030	0	923	923	1,260	1,845	3,105	2,182
2031	0	923	923	1,260	1,845	3,105	2,182
2032	0	923	923	1,260	1,845	3,105	2,182
2033	2,768	923	3,691	1,260	1,845	3,105	-586
2034	0	923	923	1,260	1,845	3,105	2,182
2035	0	923	923	1,260	1,845	3,105	2,182
2036	0	923	923	1,260	1,845	3,105	2,182
2037	0	923	923	1,260	1,845	3,105	2,182
2038	0	923	923	1,260	1,845	3,105	2,182
2039	0	923	923	1,260	1,845	3,105	2,182
2040	0	923	923	1,260	1,845	3,105	2,182
2041	0	923	923	1,260	1,845	3,105	2,182
2042	0	923	923	1,260	1,845	3,105	2,182
2043	0	923	923	1,260	1,845	3,105	2,182
2044	2,668	923	3,591	1,260	1,845	3,105	-486
2045	205	923	1,127	1,260	1,845	3,105	1,977
2046	0	923	923	1,260	1,845	3,105	2,182
2047	0	923	923	1,260	1,845	3,105	2,182
2048	2,768	923	3,691	1,260	1,845	3,105	-586
2049	-4,208	923	-3,285	1,260	1,845	3,105	6,390

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

11) Divina Pastora:
Deep Well Development

Project Cost	403	(R\$ 000)
EIRR	19.6	(%)
NPV	170	(R\$ 000)
B/C	1.68	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	101	0	101	0	0	0	-101
2005	0	4	4	12	3	15	11
2006	0	4	4	13	3	16	12
2007	0	4	4	13	4	17	13
2008	0	5	5	14	5	19	14
2009	101	5	106	14	6	20	-86
2010	0	10	10	29	14	43	33
2011	0	11	11	30	17	47	35
2012	0	12	12	31	19	50	38
2013	0	13	13	33	22	54	41
2014	101	14	115	34	24	58	-57
2015	0	22	22	53	40	93	70
2016	0	24	24	55	46	101	77
2017	0	26	26	58	51	109	83
2018	0	28	28	60	57	117	89
2019	158	30	188	63	62	125	-63
2020	0	42	42	87	90	178	135
2021	0	42	42	87	90	178	135
2022	0	42	42	87	90	178	135
2023	0	42	42	87	90	178	135
2024	57	42	100	87	90	178	78
2025	0	42	42	87	90	178	135
2026	0	42	42	87	90	178	135
2027	0	42	42	87	90	178	135
2028	0	42	42	87	90	178	135
2029	57	42	100	87	90	178	78
2030	0	42	42	87	90	178	135
2031	0	42	42	87	90	178	135
2032	0	42	42	87	90	178	135
2033	0	42	42	87	90	178	135
2034	115	42	157	87	90	178	21
2035	0	42	42	87	90	178	135
2036	0	42	42	87	90	178	135
2037	0	42	42	87	90	178	135
2038	0	42	42	87	90	178	135
2039	57	42	100	87	90	178	78
2040	0	42	42	87	90	178	135
2041	0	42	42	87	90	178	135
2042	0	42	42	87	90	178	135
2043	0	42	42	87	90	178	135
2044	88	42	130	87	90	178	47
2045	0	42	42	87	90	178	135
2046	0	42	42	87	90	178	135
2047	0	42	42	87	90	178	135
2048	0	42	42	87	90	178	135
2049	-122	42	-80	87	90	178	258

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

12) Santa Rosa de Lima:
Deep Well Development

Project Cost	350	(R\$ 000)
EIRR	16.0	(%)
NPV	72	(R\$ 000)
B/C	1.36	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	88	0	88	0	0	0	-88
2005	0	4	4	15	0	15	11
2006	0	4	4	15	0	16	11
2007	0	4	4	16	0	16	12
2008	0	5	5	16	0	17	12
2009	88	5	92	17	0	17	-75
2010	0	10	10	34	1	35	26
2011	0	10	10	35	1	37	27
2012	0	10	10	37	1	38	28
2013	0	11	11	38	2	39	29
2014	88	11	99	39	2	41	-58
2015	0	17	17	61	3	63	47
2016	0	17	17	63	3	66	49
2017	0	18	18	66	4	69	51
2018	0	19	19	68	4	72	53
2019	138	20	157	71	4	75	-82
2020	0	27	27	98	6	104	77
2021	0	27	27	98	6	104	77
2022	0	27	27	98	6	104	77
2023	0	27	27	98	6	104	77
2024	50	27	77	98	6	104	27
2025	0	27	27	98	6	104	77
2026	0	27	27	98	6	104	77
2027	0	27	27	98	6	104	77
2028	0	27	27	98	6	104	77
2029	50	27	77	98	6	104	27
2030	0	27	27	98	6	104	77
2031	0	27	27	98	6	104	77
2032	0	27	27	98	6	104	77
2033	0	27	27	98	6	104	77
2034	100	27	127	98	6	104	-23
2035	0	27	27	98	6	104	77
2036	0	27	27	98	6	104	77
2037	0	27	27	98	6	104	77
2038	0	27	27	98	6	104	77
2039	50	27	77	98	6	104	27
2040	0	27	27	98	6	104	77
2041	0	27	27	98	6	104	77
2042	0	27	27	98	6	104	77
2043	0	27	27	98	6	104	77
2044	76	27	103	98	6	104	1
2045	0	27	27	98	6	104	77
2046	0	27	27	98	6	104	77
2047	0	27	27	98	6	104	77
2048	0	27	27	98	6	104	77
2049	-68	27	-41	98	6	104	145

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

13) Siriri:
Deep Well Development

Project Cost	490	(R\$ 000)
EIRR	32.6	(%)
NPV	108	(R\$ 000)
B/C	1.51	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0
2011	98	0	98	0	0	0	-98
2012	0	5	5	51	12	63	57
2013	98	6	104	57	14	71	-33
2014	0	13	13	64	15	79	66
2015	98	14	112	71	17	88	-25
2016	0	23	23	79	19	99	75
2017	98	26	124	88	22	109	-14
2018	0	37	37	97	24	120	84
2019	98	40	138	105	26	131	-7
2020	0	53	53	114	29	142	89
2021	0	53	53	114	29	142	89
2022	0	53	53	114	29	142	89
2023	0	53	53	114	29	142	89
2024	0	53	53	114	29	142	89
2025	0	53	53	114	29	142	89
2026	61	53	114	114	29	142	28
2027	0	53	53	114	29	142	89
2028	61	53	114	114	29	142	28
2029	0	53	53	114	29	142	89
2030	61	53	114	114	29	142	28
2031	0	53	53	114	29	142	89
2032	61	53	114	114	29	142	28
2033	0	53	53	114	29	142	89
2034	61	53	114	114	29	142	28
2035	0	53	53	114	29	142	89
2036	0	53	53	114	29	142	89
2037	0	53	53	114	29	142	89
2038	0	53	53	114	29	142	89
2039	0	53	53	114	29	142	89
2040	0	53	53	114	29	142	89
2041	61	53	114	114	29	142	28
2042	0	53	53	114	29	142	89
2043	61	53	114	114	29	142	28
2044	0	53	53	114	29	142	89
2045	61	53	114	114	29	142	28
2046	0	53	53	114	29	142	89
2047	61	53	114	114	29	142	28
2048	0	53	53	114	29	142	89
2049	-175	53	-121	114	29	142	264

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

14) Japarutuba:
Deep Well Development

Project Cost	1,349	(R\$ 000)
EIRR	27.5	(%)
NPV	1,524	(R\$ 000)
B/C	2.21	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	450	0	450	0	0	0	-450
2005	0	23	23	84	6	90	67
2006	0	26	26	92	9	101	75
2007	0	28	28	100	12	112	84
2008	0	31	31	108	16	123	92
2009	450	33	483	115	19	134	-349
2010	0	72	72	246	45	291	219
2011	0	79	79	265	60	325	245
2012	0	87	87	283	75	358	271
2013	0	94	94	301	90	392	297
2014	450	102	551	479	159	638	86
2015	0	164	164	506	182	688	524
2016	0	180	180	539	224	763	583
2017	0	196	196	572	267	839	642
2018	0	213	213	605	310	914	701
2019	324	229	553	637	352	990	436
2020	0	246	246	670	395	1,065	819
2021	0	246	246	670	395	1,065	819
2022	0	246	246	670	395	1,065	819
2023	0	246	246	670	395	1,065	819
2024	324	246	570	670	395	1,065	495
2025	0	246	246	670	395	1,065	819
2026	0	246	246	670	395	1,065	819
2027	0	246	246	670	395	1,065	819
2028	0	246	246	670	395	1,065	819
2029	324	246	570	670	395	1,065	495
2030	0	246	246	670	395	1,065	819
2031	0	246	246	670	395	1,065	819
2032	0	246	246	670	395	1,065	819
2033	0	246	246	670	395	1,065	819
2034	324	246	570	670	395	1,065	495
2035	0	246	246	670	395	1,065	819
2036	0	246	246	670	395	1,065	819
2037	0	246	246	670	395	1,065	819
2038	0	246	246	670	395	1,065	819
2039	324	246	570	670	395	1,065	495
2040	0	246	246	670	395	1,065	819
2041	0	246	246	670	395	1,065	819
2042	0	246	246	670	395	1,065	819
2043	0	246	246	670	395	1,065	819
2044	394	246	640	670	395	1,065	425
2045	0	246	246	670	395	1,065	819
2046	0	246	246	670	395	1,065	819
2047	0	246	246	670	395	1,065	819
2048	0	246	246	670	395	1,065	819
2049	-354	246	-108	670	395	1,065	1,173

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

15) Japoata:
Deep Well Development

Project Cost	422	(R\$ 000)
EIRR	14.1	(%)
NPV	38	(R\$ 000)
B/C	1.18	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0
2010	106	0	106	0	0	0	-106
2011	0	9	9	22	1	23	14
2012	106	9	114	22	1	23	-91
2013	0	18	18	46	1	47	29
2014	106	18	124	46	2	48	-76
2015	0	28	28	71	2	72	45
2016	106	28	134	73	2	75	-59
2017	0	39	39	100	2	102	64
2018	0	39	39	103	3	105	66
2019	0	40	40	106	3	109	68
2020	0	41	41	109	3	112	71
2021	0	41	41	109	3	112	71
2022	0	41	41	109	3	112	71
2023	0	41	41	109	3	112	71
2024	0	41	41	109	3	112	71
2025	64	41	105	109	3	112	6
2026	0	41	41	109	3	112	71
2027	64	41	105	109	3	112	6
2028	0	41	41	109	3	112	71
2029	64	41	105	109	3	112	6
2030	0	41	41	109	3	112	71
2031	64	41	105	109	3	112	6
2032	0	41	41	109	3	112	71
2033	0	41	41	109	3	112	71
2034	0	41	41	109	3	112	71
2035	0	41	41	109	3	112	71
2036	0	41	41	109	3	112	71
2037	0	41	41	109	3	112	71
2038	0	41	41	109	3	112	71
2039	0	41	41	109	3	112	71
2040	64	41	105	109	3	112	6
2041	0	41	41	109	3	112	71
2042	64	41	105	109	3	112	6
2043	0	41	41	109	3	112	71
2044	64	41	105	109	3	112	6
2045	0	41	41	109	3	112	71
2046	64	41	105	109	3	112	6
2047	0	41	41	109	3	112	71
2048	0	41	41	109	3	112	71
2049	-187	41	-146	109	3	112	258

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

16) Pacatuba: Santo Antonio River Development	Project Cost	1,631	(R\$ 000)
	EIRR	75.0	(%)
	NPV	11,041	(R\$ 000)
	B/C	6.14	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	862	0	862	0	0	0	-862
2005	0	45	45	479	89	568	523
2006	0	53	53	541	115	657	604
2007	0	61	61	603	142	745	684
2008	0	69	69	666	169	834	765
2009	0	77	77	728	195	923	846
2010	0	85	85	790	222	1,011	926
2011	769	98	866	857	270	1,126	260
2012	0	220	220	1,847	636	2,483	2,263
2013	0	245	245	1,981	732	2,713	2,468
2014	0	270	270	2,115	828	2,943	2,673
2015	0	295	295	2,249	924	3,173	2,878
2016	0	332	332	2,400	1,076	3,476	3,144
2017	0	368	368	2,551	1,227	3,778	3,409
2018	0	405	405	2,702	1,378	4,080	3,675
2019	688	442	1,129	2,853	1,530	4,383	3,253
2020	0	478	478	3,004	1,681	4,685	4,207
2021	0	478	478	3,004	1,681	4,685	4,207
2022	0	478	478	3,004	1,681	4,685	4,207
2023	0	478	478	3,004	1,681	4,685	4,207
2024	0	478	478	3,004	1,681	4,685	4,207
2025	0	478	478	3,004	1,681	4,685	4,207
2026	688	478	1,166	3,004	1,681	4,685	3,519
2027	0	478	478	3,004	1,681	4,685	4,207
2028	0	478	478	3,004	1,681	4,685	4,207
2029	0	478	478	3,004	1,681	4,685	4,207
2030	0	478	478	3,004	1,681	4,685	4,207
2031	0	478	478	3,004	1,681	4,685	4,207
2032	0	478	478	3,004	1,681	4,685	4,207
2033	0	478	478	3,004	1,681	4,685	4,207
2034	688	478	1,166	3,004	1,681	4,685	3,519
2035	0	478	478	3,004	1,681	4,685	4,207
2036	0	478	478	3,004	1,681	4,685	4,207
2037	0	478	478	3,004	1,681	4,685	4,207
2038	0	478	478	3,004	1,681	4,685	4,207
2039	0	478	478	3,004	1,681	4,685	4,207
2040	0	478	478	3,004	1,681	4,685	4,207
2041	688	478	1,166	3,004	1,681	4,685	3,519
2042	0	478	478	3,004	1,681	4,685	4,207
2043	0	478	478	3,004	1,681	4,685	4,207
2044	81	478	560	3,004	1,681	4,685	4,126
2045	0	478	478	3,004	1,681	4,685	4,207
2046	0	478	478	3,004	1,681	4,685	4,207
2047	0	478	478	3,004	1,681	4,685	4,207
2048	0	478	478	3,004	1,681	4,685	4,207
2049	-350	478	129	3,004	1,681	4,685	4,556

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

17) Pirambu:
Deep Well Development

Project Cost	1,055	(R\$ 000)
EIRR	21.1	(%)
NPV	696	(R\$ 000)
B/C	1.72	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	151	0	151	0	0	0	-151
2002	0	5	5	18	0	18	13
2003	0	6	6	21	0	21	15
2004	151	7	158	25	0	25	-133
2005	0	17	17	56	0	56	40
2006	0	19	19	64	0	64	45
2007	151	21	172	71	0	71	-101
2008	0	35	35	117	0	118	83
2009	0	38	38	128	0	129	91
2010	151	41	192	139	0	140	-52
2011	0	60	60	202	0	203	143
2012	0	65	65	219	0	219	154
2013	151	70	221	235	0	236	15
2014	0	94	94	315	1	315	222
2015	0	100	100	336	1	336	236
2016	265	107	372	360	1	360	-12
2017	0	137	137	461	1	462	324
2018	0	146	146	489	1	491	345
2019	265	155	420	518	1	520	100
2020	0	191	191	639	2	640	450
2021	0	191	191	639	2	640	450
2022	114	191	305	639	2	640	335
2023	0	191	191	639	2	640	450
2024	0	191	191	639	2	640	450
2025	114	191	305	639	2	640	335
2026	0	191	191	639	2	640	450
2027	0	191	191	639	2	640	450
2028	114	191	305	639	2	640	335
2029	0	191	191	639	2	640	450
2030	0	191	191	639	2	640	450
2031	228	191	419	639	2	640	221
2032	0	191	191	639	2	640	450
2033	0	191	191	639	2	640	450
2034	114	191	305	639	2	640	335
2035	0	191	191	639	2	640	450
2036	0	191	191	639	2	640	450
2037	114	191	305	639	2	640	335
2038	0	191	191	639	2	640	450
2039	0	191	191	639	2	640	450
2040	114	191	305	639	2	640	335
2041	27	191	218	639	2	640	422
2042	0	191	191	639	2	640	450
2043	114	191	305	639	2	640	335
2044	27	191	218	639	2	640	422
2045	0	191	191	639	2	640	450
2046	228	191	419	639	2	640	221
2047	27	191	218	639	2	640	422
2048	0	191	191	639	2	640	450
2049	-355	191	-165	639	2	640	805

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

18) Sao Francisco:
Deep Well Development

Project Cost	387	(R\$ 000)
EIRR	14.4	(%)
NPV	45	(R\$ 000)
B/C	1.24	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	77	0	77	0	0	0	-77
2008	0	3	3	11	0	11	8
2009	0	4	4	12	0	12	8
2010	77	4	81	12	0	12	-69
2011	0	8	8	26	0	26	18
2012	0	9	9	28	0	28	19
2013	77	9	86	29	0	29	-57
2014	0	14	14	47	0	47	32
2015	0	15	15	49	0	49	34
2016	77	16	93	52	0	52	-42
2017	0	23	23	73	0	73	50
2018	0	24	24	77	0	77	53
2019	77	25	103	81	0	81	-22
2020	0	33	33	106	0	106	73
2021	0	33	33	106	0	106	73
2022	45	33	78	106	0	106	28
2023	0	33	33	106	0	106	73
2024	0	33	33	106	0	106	73
2025	45	33	78	106	0	106	28
2026	0	33	33	106	0	106	73
2027	0	33	33	106	0	106	73
2028	45	33	78	106	0	106	28
2029	0	33	33	106	0	106	73
2030	0	33	33	106	0	106	73
2031	45	33	78	106	0	106	28
2032	0	33	33	106	0	106	73
2033	0	33	33	106	0	106	73
2034	45	33	78	106	0	106	28
2035	0	33	33	106	0	106	73
2036	0	33	33	106	0	106	73
2037	45	33	78	106	0	106	28
2038	0	33	33	106	0	106	73
2039	0	33	33	106	0	106	73
2040	45	33	78	106	0	106	28
2041	0	33	33	106	0	106	73
2042	0	33	33	106	0	106	73
2043	45	33	78	106	0	106	28
2044	0	33	33	106	0	106	73
2045	0	33	33	106	0	106	73
2046	67	33	101	106	0	106	6
2047	0	33	33	106	0	106	73
2048	0	33	33	106	0	106	73
2049	-121	33	-88	106	0	106	195

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

19) Carmopolis:
Deep Well Development

Project Cost	478	(R\$ 000)
EIRR	82.0	(%)
NPV	607	(R\$ 000)
B/C	4.05	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0
2013	120	0	120	0	0	0	-120
2014	0	7	7	21	0	21	14
2015	120	9	128	27	179	206	78
2016	0	22	22	52	204	257	235
2017	120	26	146	78	229	307	161
2018	0	46	46	103	254	357	312
2019	120	52	172	128	279	408	236
2020	0	78	78	154	305	458	380
2021	0	78	78	154	305	458	380
2022	0	78	78	154	305	458	380
2023	0	78	78	154	305	458	380
2024	0	78	78	154	305	458	380
2025	0	78	78	154	305	458	380
2026	0	78	78	154	305	458	380
2027	0	78	78	154	305	458	380
2028	71	78	150	154	305	458	309
2029	0	78	78	154	305	458	380
2030	71	78	150	154	305	458	309
2031	0	78	78	154	305	458	380
2032	71	78	150	154	305	458	309
2033	0	78	78	154	305	458	380
2034	71	78	150	154	305	458	309
2035	0	78	78	154	305	458	380
2036	0	78	78	154	305	458	380
2037	0	78	78	154	305	458	380
2038	0	78	78	154	305	458	380
2039	0	78	78	154	305	458	380
2040	0	78	78	154	305	458	380
2041	0	78	78	154	305	458	380
2042	0	78	78	154	305	458	380
2043	71	78	150	154	305	458	309
2044	0	78	78	154	305	458	380
2045	71	78	150	154	305	458	309
2046	0	78	78	154	305	458	380
2047	71	78	150	154	305	458	309
2048	0	78	78	154	305	458	380
2049	-170	78	-92	154	305	458	550

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

20) General Maynard:
Deep Well Development

Project Cost	365	(R\$ 000)
EIRR	14.4	(%)
NPV	51	(R\$ 000)
B/C	1.24	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	122	0	122	0	0	0	-122
2006	0	6	6	20	0	20	14
2007	0	6	6	20	0	20	14
2008	0	6	6	21	0	21	15
2009	0	7	7	22	0	22	15
2010	0	7	7	23	0	23	16
2011	0	7	7	24	0	24	17
2012	122	8	130	25	0	25	-104
2013	0	16	16	52	0	52	36
2014	0	17	17	55	0	55	37
2015	0	18	18	57	0	57	39
2016	0	19	19	59	0	59	40
2017	0	20	20	62	0	62	42
2018	0	21	21	65	0	65	44
2019	122	22	143	68	0	68	-76
2020	72	34	106	106	0	106	0
2021	0	34	34	106	0	106	72
2022	0	34	34	106	0	106	72
2023	0	34	34	106	0	106	72
2024	0	34	34	106	0	106	72
2025	0	34	34	106	0	106	72
2026	0	34	34	106	0	106	72
2027	72	34	106	106	0	106	0
2028	0	34	34	106	0	106	72
2029	0	34	34	106	0	106	72
2030	0	34	34	106	0	106	72
2031	0	34	34	106	0	106	72
2032	0	34	34	106	0	106	72
2033	0	34	34	106	0	106	72
2034	72	34	106	106	0	106	0
2035	72	34	106	106	0	106	0
2036	0	34	34	106	0	106	72
2037	0	34	34	106	0	106	72
2038	0	34	34	106	0	106	72
2039	0	34	34	106	0	106	72
2040	0	34	34	106	0	106	72
2041	0	34	34	106	0	106	72
2042	72	34	106	106	0	106	0
2043	0	34	34	106	0	106	72
2044	0	34	34	106	0	106	72
2045	38	34	72	106	0	106	34
2046	0	34	34	106	0	106	72
2047	0	34	34	106	0	106	72
2048	0	34	34	106	0	106	72
2049	-81	34	-47	106	0	106	153

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

21) Maruim:
Deep Well Development

Project Cost	1,068	(R\$ 000)
EIRR	37.8	(%)
NPV	3,540	(R\$ 000)
B/C	3.97	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	267	0	267	0	0	0	-267
2002	0	10	10	50	20	70	60
2003	0	11	11	47	30	77	65
2004	0	12	12	43	40	83	71
2005	0	13	13	40	50	90	77
2006	267	16	283	38	68	106	-177
2007	0	36	36	71	173	244	208
2008	0	40	40	66	209	275	235
2009	0	44	44	62	245	307	263
2010	0	49	49	57	281	339	290
2011	267	55	322	55	331	386	64
2012	0	93	93	78	572	650	557
2013	0	103	103	74	647	721	618
2014	0	113	113	69	722	792	679
2015	0	122	122	65	798	863	740
2016	415	137	553	63	909	972	419
2017	0	203	203	81	1,360	1,441	1,238
2018	0	223	223	78	1,508	1,587	1,364
2019	0	243	243	76	1,657	1,732	1,489
2020	0	263	263	73	1,805	1,878	1,615
2021	148	263	411	73	1,805	1,878	1,467
2022	0	263	263	73	1,805	1,878	1,615
2023	0	263	263	73	1,805	1,878	1,615
2024	0	263	263	73	1,805	1,878	1,615
2025	0	263	263	73	1,805	1,878	1,615
2026	148	263	411	73	1,805	1,878	1,467
2027	0	263	263	73	1,805	1,878	1,615
2028	0	263	263	73	1,805	1,878	1,615
2029	0	263	263	73	1,805	1,878	1,615
2030	0	263	263	73	1,805	1,878	1,615
2031	296	263	559	73	1,805	1,878	1,319
2032	0	263	263	73	1,805	1,878	1,615
2033	0	263	263	73	1,805	1,878	1,615
2034	0	263	263	73	1,805	1,878	1,615
2035	0	263	263	73	1,805	1,878	1,615
2036	148	263	411	73	1,805	1,878	1,467
2037	0	263	263	73	1,805	1,878	1,615
2038	0	263	263	73	1,805	1,878	1,615
2039	0	263	263	73	1,805	1,878	1,615
2040	0	263	263	73	1,805	1,878	1,615
2041	202	263	465	73	1,805	1,878	1,413
2042	0	263	263	73	1,805	1,878	1,615
2043	0	263	263	73	1,805	1,878	1,615
2044	0	263	263	73	1,805	1,878	1,615
2045	0	263	263	73	1,805	1,878	1,615
2046	350	263	613	73	1,805	1,878	1,265
2047	0	263	263	73	1,805	1,878	1,615
2048	0	263	263	73	1,805	1,878	1,615
2049	-430	263	-168	73	1,805	1,878	2,045

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

22) Riachueiro: Jacareica River Development Deep Well Development	Project Cost	2,908	(R\$ 000)
	EIRR	39.7	(%)
	NPV	8,906	(R\$ 000)
	B/C	3.81	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	745	0	745	0	0	0	-745
2004	0	30	30	63	102	165	135
2005	0	34	34	65	128	192	158
2006	0	43	43	67	174	240	197
2007	745	51	796	69	220	288	-508
2008	0	119	119	141	532	673	554
2009	0	136	136	145	624	769	633
2010	0	153	153	149	717	866	713
2011	0	176	176	154	844	998	823
2012	709	199	908	239	1,458	1,697	789
2013	0	310	310	247	1,649	1,896	1,587
2014	0	342	342	255	1,840	2,095	1,754
2015	0	374	374	263	2,032	2,295	1,921
2016	709	421	1,130	273	2,315	2,588	1,458
2017	0	601	601	378	3,464	3,842	3,241
2018	358	662	1,020	392	3,842	4,234	3,214
2019	0	723	723	405	4,220	4,625	3,903
2020	0	783	783	419	4,598	5,017	4,233
2021	0	783	783	419	4,598	5,017	4,233
2022	358	783	1,141	419	4,598	5,017	3,875
2023	0	783	783	419	4,598	5,017	4,233
2024	0	783	783	419	4,598	5,017	4,233
2025	0	783	783	419	4,598	5,017	4,233
2026	0	783	783	419	4,598	5,017	4,233
2027	396	783	1,180	419	4,598	5,017	3,837
2028	0	783	783	419	4,598	5,017	4,233
2029	0	783	783	419	4,598	5,017	4,233
2030	0	783	783	419	4,598	5,017	4,233
2031	396	783	1,180	419	4,598	5,017	3,837
2032	0	783	783	419	4,598	5,017	4,233
2033	358	783	1,141	419	4,598	5,017	3,875
2034	0	783	783	419	4,598	5,017	4,233
2035	0	783	783	419	4,598	5,017	4,233
2036	0	783	783	419	4,598	5,017	4,233
2037	358	783	1,141	419	4,598	5,017	3,875
2038	0	783	783	419	4,598	5,017	4,233
2039	0	783	783	419	4,598	5,017	4,233
2040	0	783	783	419	4,598	5,017	4,233
2041	0	783	783	419	4,598	5,017	4,233
2042	396	783	1,180	419	4,598	5,017	3,837
2043	63	783	847	419	4,598	5,017	4,170
2044	0	783	783	419	4,598	5,017	4,233
2045	0	783	783	419	4,598	5,017	4,233
2046	396	783	1,180	419	4,598	5,017	3,837
2047	421	783	1,205	419	4,598	5,017	3,812
2048	0	783	783	419	4,598	5,017	4,233
2049	-1,094	783	-311	419	4,598	5,017	5,328

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

23) Rosario do Catete: Siriri River Development Deep Well Development	Project Cost	4,110	(R\$ 000)
	EIRR	53.2	(%)
	NPV	23,265	(R\$ 000)
	B/C	5.26	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	858	0	858	0	0	0	-858
2003	0	25	25	68	182	250	226
2004	0	31	31	73	243	316	285
2005	0	38	38	78	304	382	344
2006	858	49	907	83	414	497	-410
2007	0	120	120	177	1,047	1,224	1,105
2008	0	142	142	188	1,267	1,455	1,313
2009	0	164	164	198	1,487	1,686	1,521
2010	1,197	187	1,384	209	1,707	1,916	532
2011	0	397	397	332	3,016	3,349	2,951
2012	0	453	453	351	3,472	3,823	3,370
2013	0	509	509	370	3,928	4,297	3,788
2014	0	565	565	388	4,383	4,772	4,206
2015	1,197	621	1,818	407	4,839	5,246	3,428
2016	0	1,021	1,021	572	7,352	7,924	6,902
2017	557	1,141	1,698	602	8,252	8,853	7,155
2018	0	1,260	1,260	631	9,151	9,782	8,523
2019	0	1,379	1,379	661	10,051	10,712	9,333
2020	0	1,498	1,498	690	10,951	11,641	10,143
2021	557	1,498	2,056	690	10,951	11,641	9,585
2022	0	1,498	1,498	690	10,951	11,641	10,143
2023	0	1,498	1,498	690	10,951	11,641	10,143
2024	0	1,498	1,498	690	10,951	11,641	10,143
2025	751	1,498	2,250	690	10,951	11,641	9,391
2026	0	1,498	1,498	690	10,951	11,641	10,143
2027	0	1,498	1,498	690	10,951	11,641	10,143
2028	0	1,498	1,498	690	10,951	11,641	10,143
2029	0	1,498	1,498	690	10,951	11,641	10,143
2030	751	1,498	2,250	690	10,951	11,641	9,391
2031	557	1,498	2,056	690	10,951	11,641	9,585
2032	0	1,498	1,498	690	10,951	11,641	10,143
2033	0	1,498	1,498	690	10,951	11,641	10,143
2034	0	1,498	1,498	690	10,951	11,641	10,143
2035	557	1,498	2,056	690	10,951	11,641	9,585
2036	0	1,498	1,498	690	10,951	11,641	10,143
2037	0	1,498	1,498	690	10,951	11,641	10,143
2038	0	1,498	1,498	690	10,951	11,641	10,143
2039	0	1,498	1,498	690	10,951	11,641	10,143
2040	751	1,498	2,250	690	10,951	11,641	9,391
2041	0	1,498	1,498	690	10,951	11,641	10,143
2042	111	1,498	1,609	690	10,951	11,641	10,032
2043	0	1,498	1,498	690	10,951	11,641	10,143
2044	0	1,498	1,498	690	10,951	11,641	10,143
2045	751	1,498	2,250	690	10,951	11,641	9,391
2046	668	1,498	2,166	690	10,951	11,641	9,475
2047	0	1,498	1,498	690	10,951	11,641	10,143
2048	0	1,498	1,498	690	10,951	11,641	10,143
2049	-1,545	1,498	-47	690	10,951	11,641	11,688

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

24) Santo Amaro das Brotas:
Deep Well Development

Project Cost	444	(R\$ 000)
EIRR	43.4	(%)
NPV	458	(R\$ 000)
B/C	2.43	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	148	0	148	0	0	0	-148
2006	0	17	17	78	3	82	64
2007	0	17	17	77	4	81	64
2008	0	17	17	76	5	81	64
2009	0	17	17	75	6	80	63
2010	0	17	17	74	6	80	63
2011	0	17	17	73	8	81	64
2012	148	17	165	73	9	82	-84
2013	0	35	35	145	20	164	130
2014	0	35	35	144	22	166	131
2015	0	36	36	143	24	167	132
2016	0	36	36	144	28	171	135
2017	0	37	37	144	31	175	138
2018	0	38	38	145	34	179	141
2019	148	39	187	145	38	183	-3
2020	95	59	154	219	62	281	126
2021	0	59	59	219	62	281	222
2022	0	59	59	219	62	281	222
2023	0	59	59	219	62	281	222
2024	0	59	59	219	62	281	222
2025	0	59	59	219	62	281	222
2026	0	59	59	219	62	281	222
2027	95	59	154	219	62	281	126
2028	0	59	59	219	62	281	222
2029	0	59	59	219	62	281	222
2030	0	59	59	219	62	281	222
2031	0	59	59	219	62	281	222
2032	0	59	59	219	62	281	222
2033	0	59	59	219	62	281	222
2034	0	59	59	219	62	281	222
2035	95	59	154	219	62	281	126
2036	0	59	59	219	62	281	222
2037	0	59	59	219	62	281	222
2038	0	59	59	219	62	281	222
2039	0	59	59	219	62	281	222
2040	0	59	59	219	62	281	222
2041	0	59	59	219	62	281	222
2042	95	59	154	219	62	281	126
2043	0	59	59	219	62	281	222
2044	0	59	59	219	62	281	222
2045	45	59	105	219	62	281	176
2046	0	59	59	219	62	281	222
2047	0	59	59	219	62	281	222
2048	0	59	59	219	62	281	222
2049	-96	59	-37	219	62	281	317

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

25) Barra dos Coqueiros:
Deep Well Development

Project Cost	2,333	(R\$ 000)
EIRR	9.1	(%)
NPV	-84	(R\$ 000)
B/C	0.96	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	778	0	778	0	0	0	-778
2006	0	27	27	45	7	52	25
2007	0	32	32	53	9	61	29
2008	0	37	37	61	10	71	33
2009	0	43	43	69	11	80	37
2010	778	48	826	77	12	89	-736
2011	0	116	116	184	29	212	96
2012	0	136	136	213	33	246	110
2013	0	156	156	243	37	280	124
2014	0	175	175	273	41	314	138
2015	778	195	973	302	45	348	-625
2016	0	344	344	531	76	607	263
2017	0	396	396	608	85	693	297
2018	0	448	448	685	94	779	331
2019	0	500	500	763	103	865	366
2020	663	552	1,215	840	112	951	-264
2021	0	552	552	840	112	951	400
2022	0	552	552	840	112	951	400
2023	0	552	552	840	112	951	400
2024	0	552	552	840	112	951	400
2025	663	552	1,215	840	112	951	-264
2026	0	552	552	840	112	951	400
2027	0	552	552	840	112	951	400
2028	0	552	552	840	112	951	400
2029	0	552	552	840	112	951	400
2030	663	552	1,215	840	112	951	-264
2031	0	552	552	840	112	951	400
2032	0	552	552	840	112	951	400
2033	0	552	552	840	112	951	400
2034	0	552	552	840	112	951	400
2035	663	552	1,215	840	112	951	-264
2036	0	552	552	840	112	951	400
2037	0	552	552	840	112	951	400
2038	0	552	552	840	112	951	400
2039	0	552	552	840	112	951	400
2040	663	552	1,215	840	112	951	-264
2041	0	552	552	840	112	951	400
2042	0	552	552	840	112	951	400
2043	0	552	552	840	112	951	400
2044	0	552	552	840	112	951	400
2045	744	552	1,296	840	112	951	-344
2046	0	552	552	840	112	951	400
2047	0	552	552	840	112	951	400
2048	0	552	552	840	112	951	400
2049	-764	552	-213	840	112	951	1,164

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

26) Sao Cristovao:
Deep Well Development

Project Cost	2,075	(R\$ 000)
EIRR	70.3	(%)
NPV	3,113	(R\$ 000)
B/C	2.99	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	692	0	692	0	0	0	-692
2008	0	37	37	323	149	473	436
2009	0	41	41	361	168	530	488
2010	0	46	46	399	187	586	541
2011	0	53	53	463	218	681	628
2012	692	60	752	526	250	776	24
2013	0	135	135	590	281	871	736
2014	0	149	149	653	312	965	816
2015	0	164	164	717	343	1,060	896
2016	0	185	185	810	388	1,198	1,013
2017	692	206	898	903	432	1,335	437
2018	0	341	341	996	476	1,473	1,132
2019	0	373	373	1,089	521	1,610	1,238
2020	0	404	404	1,183	565	1,748	1,343
2021	0	404	404	1,183	565	1,748	1,343
2022	520	404	924	1,183	565	1,748	824
2023	0	404	404	1,183	565	1,748	1,343
2024	0	404	404	1,183	565	1,748	1,343
2025	0	404	404	1,183	565	1,748	1,343
2026	0	404	404	1,183	565	1,748	1,343
2027	520	404	924	1,183	565	1,748	824
2028	0	404	404	1,183	565	1,748	1,343
2029	0	404	404	1,183	565	1,748	1,343
2030	0	404	404	1,183	565	1,748	1,343
2031	0	404	404	1,183	565	1,748	1,343
2032	520	404	924	1,183	565	1,748	824
2033	0	404	404	1,183	565	1,748	1,343
2034	0	404	404	1,183	565	1,748	1,343
2035	0	404	404	1,183	565	1,748	1,343
2036	0	404	404	1,183	565	1,748	1,343
2037	520	404	924	1,183	565	1,748	824
2038	0	404	404	1,183	565	1,748	1,343
2039	0	404	404	1,183	565	1,748	1,343
2040	0	404	404	1,183	565	1,748	1,343
2041	0	404	404	1,183	565	1,748	1,343
2042	520	404	924	1,183	565	1,748	824
2043	0	404	404	1,183	565	1,748	1,343
2044	0	404	404	1,183	565	1,748	1,343
2045	0	404	404	1,183	565	1,748	1,343
2046	0	404	404	1,183	565	1,748	1,343
2047	600	404	1,004	1,183	565	1,748	743
2048	0	404	404	1,183	565	1,748	1,343
2049	-881	404	-476	1,183	565	1,748	2,224

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

27) Araua: Camboata River Development Deep Well Development	Project Cost	1,850	(R\$ 000)
	EIRR	6.4	(%)
	NPV	-254	(R\$ 000)
	B/C	0.86	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0
2008	1,007	0	1,007	0	0	0	-1,007
2009	0	170	170	77	29	106	-63
2010	421	179	600	79	33	112	-488
2011	0	211	211	163	79	243	32
2012	0	226	226	169	92	261	35
2013	0	240	240	174	105	279	39
2014	0	255	255	179	118	297	42
2015	421	269	690	184	131	315	-375
2016	0	314	314	287	223	510	196
2017	0	335	335	296	250	547	212
2018	0	356	356	306	277	583	228
2019	0	376	376	316	304	620	244
2020	0	397	397	326	331	657	260
2021	0	397	397	326	331	657	260
2022	0	397	397	326	331	657	260
2023	741	397	1,138	326	331	657	-481
2024	0	397	397	326	331	657	260
2025	246	397	643	326	331	657	14
2026	0	397	397	326	331	657	260
2027	0	397	397	326	331	657	260
2028	0	397	397	326	331	657	260
2029	0	397	397	326	331	657	260
2030	246	397	643	326	331	657	14
2031	0	397	397	326	331	657	260
2032	0	397	397	326	331	657	260
2033	0	397	397	326	331	657	260
2034	0	397	397	326	331	657	260
2035	0	397	397	326	331	657	260
2036	0	397	397	326	331	657	260
2037	0	397	397	326	331	657	260
2038	741	397	1,138	326	331	657	-481
2039	0	397	397	326	331	657	260
2040	246	397	643	326	331	657	14
2041	0	397	397	326	331	657	260
2042	0	397	397	326	331	657	260
2043	0	397	397	326	331	657	260
2044	0	397	397	326	331	657	260
2045	246	397	643	326	331	657	14
2046	0	397	397	326	331	657	260
2047	0	397	397	326	331	657	260
2048	89	397	486	326	331	657	171
2049	-566	397	-169	326	331	657	826

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

28) Boquim:
Garangal River Development

Project Cost	3,179	(R\$ 000)
EIRR	10.1	(%)
NPV	9	(R\$ 000)
B/C	1.00	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0
2009	3,179	0	3,179	0	0	0	-3,179
2010	0	290	290	610	3	613	323
2011	0	301	301	634	3	637	336
2012	0	313	313	658	4	662	349
2013	0	324	324	682	4	686	362
2014	0	336	336	706	5	711	375
2015	0	347	347	730	5	735	388
2016	0	362	362	762	6	768	406
2017	0	376	376	793	7	800	423
2018	0	391	391	824	8	832	441
2019	0	406	406	856	9	864	459
2020	0	420	420	887	9	897	476
2021	0	420	420	887	9	897	476
2022	0	420	420	887	9	897	476
2023	0	420	420	887	9	897	476
2024	2,929	420	3,349	887	9	897	-2,452
2025	0	420	420	887	9	897	476
2026	0	420	420	887	9	897	476
2027	0	420	420	887	9	897	476
2028	0	420	420	887	9	897	476
2029	0	420	420	887	9	897	476
2030	0	420	420	887	9	897	476
2031	0	420	420	887	9	897	476
2032	0	420	420	887	9	897	476
2033	0	420	420	887	9	897	476
2034	0	420	420	887	9	897	476
2035	0	420	420	887	9	897	476
2036	0	420	420	887	9	897	476
2037	0	420	420	887	9	897	476
2038	0	420	420	887	9	897	476
2039	2,929	420	3,349	887	9	897	-2,452
2040	0	420	420	887	9	897	476
2041	0	420	420	887	9	897	476
2042	0	420	420	887	9	897	476
2043	0	420	420	887	9	897	476
2044	0	420	420	887	9	897	476
2045	0	420	420	887	9	897	476
2046	0	420	420	887	9	897	476
2047	0	420	420	887	9	897	476
2048	0	420	420	887	9	897	476
2049	-1,778	420	-1,358	887	9	897	2,255

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

29) Cristinapolis: Itamirim River Development	Project Cost	3,467	(R\$ 000)
	EIRR	—	(%)
	NPV	-1,137	(R\$ 000)
	B/C	0.52	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	1,734	0	1,734	0	0	0	-1,734
2008	0	79	79	108	4	112	34
2009	0	85	85	115	4	119	34
2010	0	92	92	121	5	126	34
2011	0	101	101	130	6	136	34
2012	0	111	111	139	7	146	35
2013	0	121	121	148	8	156	35
2014	1,734	130	1,864	157	9	166	-1,698
2015	0	280	280	332	20	352	73
2016	0	307	307	358	23	381	74
2017	0	333	333	384	25	409	76
2018	0	360	360	409	28	437	77
2019	0	387	387	435	31	466	79
2020	0	414	414	460	34	494	80
2021	0	414	414	460	34	494	80
2022	1,411	414	1,825	460	34	494	-1,331
2023	0	414	414	460	34	494	80
2024	0	414	414	460	34	494	80
2025	0	414	414	460	34	494	80
2026	0	414	414	460	34	494	80
2027	0	414	414	460	34	494	80
2028	0	414	414	460	34	494	80
2029	1,411	414	1,825	460	34	494	-1,331
2030	0	414	414	460	34	494	80
2031	0	414	414	460	34	494	80
2032	0	414	414	460	34	494	80
2033	0	414	414	460	34	494	80
2034	0	414	414	460	34	494	80
2035	0	414	414	460	34	494	80
2036	0	414	414	460	34	494	80
2037	1,411	414	1,825	460	34	494	-1,331
2038	0	414	414	460	34	494	80
2039	0	414	414	460	34	494	80
2040	0	414	414	460	34	494	80
2041	0	414	414	460	34	494	80
2042	0	414	414	460	34	494	80
2043	0	414	414	460	34	494	80
2044	1,411	414	1,825	460	34	494	-1,331
2045	0	414	414	460	34	494	80
2046	0	414	414	460	34	494	80
2047	63	414	477	460	34	494	17
2048	0	414	414	460	34	494	80
2049	-1,208	414	-794	460	34	494	1,288

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

30) Pedrinhas:
Araua River Development
Deep Well Development

Project Cost	2,356	(R\$ 000)
EIRR	21.9	(%)
NPV	1,232	(R\$ 000)
B/C	1.50	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	1,860	0	1,860	0	0	0	-1,860
2008	0	228	228	549	0	549	321
2009	248	236	484	568	0	568	85
2010	0	256	256	690	0	690	434
2011	0	265	265	718	0	718	453
2012	0	275	275	747	0	747	472
2013	0	284	284	776	0	776	491
2014	248	294	542	804	0	804	262
2015	0	319	319	947	0	947	628
2016	0	331	331	987	0	987	656
2017	0	343	343	1,027	0	1,027	684
2018	0	356	356	1,068	0	1,068	712
2019	0	368	368	1,108	0	1,108	740
2020	0	380	380	1,148	0	1,148	768
2021	0	380	380	1,148	0	1,148	768
2022	1,720	380	2,100	1,148	0	1,148	-952
2023	0	380	380	1,148	0	1,148	768
2024	155	380	535	1,148	0	1,148	613
2025	0	380	380	1,148	0	1,148	768
2026	0	380	380	1,148	0	1,148	768
2027	0	380	380	1,148	0	1,148	768
2028	0	380	380	1,148	0	1,148	768
2029	155	380	535	1,148	0	1,148	613
2030	0	380	380	1,148	0	1,148	768
2031	0	380	380	1,148	0	1,148	768
2032	0	380	380	1,148	0	1,148	768
2033	0	380	380	1,148	0	1,148	768
2034	0	380	380	1,148	0	1,148	768
2035	0	380	380	1,148	0	1,148	768
2036	0	380	380	1,148	0	1,148	768
2037	1,720	380	2,100	1,148	0	1,148	-952
2038	0	380	380	1,148	0	1,148	768
2039	155	380	535	1,148	0	1,148	613
2040	0	380	380	1,148	0	1,148	768
2041	0	380	380	1,148	0	1,148	768
2042	0	380	380	1,148	0	1,148	768
2043	0	380	380	1,148	0	1,148	768
2044	155	380	535	1,148	0	1,148	613
2045	0	380	380	1,148	0	1,148	768
2046	0	380	380	1,148	0	1,148	768
2047	93	380	473	1,148	0	1,148	675
2048	0	380	380	1,148	0	1,148	768
2049	-476	380	-96	1,148	0	1,148	1,244

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

31) Salgado:
Grilo River Development
Deep Well Development

Project Cost	2,562	(R\$ 000)
EIRR	5.9	(%)
NPV	-356	(R\$ 000)
B/C	0.86	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	1,700	0	1,700	0	0	0	-1,700
2008	0	192	192	253	4	257	65
2009	0	206	206	271	5	276	71
2010	0	219	219	290	6	296	77
2011	431	234	665	311	7	318	-347
2012	0	273	273	403	10	413	140
2013	0	289	289	428	11	439	150
2014	0	305	305	454	12	466	161
2015	0	322	322	479	14	493	171
2016	431	340	771	508	16	524	-247
2017	0	390	390	633	21	653	264
2018	0	410	410	667	23	690	280
2019	0	430	430	702	26	727	297
2020	0	450	450	736	28	764	314
2021	0	450	450	736	28	764	314
2022	1,564	450	2,014	736	28	764	-1,250
2023	0	450	450	736	28	764	314
2024	0	450	450	736	28	764	314
2025	0	450	450	736	28	764	314
2026	269	450	719	736	28	764	45
2027	0	450	450	736	28	764	314
2028	0	450	450	736	28	764	314
2029	0	450	450	736	28	764	314
2030	0	450	450	736	28	764	314
2031	269	450	719	736	28	764	45
2032	0	450	450	736	28	764	314
2033	0	450	450	736	28	764	314
2034	0	450	450	736	28	764	314
2035	0	450	450	736	28	764	314
2036	0	450	450	736	28	764	314
2037	1,564	450	2,014	736	28	764	-1,250
2038	0	450	450	736	28	764	314
2039	0	450	450	736	28	764	314
2040	0	450	450	736	28	764	314
2041	269	450	719	736	28	764	45
2042	0	450	450	736	28	764	314
2043	0	450	450	736	28	764	314
2044	0	450	450	736	28	764	314
2045	0	450	450	736	28	764	314
2046	269	450	719	736	28	764	45
2047	103	450	554	736	28	764	210
2048	0	450	450	736	28	764	314
2049	-672	450	-222	736	28	764	986

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

2) Estancia: Piauitinga River & Piaui River Develop. Deep Well Development	Project Cost		11,323	(R\$ 000)
	EIRR		33.3	(%)
	NPV		20,077	(R\$ 000)
	B/C		2.78	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	5,773	0	5,773	0	0	0	-5,773
2005	0	284	284	1,200	325	1,525	1,240
2006	0	317	317	1,249	460	1,709	1,392
2007	0	350	350	1,299	594	1,893	1,543
2008	1,726	383	2,109	1,348	729	2,077	-32
2009	0	569	569	1,957	1,209	3,166	2,597
2010	0	614	614	2,026	1,398	3,424	2,810
2011	0	679	679	2,111	1,688	3,799	3,120
2012	0	744	744	2,196	1,978	4,174	3,430
2013	0	809	809	2,281	2,268	4,549	3,741
2014	1,726	874	2,600	2,366	2,558	4,925	2,325
2015	0	1,191	1,191	3,152	3,662	6,814	5,623
2016	0	1,315	1,315	3,287	4,256	7,543	6,228
2017	0	1,439	1,439	3,421	4,850	8,272	6,833
2018	1,049	1,563	2,612	3,556	5,444	9,001	6,389
2019	5,624	1,806	7,430	3,896	6,374	10,270	2,840
2020	0	2,067	2,067	4,251	7,369	11,620	9,553
2021	0	2,067	2,067	4,251	7,369	11,620	9,553
2022	0	2,067	2,067	4,251	7,369	11,620	9,553
2023	1,522	2,067	3,589	4,251	7,369	11,620	8,031
2024	0	2,067	2,067	4,251	7,369	11,620	9,553
2025	0	2,067	2,067	4,251	7,369	11,620	9,553
2026	0	2,067	2,067	4,251	7,369	11,620	9,553
2027	0	2,067	2,067	4,251	7,369	11,620	9,553
2028	0	2,067	2,067	4,251	7,369	11,620	9,553
2029	1,522	2,067	3,589	4,251	7,369	11,620	8,031
2030	0	2,067	2,067	4,251	7,369	11,620	9,553
2031	0	2,067	2,067	4,251	7,369	11,620	9,553
2032	0	2,067	2,067	4,251	7,369	11,620	9,553
2033	659	2,067	2,727	4,251	7,369	11,620	8,894
2034	5,234	2,067	7,301	4,251	7,369	11,620	4,319
2035	0	2,067	2,067	4,251	7,369	11,620	9,553
2036	0	2,067	2,067	4,251	7,369	11,620	9,553
2037	0	2,067	2,067	4,251	7,369	11,620	9,553
2038	1,522	2,067	3,589	4,251	7,369	11,620	8,031
2039	0	2,067	2,067	4,251	7,369	11,620	9,553
2040	0	2,067	2,067	4,251	7,369	11,620	9,553
2041	0	2,067	2,067	4,251	7,369	11,620	9,553
2042	0	2,067	2,067	4,251	7,369	11,620	9,553
2043	0	2,067	2,067	4,251	7,369	11,620	9,553
2044	2,213	2,067	4,280	4,251	7,369	11,620	7,340
2045	0	2,067	2,067	4,251	7,369	11,620	9,553
2046	0	2,067	2,067	4,251	7,369	11,620	9,553
2047	0	2,067	2,067	4,251	7,369	11,620	9,553
2048	863	2,067	2,930	4,251	7,369	11,620	8,690
2049	-2,915	2,067	-848	4,251	7,369	11,620	12,468

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

33) Indiaroba:
Paripe River Development

Project Cost	1,003	(R\$ 000)
EIRR	—	(%)
NPV	-837	(R\$ 000)
B/C	0.47	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0
2009	1,003	0	1,003	0	0	0	-1,003
2010	0	334	334	180	0	181	-153
2011	0	334	334	186	1	186	-148
2012	0	334	334	191	1	192	-142
2013	0	334	334	196	1	197	-137
2014	0	334	334	201	1	202	-132
2015	0	334	334	207	1	208	-126
2016	0	334	334	214	1	215	-119
2017	0	334	334	221	1	222	-112
2018	0	334	334	228	1	229	-105
2019	0	334	334	235	1	236	-98
2020	0	334	334	242	2	243	-91
2021	0	334	334	242	2	243	-91
2022	0	334	334	242	2	243	-91
2023	0	334	334	242	2	243	-91
2024	845	334	1,179	242	2	243	-935
2025	0	334	334	242	2	243	-91
2026	0	334	334	242	2	243	-91
2027	0	334	334	242	2	243	-91
2028	0	334	334	242	2	243	-91
2029	0	334	334	242	2	243	-91
2030	0	334	334	242	2	243	-91
2031	0	334	334	242	2	243	-91
2032	0	334	334	242	2	243	-91
2033	0	334	334	242	2	243	-91
2034	0	334	334	242	2	243	-91
2035	0	334	334	242	2	243	-91
2036	0	334	334	242	2	243	-91
2037	0	334	334	242	2	243	-91
2038	0	334	334	242	2	243	-91
2039	845	334	1,179	242	2	243	-935
2040	0	334	334	242	2	243	-91
2041	0	334	334	242	2	243	-91
2042	0	334	334	242	2	243	-91
2043	0	334	334	242	2	243	-91
2044	0	334	334	242	2	243	-91
2045	0	334	334	242	2	243	-91
2046	0	334	334	242	2	243	-91
2047	0	334	334	242	2	243	-91
2048	0	334	334	242	2	243	-91
2049	-252	334	82	242	2	243	161

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

34) Itaporanga d'Ajuda: Fundo River Development Tejupeba River Development	Project Cost	58,956	(R\$ 000)
	EIRR	6.1	(%)
	NPV	-2,432	(R\$ 000)
	B/C	0.92	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	2,484	0	2,484	0	0	0	-2,484
2003	0	31	31	55	108	163	132
2004	0	39	39	63	144	207	168
2005	0	47	47	71	180	251	204
2006	0	61	61	79	247	326	265
2007	0	74	74	87	315	402	327
2008	0	88	88	95	382	477	389
2009	0	101	101	103	449	552	451
2010	2,484	115	2,599	111	516	628	-1,971
2011	0	267	267	241	1,224	1,464	1,197
2012	0	305	305	259	1,415	1,673	1,369
2013	0	342	342	276	1,606	1,882	1,541
2014	0	379	379	294	1,797	2,091	1,712
2015	0	417	417	312	1,988	2,300	1,884
2016	0	472	472	332	2,277	2,610	2,138
2017	56,276	527	56,803	353	2,566	2,919	-53,884
2018	0	8,633	8,633	1,493	11,420	12,913	4,280
2019	0	9,450	9,450	1,574	12,575	14,150	4,699
2020	0	10,268	10,268	1,656	13,731	15,387	5,119
2021	0	10,268	10,268	1,656	13,731	15,387	5,119
2022	0	10,268	10,268	1,656	13,731	15,387	5,119
2023	0	10,268	10,268	1,656	13,731	15,387	5,119
2024	0	10,268	10,268	1,656	13,731	15,387	5,119
2025	2,287	10,268	12,555	1,656	13,731	15,387	2,832
2026	0	10,268	10,268	1,656	13,731	15,387	5,119
2027	0	10,268	10,268	1,656	13,731	15,387	5,119
2028	0	10,268	10,268	1,656	13,731	15,387	5,119
2029	0	10,268	10,268	1,656	13,731	15,387	5,119
2030	0	10,268	10,268	1,656	13,731	15,387	5,119
2031	0	10,268	10,268	1,656	13,731	15,387	5,119
2032	46,061	10,268	56,329	1,656	13,731	15,387	-40,942
2033	0	10,268	10,268	1,656	13,731	15,387	5,119
2034	0	10,268	10,268	1,656	13,731	15,387	5,119
2035	0	10,268	10,268	1,656	13,731	15,387	5,119
2036	0	10,268	10,268	1,656	13,731	15,387	5,119
2037	0	10,268	10,268	1,656	13,731	15,387	5,119
2038	0	10,268	10,268	1,656	13,731	15,387	5,119
2039	0	10,268	10,268	1,656	13,731	15,387	5,119
2040	2,287	10,268	12,555	1,656	13,731	15,387	2,832
2041	0	10,268	10,268	1,656	13,731	15,387	5,119
2042	175	10,268	10,442	1,656	13,731	15,387	4,945
2043	0	10,268	10,268	1,656	13,731	15,387	5,119
2044	0	10,268	10,268	1,656	13,731	15,387	5,119
2045	0	10,268	10,268	1,656	13,731	15,387	5,119
2046	0	10,268	10,268	1,656	13,731	15,387	5,119
2047	46,061	10,268	56,329	1,656	13,731	15,387	-40,942
2048	0	10,268	10,268	1,656	13,731	15,387	5,119
2049	-39,621	10,268	-29,354	1,656	13,731	15,387	44,741

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

35) Santa Luzia do Itanhy: Ariquitiba River Development	Project Cost	1,256	(R\$ 000)
	EIRR	—	(%)
	NPV	-360	(R\$ 000)
	B/C	0.79	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	628	0	628	0	0	0	-628
2007	0	92	92	112	0	112	20
2008	0	98	98	236	0	236	139
2009	0	104	104	125	0	125	21
2010	0	110	110	131	0	131	22
2011	628	116	744	139	0	139	-605
2012	0	247	247	293	0	293	46
2013	0	260	260	308	0	308	48
2014	0	274	274	323	0	323	49
2015	0	288	288	338	0	338	50
2016	0	304	304	356	0	356	52
2017	0	320	320	374	0	374	54
2018	0	336	336	392	0	392	56
2019	0	352	352	409	0	409	57
2020	0	368	368	427	0	427	59
2021	550	368	918	427	0	427	-491
2022	0	368	368	427	0	427	59
2023	0	368	368	427	0	427	59
2024	0	368	368	427	0	427	59
2025	0	368	368	427	0	427	59
2026	550	368	918	427	0	427	-491
2027	0	368	368	427	0	427	59
2028	0	368	368	427	0	427	59
2029	0	368	368	427	0	427	59
2030	0	368	368	427	0	427	59
2031	0	368	368	427	0	427	59
2032	0	368	368	427	0	427	59
2033	0	368	368	427	0	427	59
2034	0	368	368	427	0	427	59
2035	0	368	368	427	0	427	59
2036	550	368	918	427	0	427	-491
2037	0	368	368	427	0	427	59
2038	0	368	368	427	0	427	59
2039	0	368	368	427	0	427	59
2040	0	368	368	427	0	427	59
2041	550	368	918	427	0	427	-491
2042	0	368	368	427	0	427	59
2043	0	368	368	427	0	427	59
2044	0	368	368	427	0	427	59
2045	0	368	368	427	0	427	59
2046	49	368	417	427	0	427	10
2047	0	368	368	427	0	427	59
2048	0	368	368	427	0	427	59
2049	-312	368	56	427	0	427	371

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (2) Economic Evaluation of Independent System

Total of Independent System	Project Cost	136,176	(R\$ 000)
	EIRR	27.7	(%)
	NPV	87,721	(R\$ 000)
	B/C	1.82	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	418	0	418	0	0	0	-418
2002	3,342	16	3,358	68	20	88	-3,270
2003	3,099	74	3,173	515	397	913	-2,260
2004	7,673	199	7,872	645	631	1,276	-6,596
2005	5,167	621	5,788	2,593	1,210	3,803	-1,985
2006	13,170	1,029	14,200	4,263	1,987	6,250	-7,949
2007	9,481	2,028	11,510	6,052	3,185	9,238	-2,272
2008	2,733	3,090	5,823	8,524	4,304	12,828	7,005
2009	7,485	3,658	11,143	9,530	5,425	14,956	3,813
2010	6,004	5,063	11,067	11,340	6,298	17,638	6,571
2011	2,278	6,002	8,280	12,877	9,173	22,051	13,771
2012	1,776	6,760	8,536	14,928	11,639	26,567	18,031
2013	531	7,434	7,965	15,875	13,245	29,120	21,154
2014	9,916	7,978	17,894	16,978	14,896	31,873	13,979
2015	2,995	9,516	12,511	20,249	18,468	38,717	26,206
2016	2,078	10,846	12,924	21,897	23,198	45,094	32,170
2017	57,902	11,978	69,881	23,479	27,436	50,915	-18,965
2018	6,285	21,075	27,360	25,887	39,164	65,050	37,690
2019	8,084	22,873	30,957	27,422	43,529	70,951	39,994
2020	1,713	24,808	26,521	29,263	48,006	77,269	50,748
2021	11,436	24,808	36,244	29,263	48,006	77,269	41,025
2022	8,081	24,808	32,889	29,263	48,006	77,269	44,380
2023	2,263	24,808	27,071	29,263	48,006	77,269	50,198
2024	6,496	24,808	31,305	29,263	48,006	77,269	45,965
2025	4,901	24,808	29,709	29,263	48,006	77,269	47,560
2026	1,758	24,808	26,567	29,263	48,006	77,269	50,703
2027	1,147	24,808	25,956	29,263	48,006	77,269	51,314
2028	334	24,808	25,143	29,263	48,006	77,269	52,127
2029	8,449	24,808	33,257	29,263	48,006	77,269	44,012
2030	1,988	24,808	26,797	29,263	48,006	77,269	50,473
2031	1,856	24,808	26,664	29,263	48,006	77,269	50,605
2032	46,756	24,808	71,565	29,263	48,006	77,269	5,705
2033	5,821	24,808	30,629	29,263	48,006	77,269	46,640
2034	7,030	24,808	31,838	29,263	48,006	77,269	45,431
2035	2,524	24,808	27,332	29,263	48,006	77,269	49,937
2036	10,878	24,808	35,687	29,263	48,006	77,269	41,583
2037	8,081	24,808	32,889	29,263	48,006	77,269	44,380
2038	2,263	24,808	27,071	29,263	48,006	77,269	50,198
2039	6,496	24,808	31,305	29,263	48,006	77,269	45,965
2040	4,901	24,808	29,709	29,263	48,006	77,269	47,560
2041	1,840	24,808	26,648	29,263	48,006	77,269	50,621
2042	1,433	24,808	26,241	29,263	48,006	77,269	51,028
2043	880	24,808	25,688	29,263	48,006	77,269	51,581
2044	9,284	24,808	34,092	29,263	48,006	77,269	43,177
2045	2,426	24,808	27,234	29,263	48,006	77,269	50,035
2046	5,276	24,808	30,084	29,263	48,006	77,269	47,185
2047	47,694	24,808	72,502	29,263	48,006	77,269	4,767
2048	3,721	24,808	28,529	29,263	48,006	77,269	48,740
2049	-65,403	24,808	-40,595	29,263	48,006	77,269	117,864

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (3) Economic Evaluation of Single Well System (Public Tap)

Project Cost	62,776	(R\$ 000)
EIRR	—	(%)
NPV	-29,511	(R\$ 000)
B/C	0.18	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Domestic	Industrial	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	3,304	0	3,304	0	0	0	-3,304
2002	3,304	62	3,366	55	0	55	-3,312
2003	3,304	136	3,440	115	0	115	-3,325
2004	3,304	222	3,525	181	0	181	-3,344
2005	3,304	319	3,623	253	0	253	-3,369
2006	3,304	427	3,731	333	0	333	-3,399
2007	3,304	547	3,851	419	0	419	-3,433
2008	3,304	679	3,983	511	0	511	-3,472
2009	3,304	823	4,127	610	0	610	-3,517
2010	3,304	978	4,282	715	0	715	-3,566
2011	3,304	1,144	4,448	832	0	832	-3,616
2012	3,304	1,322	4,626	957	0	957	-3,669
2013	3,304	1,512	4,816	1,090	0	1,090	-3,726
2014	3,304	1,714	5,018	1,230	0	1,230	-3,788
2015	3,304	1,927	5,231	1,377	0	1,377	-3,853
2016	5,420	2,151	7,571	1,545	0	1,545	-6,026
2017	5,420	2,387	7,807	1,722	0	1,722	-6,085
2018	5,420	2,635	8,055	1,908	0	1,908	-6,146
2019	5,420	2,894	8,314	2,104	0	2,104	-6,210
2020	2,116	3,165	5,281	2,309	0	2,309	-2,972
2021	2,116	3,165	5,281	2,309	0	2,309	-2,972
2022	2,116	3,165	5,281	2,309	0	2,309	-2,972
2023	2,116	3,165	5,281	2,309	0	2,309	-2,972
2024	2,116	3,165	5,281	2,309	0	2,309	-2,972
2025	2,116	3,165	5,281	2,309	0	2,309	-2,972
2026	2,116	3,165	5,281	2,309	0	2,309	-2,972
2027	2,116	3,165	5,281	2,309	0	2,309	-2,972
2028	2,116	3,165	5,281	2,309	0	2,309	-2,972
2029	2,116	3,165	5,281	2,309	0	2,309	-2,972
2030	2,116	3,165	5,281	2,309	0	2,309	-2,972
2031	4,231	3,165	7,397	2,309	0	2,309	-5,088
2032	4,231	3,165	7,397	2,309	0	2,309	-5,088
2033	4,231	3,165	7,397	2,309	0	2,309	-5,088
2034	4,231	3,165	7,397	2,309	0	2,309	-5,088
2035	2,116	3,165	5,281	2,309	0	2,309	-2,972
2036	2,116	3,165	5,281	2,309	0	2,309	-2,972
2037	2,116	3,165	5,281	2,309	0	2,309	-2,972
2038	2,116	3,165	5,281	2,309	0	2,309	-2,972
2039	2,116	3,165	5,281	2,309	0	2,309	-2,972
2040	2,116	3,165	5,281	2,309	0	2,309	-2,972
2041	2,116	3,165	5,281	2,309	0	2,309	-2,972
2042	2,831	3,165	5,996	2,309	0	2,309	-3,687
2043	2,831	3,165	5,996	2,309	0	2,309	-3,687
2044	2,831	3,165	5,996	2,309	0	2,309	-3,687
2045	2,831	3,165	5,996	2,309	0	2,309	-3,687
2046	4,947	3,165	8,112	2,309	0	2,309	-5,803
2047	4,947	3,165	8,112	2,309	0	2,309	-5,803
2048	4,947	3,165	8,112	2,309	0	2,309	-5,803
2049	-24,775	3,165	-21,610	2,309	0	2,309	23,918

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (4) Economic Evaluation of Irrigation Water Supply

1) Quixabeira	Project Cost	29,793	(R\$ 000)
	EIRR	26.9	(%)
	NPV	9,494	(R\$ 000)
	B/C	1.93	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Irrigation		Total	
1999	0	0	0	0		0	0
2000	0	0	0	0		0	0
2001	0	0	0	0		0	0
2002	0	0	0	0		0	0
2003	0	0	0	0		0	0
2004	0	0	0	0		0	0
2005	0	0	0	0		0	0
2006	0	0	0	0		0	0
2007	0	0	0	0		0	0
2008	0	0	0	0		0	0
2009	0	0	0	0		0	0
2010	0	0	0	0		0	0
2011	0	0	0	0		0	0
2012	0	0	0	0		0	0
2013	9,931	0	9,931	0		0	-9,931
2014	9,931	397	10,328	3,127		3,127	-7,201
2015	9,931	794	10,726	6,255		6,255	-4,470
2016	0	1,192	1,192	9,382		9,382	8,190
2017	0	1,192	1,192	9,382		9,382	8,190
2018	0	1,192	1,192	9,382		9,382	8,190
2019	0	1,192	1,192	9,382		9,382	8,190
2020	0	1,192	1,192	9,382		9,382	8,190
2021	0	1,192	1,192	9,382		9,382	8,190
2022	0	1,192	1,192	9,382		9,382	8,190
2023	0	1,192	1,192	9,382		9,382	8,190
2024	0	1,192	1,192	9,382		9,382	8,190
2025	0	1,192	1,192	9,382		9,382	8,190
2026	0	1,192	1,192	9,382		9,382	8,190
2027	0	1,192	1,192	9,382		9,382	8,190
2028	6,952	1,192	8,144	9,382		9,382	1,239
2029	6,952	1,192	8,144	9,382		9,382	1,239
2030	6,952	1,192	8,144	9,382		9,382	1,239
2031	0	1,192	1,192	9,382		9,382	8,190
2032	0	1,192	1,192	9,382		9,382	8,190
2033	0	1,192	1,192	9,382		9,382	8,190
2034	0	1,192	1,192	9,382		9,382	8,190
2035	0	1,192	1,192	9,382		9,382	8,190
2036	0	1,192	1,192	9,382		9,382	8,190
2037	0	1,192	1,192	9,382		9,382	8,190
2038	0	1,192	1,192	9,382		9,382	8,190
2039	0	1,192	1,192	9,382		9,382	8,190
2040	0	1,192	1,192	9,382		9,382	8,190
2041	0	1,192	1,192	9,382		9,382	8,190
2042	0	1,192	1,192	9,382		9,382	8,190
2043	6,952	1,192	8,144	9,382		9,382	1,239
2044	6,952	1,192	8,144	9,382		9,382	1,239
2045	6,952	1,192	8,144	9,382		9,382	1,239
2046	0	1,192	1,192	9,382		9,382	8,190
2047	0	1,192	1,192	9,382		9,382	8,190
2048	0	1,192	1,192	9,382		9,382	8,190
2049	-13,407	1,192	-12,215	9,382		9,382	21,597

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (4) Economic Evaluation of Irrigation Water Supply

2) Jacare-Curituba

Project Cost	32,174	(R\$ 000)
EIRR	22.5	(%)
NPV	27,762	(R\$ 000)
B/C	1.68	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Irrigation		Total	
1999	0	0	0	0		0	0
2000	16,087	0	16,087	0		0	-16,087
2001	16,087	643	16,731	4,397		4,397	-12,333
2002	0	1,287	1,287	8,795		8,795	7,508
2003	0	1,287	1,287	8,795		8,795	7,508
2004	0	1,287	1,287	8,795		8,795	7,508
2005	0	1,287	1,287	8,795		8,795	7,508
2006	0	1,287	1,287	8,795		8,795	7,508
2007	0	1,287	1,287	8,795		8,795	7,508
2008	0	1,287	1,287	8,795		8,795	7,508
2009	0	1,287	1,287	8,795		8,795	7,508
2010	0	1,287	1,287	8,795		8,795	7,508
2011	0	1,287	1,287	8,795		8,795	7,508
2012	0	1,287	1,287	8,795		8,795	7,508
2013	0	1,287	1,287	8,795		8,795	7,508
2014	0	1,287	1,287	8,795		8,795	7,508
2015	11,261	1,287	12,548	8,795		8,795	-3,753
2016	11,261	1,287	12,548	8,795		8,795	-3,753
2017	0	1,287	1,287	8,795		8,795	7,508
2018	0	1,287	1,287	8,795		8,795	7,508
2019	0	1,287	1,287	8,795		8,795	7,508
2020	0	1,287	1,287	8,795		8,795	7,508
2021	0	1,287	1,287	8,795		8,795	7,508
2022	0	1,287	1,287	8,795		8,795	7,508
2023	0	1,287	1,287	8,795		8,795	7,508
2024	0	1,287	1,287	8,795		8,795	7,508
2025	0	1,287	1,287	8,795		8,795	7,508
2026	0	1,287	1,287	8,795		8,795	7,508
2027	0	1,287	1,287	8,795		8,795	7,508
2028	0	1,287	1,287	8,795		8,795	7,508
2029	0	1,287	1,287	8,795		8,795	7,508
2030	11,261	1,287	12,548	8,795		8,795	-3,753
2031	11,261	1,287	12,548	8,795		8,795	-3,753
2032	0	1,287	1,287	8,795		8,795	7,508
2033	0	1,287	1,287	8,795		8,795	7,508
2034	0	1,287	1,287	8,795		8,795	7,508
2035	0	1,287	1,287	8,795		8,795	7,508
2036	0	1,287	1,287	8,795		8,795	7,508
2037	0	1,287	1,287	8,795		8,795	7,508
2038	0	1,287	1,287	8,795		8,795	7,508
2039	0	1,287	1,287	8,795		8,795	7,508
2040	4,826	1,287	6,113	8,795		8,795	2,682
2041	4,826	1,287	6,113	8,795		8,795	2,682
2042	0	1,287	1,287	8,795		8,795	7,508
2043	0	1,287	1,287	8,795		8,795	7,508
2044	0	1,287	1,287	8,795		8,795	7,508
2045	11,261	1,287	12,548	8,795		8,795	-3,753
2046	11,261	1,287	12,548	8,795		8,795	-3,753
2047	0	1,287	1,287	8,795		8,795	7,508
2048	0	1,287	1,287	8,795		8,795	7,508
2049	-23,125	1,287	-21,838	8,795		8,795	30,633

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (4) Economic Evaluation of Irrigation Water Supply

3) Sao Francisco

Project Cost	180,821	(R\$ 000)
EIRR	22.3	(%)
NPV	83,039	(R\$ 000)
B/C	1.68	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Irrigation		Total	
1999	0	0	0	0		0	0
2000	0	0	0	0		0	0
2001	0	0	0	0		0	0
2002	0	0	0	0		0	0
2003	20,003	0	20,003	0		0	-20,003
2004	20,004	704	20,708	5,001		5,001	-15,707
2005	17,598	1,408	19,006	10,002		10,002	-9,004
2006	17,599	2,112	19,711	15,003		15,003	-4,707
2007	17,600	2,815	20,416	20,005		20,005	-411
2008	17,601	3,519	21,120	25,006		25,006	3,885
2009	17,602	4,223	21,825	30,007		30,007	8,182
2010	17,603	4,927	22,530	35,008		35,008	12,478
2011	17,604	5,631	23,235	40,009		40,009	16,774
2012	17,605	6,335	23,940	45,010		45,010	21,070
2013	0	7,038	7,038	50,011		50,011	42,973
2014	0	7,038	7,038	50,011		50,011	42,973
2015	0	7,038	7,038	50,011		50,011	42,973
2016	0	7,038	7,038	50,011		50,011	42,973
2017	0	7,038	7,038	50,011		50,011	42,973
2018	13,905	7,038	20,943	50,011		50,011	29,068
2019	13,905	7,038	20,943	50,011		50,011	29,068
2020	13,905	7,038	20,943	50,011		50,011	29,068
2021	13,905	7,038	20,943	50,011		50,011	29,068
2022	13,905	7,038	20,943	50,011		50,011	29,068
2023	13,905	7,038	20,943	50,011		50,011	29,068
2024	13,905	7,038	20,943	50,011		50,011	29,068
2025	13,905	7,038	20,943	50,011		50,011	29,068
2026	13,905	7,038	20,943	50,011		50,011	29,068
2027	13,905	7,038	20,943	50,011		50,011	29,068
2028	0	7,038	7,038	50,011		50,011	42,973
2029	0	7,038	7,038	50,011		50,011	42,973
2030	0	7,038	7,038	50,011		50,011	42,973
2031	0	7,038	7,038	50,011		50,011	42,973
2032	0	7,038	7,038	50,011		50,011	42,973
2033	13,905	7,038	20,943	50,011		50,011	29,068
2034	13,905	7,038	20,943	50,011		50,011	29,068
2035	13,905	7,038	20,943	50,011		50,011	29,068
2036	13,905	7,038	20,943	50,011		50,011	29,068
2037	13,905	7,038	20,943	50,011		50,011	29,068
2038	13,905	7,038	20,943	50,011		50,011	29,068
2039	13,905	7,038	20,943	50,011		50,011	29,068
2040	13,905	7,038	20,943	50,011		50,011	29,068
2041	13,905	7,038	20,943	50,011		50,011	29,068
2042	13,905	7,038	20,943	50,011		50,011	29,068
2043	6,099	7,038	13,137	50,011		50,011	36,874
2044	6,099	7,038	13,137	50,011		50,011	36,874
2045	3,692	7,038	10,730	50,011		50,011	39,281
2046	3,692	7,038	10,730	50,011		50,011	39,281
2047	3,692	7,038	10,730	50,011		50,011	39,281
2048	17,596	7,038	24,635	50,011		50,011	25,377
2049	-60,953	7,038	-53,915	50,011		50,011	103,926

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (4) Economic Evaluation of Irrigation Water Supply

4) Ladeirinhas

Project Cost	24,002	(R\$ 000)
EIRR	10.2	(%)
NPV	115	(R\$ 000)
B/C	1.02	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Irrigation		Total	
1999	0	0	0	0		0	0
2000	0	0	0	0		0	0
2001	0	0	0	0		0	0
2002	0	0	0	0		0	0
2003	0	0	0	0		0	0
2004	0	0	0	0		0	0
2005	0	0	0	0		0	0
2006	0	0	0	0		0	0
2007	0	0	0	0		0	0
2008	0	0	0	0		0	0
2009	0	0	0	0		0	0
2010	0	0	0	0		0	0
2011	0	0	0	0		0	0
2012	0	0	0	0		0	0
2013	8,001	0	8,001	0		0	-8,001
2014	8,001	83	8,084	960		960	-7,123
2015	8,001	167	8,167	1,921		1,921	-6,246
2016	0	250	250	2,881		2,881	2,632
2017	0	250	250	2,881		2,881	2,632
2018	0	250	250	2,881		2,881	2,632
2019	0	250	250	2,881		2,881	2,632
2020	0	250	250	2,881		2,881	2,632
2021	0	250	250	2,881		2,881	2,632
2022	0	250	250	2,881		2,881	2,632
2023	0	250	250	2,881		2,881	2,632
2024	0	250	250	2,881		2,881	2,632
2025	0	250	250	2,881		2,881	2,632
2026	0	250	250	2,881		2,881	2,632
2027	0	250	250	2,881		2,881	2,632
2028	1,458	250	1,708	2,881		2,881	1,174
2029	1,458	250	1,708	2,881		2,881	1,174
2030	1,458	250	1,708	2,881		2,881	1,174
2031	0	250	250	2,881		2,881	2,632
2032	0	250	250	2,881		2,881	2,632
2033	0	250	250	2,881		2,881	2,632
2034	0	250	250	2,881		2,881	2,632
2035	0	250	250	2,881		2,881	2,632
2036	0	250	250	2,881		2,881	2,632
2037	0	250	250	2,881		2,881	2,632
2038	0	250	250	2,881		2,881	2,632
2039	0	250	250	2,881		2,881	2,632
2040	0	250	250	2,881		2,881	2,632
2041	0	250	250	2,881		2,881	2,632
2042	0	250	250	2,881		2,881	2,632
2043	1,458	250	1,708	2,881		2,881	1,174
2044	1,458	250	1,708	2,881		2,881	1,174
2045	1,458	250	1,708	2,881		2,881	1,174
2046	0	250	250	2,881		2,881	2,632
2047	0	250	250	2,881		2,881	2,632
2048	0	250	250	2,881		2,881	2,632
2049	-12,576	250	-12,326	2,881		2,881	15,208

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (4) Economic Evaluation of Irrigation Water Supply

5) Jacarecica II

Project Cost	37,863	(R\$ 000)
EIRR	3.1	(%)
NPV	-16,232	(R\$ 000)
B/C	0.55	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Irrigation		Total	
1999	0	0	0	0		0	0
2000	12,621	0	12,621	0		0	-12,621
2001	12,621	213	12,834	876		876	-11,957
2002	12,621	425	13,046	1,753		1,753	-11,294
2003	0	638	638	2,629		2,629	1,991
2004	0	638	638	2,629		2,629	1,991
2005	0	638	638	2,629		2,629	1,991
2006	0	638	638	2,629		2,629	1,991
2007	0	638	638	2,629		2,629	1,991
2008	0	638	638	2,629		2,629	1,991
2009	0	638	638	2,629		2,629	1,991
2010	0	638	638	2,629		2,629	1,991
2011	0	638	638	2,629		2,629	1,991
2012	0	638	638	2,629		2,629	1,991
2013	0	638	638	2,629		2,629	1,991
2014	0	638	638	2,629		2,629	1,991
2015	3,721	638	4,359	2,629		2,629	-1,730
2016	3,721	638	4,359	2,629		2,629	-1,730
2017	3,721	638	4,359	2,629		2,629	-1,730
2018	0	638	638	2,629		2,629	1,991
2019	0	638	638	2,629		2,629	1,991
2020	0	638	638	2,629		2,629	1,991
2021	0	638	638	2,629		2,629	1,991
2022	0	638	638	2,629		2,629	1,991
2023	0	638	638	2,629		2,629	1,991
2024	0	638	638	2,629		2,629	1,991
2025	0	638	638	2,629		2,629	1,991
2026	0	638	638	2,629		2,629	1,991
2027	0	638	638	2,629		2,629	1,991
2028	0	638	638	2,629		2,629	1,991
2029	0	638	638	2,629		2,629	1,991
2030	3,721	638	4,359	2,629		2,629	-1,730
2031	3,721	638	4,359	2,629		2,629	-1,730
2032	3,721	638	4,359	2,629		2,629	-1,730
2033	0	638	638	2,629		2,629	1,991
2034	0	638	638	2,629		2,629	1,991
2035	0	638	638	2,629		2,629	1,991
2036	0	638	638	2,629		2,629	1,991
2037	0	638	638	2,629		2,629	1,991
2038	0	638	638	2,629		2,629	1,991
2039	0	638	638	2,629		2,629	1,991
2040	1,595	638	2,233	2,629		2,629	396
2041	1,595	638	2,233	2,629		2,629	396
2042	1,595	638	2,233	2,629		2,629	396
2043	0	638	638	2,629		2,629	1,991
2044	0	638	638	2,629		2,629	1,991
2045	3,721	638	4,359	2,629		2,629	-1,730
2046	3,721	638	4,359	2,629		2,629	-1,730
2047	3,721	638	4,359	2,629		2,629	-1,730
2048	0	638	638	2,629		2,629	1,991
2049	-18,512	638	-17,874	2,629		2,629	20,503

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (4) Economic Evaluation of Irrigation Water Supply

6) Vaza Barris

Project Cost	44,543	(R\$ 000)
EIRR	15.0	(%)
NPV	11,776	(R\$ 000)
B/C	1.46	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Irrigation		Total	
1999	0	0	0	0		0	0
2000	0	0	0	0		0	0
2001	0	0	0	0		0	0
2002	0	0	0	0		0	0
2003	0	0	0	0		0	0
2004	8,793	0	8,793	0		0	-8,793
2005	8,793	0	8,793	0		0	-8,793
2006	13,334	0	13,334	0		0	-13,334
2007	4,541	206	4,747	2,346		2,346	-2,401
2008	4,541	412	4,953	4,691		4,691	-262
2009	4,541	618	5,159	7,037		7,037	1,878
2010	0	824	824	9,383		9,383	8,559
2011	0	824	824	9,383		9,383	8,559
2012	0	824	824	9,383		9,383	8,559
2013	0	824	824	9,383		9,383	8,559
2014	0	824	824	9,383		9,383	8,559
2015	0	824	824	9,383		9,383	8,559
2016	0	824	824	9,383		9,383	8,559
2017	0	824	824	9,383		9,383	8,559
2018	0	824	824	9,383		9,383	8,559
2019	0	824	824	9,383		9,383	8,559
2020	0	824	824	9,383		9,383	8,559
2021	3,084	824	3,908	9,383		9,383	5,475
2022	3,084	824	3,908	9,383		9,383	5,475
2023	3,084	824	3,908	9,383		9,383	5,475
2024	3,084	824	3,908	9,383		9,383	5,475
2025	0	824	824	9,383		9,383	8,559
2026	0	824	824	9,383		9,383	8,559
2027	0	824	824	9,383		9,383	8,559
2028	0	824	824	9,383		9,383	8,559
2029	0	824	824	9,383		9,383	8,559
2030	0	824	824	9,383		9,383	8,559
2031	0	824	824	9,383		9,383	8,559
2032	0	824	824	9,383		9,383	8,559
2033	0	824	824	9,383		9,383	8,559
2034	0	824	824	9,383		9,383	8,559
2035	0	824	824	9,383		9,383	8,559
2036	3,084	824	3,908	9,383		9,383	5,475
2037	3,084	824	3,908	9,383		9,383	5,475
2038	3,084	824	3,908	9,383		9,383	5,475
2039	3,084	824	3,908	9,383		9,383	5,475
2040	0	824	824	9,383		9,383	8,559
2041	0	824	824	9,383		9,383	8,559
2042	0	824	824	9,383		9,383	8,559
2043	0	824	824	9,383		9,383	8,559
2044	0	824	824	9,383		9,383	8,559
2045	0	824	824	9,383		9,383	8,559
2046	1,241	824	2,065	9,383		9,383	7,318
2047	1,241	824	2,065	9,383		9,383	7,318
2048	1,241	824	2,065	9,383		9,383	7,318
2049	-15,725	824	-14,901	9,383		9,383	24,284

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (4) Economic Evaluation of Irrigation Water Supply

7) Entre Rios

Project Cost	1,832	(R\$ 000)
EIRR	14.4	(%)
NPV	108	(R\$ 000)
B/C	1.22	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Irrigation		Total	
1999	0	0	0	0		0	0
2000	0	0	0	0		0	0
2001	0	0	0	0		0	0
2002	0	0	0	0		0	0
2003	0	0	0	0		0	0
2004	0	0	0	0		0	0
2005	0	0	0	0		0	0
2006	0	0	0	0		0	0
2007	0	0	0	0		0	0
2008	0	0	0	0		0	0
2009	0	0	0	0		0	0
2010	0	0	0	0		0	0
2011	0	0	0	0		0	0
2012	0	0	0	0		0	0
2013	0	0	0	0		0	0
2014	0	0	0	0		0	0
2015	0	0	0	0		0	0
2016	916	0	916	0		0	-916
2017	916	37	953	184		184	-769
2018	0	73	73	368		368	295
2019	0	73	73	368		368	295
2020	0	73	73	368		368	295
2021	0	73	73	368		368	295
2022	0	73	73	368		368	295
2023	0	73	73	368		368	295
2024	0	73	73	368		368	295
2025	0	73	73	368		368	295
2026	0	73	73	368		368	295
2027	0	73	73	368		368	295
2028	0	73	73	368		368	295
2029	0	73	73	368		368	295
2030	0	73	73	368		368	295
2031	641	73	715	368		368	-347
2032	641	73	715	368		368	-347
2033	0	73	73	368		368	295
2034	0	73	73	368		368	295
2035	0	73	73	368		368	295
2036	0	73	73	368		368	295
2037	0	73	73	368		368	295
2038	0	73	73	368		368	295
2039	0	73	73	368		368	295
2040	0	73	73	368		368	295
2041	0	73	73	368		368	295
2042	0	73	73	368		368	295
2043	0	73	73	368		368	295
2044	0	73	73	368		368	295
2045	0	73	73	368		368	295
2046	641	73	715	368		368	-347
2047	641	73	715	368		368	-347
2048	0	73	73	368		368	295
2049	-645	73	-572	368		368	940

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (4) Economic Evaluation of Irrigation Water Supply

8) Estancinha

Project Cost	765	(R\$ 000)
EIRR	14.4	(%)
NPV	38	(R\$ 000)
B/C	1.22	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Irrigation		Total	
1999	0	0	0	0		0	0
2000	0	0	0	0		0	0
2001	0	0	0	0		0	0
2002	0	0	0	0		0	0
2003	0	0	0	0		0	0
2004	0	0	0	0		0	0
2005	0	0	0	0		0	0
2006	0	0	0	0		0	0
2007	0	0	0	0		0	0
2008	0	0	0	0		0	0
2009	0	0	0	0		0	0
2010	0	0	0	0		0	0
2011	0	0	0	0		0	0
2012	0	0	0	0		0	0
2013	0	0	0	0		0	0
2014	0	0	0	0		0	0
2015	0	0	0	0		0	0
2016	0	0	0	0		0	0
2017	0	0	0	0		0	0
2018	383	0	383	0		0	-383
2019	383	15	398	77		77	-321
2020	0	31	31	153		153	123
2021	0	31	31	153		153	123
2022	0	31	31	153		153	123
2023	0	31	31	153		153	123
2024	0	31	31	153		153	123
2025	0	31	31	153		153	123
2026	0	31	31	153		153	123
2027	0	31	31	153		153	123
2028	0	31	31	153		153	123
2029	0	31	31	153		153	123
2030	0	31	31	153		153	123
2031	0	31	31	153		153	123
2032	0	31	31	153		153	123
2033	268	31	298	153		153	-145
2034	268	31	298	153		153	-145
2035	0	31	31	153		153	123
2036	0	31	31	153		153	123
2037	0	31	31	153		153	123
2038	0	31	31	153		153	123
2039	0	31	31	153		153	123
2040	0	31	31	153		153	123
2041	0	31	31	153		153	123
2042	0	31	31	153		153	123
2043	0	31	31	153		153	123
2044	0	31	31	153		153	123
2045	0	31	31	153		153	123
2046	0	31	31	153		153	123
2047	0	31	31	153		153	123
2048	268	31	298	153		153	-145
2049	-263	31	-232	153		153	386

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (4) Economic Evaluation of Irrigation Water Supply

Total of Irrigation Water Supply	Project Cost	351,794	(R\$ 000)
	EIRR	17.2	(%)
	NPV	116,100	(R\$ 000)
	B/C	1.48	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Irrigation		Total	
1999	0	0	0	0		0	0
2000	28,708	0	28,708	0		0	-28,708
2001	28,708	856	29,564	5,274		5,274	-24,291
2002	12,621	1,712	14,333	10,548		10,548	-3,786
2003	20,003	1,925	21,928	11,424		11,424	-10,504
2004	28,797	2,629	31,426	16,425		16,425	-15,001
2005	26,391	3,333	29,724	21,426		21,426	-8,298
2006	30,933	4,036	34,970	26,427		26,427	-8,542
2007	22,141	4,946	27,087	33,774		33,774	6,687
2008	22,142	5,856	27,998	41,121		41,121	13,123
2009	22,143	6,766	28,909	48,468		48,468	19,559
2010	17,603	7,676	25,279	55,815		55,815	30,536
2011	17,604	8,380	25,984	60,816		60,816	34,832
2012	17,605	9,083	26,689	65,817		65,817	39,128
2013	17,932	9,787	27,719	70,818		70,818	43,099
2014	17,932	10,268	28,199	74,906		74,906	46,706
2015	32,914	10,748	43,662	78,994		78,994	35,331
2016	15,899	11,229	27,128	83,082		83,082	55,954
2017	4,637	11,266	15,903	83,266		83,266	67,363
2018	14,287	11,302	25,589	83,450		83,450	57,860
2019	14,287	11,318	25,605	83,526		83,526	57,922
2020	13,905	11,333	25,237	83,603		83,603	58,366
2021	16,989	11,333	28,322	83,603		83,603	55,281
2022	16,989	11,333	28,322	83,603		83,603	55,281
2023	16,989	11,333	28,322	83,603		83,603	55,281
2024	16,989	11,333	28,322	83,603		83,603	55,281
2025	13,905	11,333	25,237	83,603		83,603	58,366
2026	13,905	11,333	25,237	83,603		83,603	58,366
2027	13,905	11,333	25,237	83,603		83,603	58,366
2028	8,410	11,333	19,743	83,603		83,603	63,860
2029	8,410	11,333	19,743	83,603		83,603	63,860
2030	23,392	11,333	34,725	83,603		83,603	48,878
2031	15,624	11,333	26,957	83,603		83,603	56,646
2032	4,363	11,333	15,695	83,603		83,603	67,908
2033	14,172	11,333	25,505	83,603		83,603	58,098
2034	14,172	11,333	25,505	83,603		83,603	58,098
2035	13,905	11,333	25,237	83,603		83,603	58,366
2036	16,989	11,333	28,322	83,603		83,603	55,281
2037	16,989	11,333	28,322	83,603		83,603	55,281
2038	16,989	11,333	28,322	83,603		83,603	55,281
2039	16,989	11,333	28,322	83,603		83,603	55,281
2040	20,325	11,333	31,658	83,603		83,603	51,945
2041	20,325	11,333	31,658	83,603		83,603	51,945
2042	15,499	11,333	26,832	83,603		83,603	56,771
2043	14,509	11,333	25,841	83,603		83,603	57,762
2044	14,509	11,333	25,841	83,603		83,603	57,762
2045	27,084	11,333	38,417	83,603		83,603	45,186
2046	20,556	11,333	31,889	83,603		83,603	51,714
2047	9,295	11,333	20,628	83,603		83,603	62,975
2048	19,105	11,333	30,438	83,603		83,603	53,165
2049	-145,207	11,333	-133,874	83,603		83,603	217,477

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (5) Economic Evaluation of Master Plan in Total

(Integrated System, Independent System, Single Well System and Irrigation Water Supply)	Project Cost	1,166,415	(R\$ 000)
	EIRR	13.1	(%)
	NPV	207,242	(R\$ 000)
	B/C	1.23	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Water Supply	Irrigation	Total	
1999	0	0	0	0	0	0	0
2000	83,525	0	83,525	0	0	0	-83,525
2001	110,131	1,752	111,883	3,290	5,274	8,564	-103,319
2002	114,119	4,694	118,814	9,885	10,548	20,433	-98,381
2003	56,957	7,890	64,848	19,765	11,424	31,188	-33,659
2004	69,196	9,911	79,107	23,465	16,425	39,890	-39,217
2005	64,284	12,031	76,316	29,019	21,426	50,445	-25,871
2006	81,289	14,564	95,853	36,073	26,427	62,500	-33,353
2007	46,572	18,335	64,907	45,280	33,774	79,054	14,147
2008	50,975	22,205	73,180	54,156	41,121	95,276	22,096
2009	60,105	26,277	86,382	61,623	48,468	110,091	23,709
2010	47,541	30,854	78,395	71,930	55,815	127,744	49,350
2011	98,632	36,661	135,292	84,059	60,816	144,875	9,582
2012	54,960	41,893	96,854	107,484	65,817	173,300	76,447
2013	69,651	47,226	116,877	122,255	70,818	193,073	76,196
2014	31,152	53,855	85,007	139,451	74,906	214,357	129,350
2015	103,185	58,748	161,933	155,261	78,994	234,255	72,322
2016	66,855	66,260	133,115	180,869	83,082	263,950	130,835
2017	142,105	71,638	213,743	200,293	83,266	283,559	69,816
2018	30,261	84,992	115,253	228,041	83,450	311,491	196,238
2019	30,447	91,037	121,484	247,564	83,526	331,090	209,607
2020	20,389	97,231	117,619	267,513	83,603	351,116	233,497
2021	37,723	97,231	134,954	267,513	83,603	351,116	216,162
2022	30,633	97,231	127,864	267,513	83,603	351,116	223,253
2023	31,386	97,231	128,617	267,513	83,603	351,116	222,499
2024	31,358	97,231	128,589	267,513	83,603	351,116	222,527
2025	23,577	97,231	120,808	267,513	83,603	351,116	230,308
2026	57,234	97,231	154,464	267,513	83,603	351,116	196,652
2027	23,271	97,231	120,502	267,513	83,603	351,116	230,615
2028	28,061	97,231	125,292	267,513	83,603	351,116	225,824
2029	18,974	97,231	116,205	267,513	83,603	351,116	234,911
2030	70,053	97,231	167,284	267,513	83,603	351,116	183,833
2031	65,170	97,231	162,400	267,513	83,603	351,116	188,716
2032	129,496	97,231	226,727	267,513	83,603	351,116	124,389
2033	28,493	97,231	125,724	267,513	83,603	351,116	225,392
2034	28,089	97,231	125,320	267,513	83,603	351,116	225,796
2035	21,200	97,231	118,430	267,513	83,603	351,116	232,686
2036	37,166	97,231	134,397	267,513	83,603	351,116	216,720
2037	30,633	97,231	127,864	267,513	83,603	351,116	223,253
2038	31,386	97,231	128,617	267,513	83,603	351,116	222,499
2039	31,358	97,231	128,589	267,513	83,603	351,116	222,527
2040	42,478	97,231	139,709	267,513	83,603	351,116	211,407
2041	77,513	97,231	174,744	267,513	83,603	351,116	176,373
2042	41,036	97,231	138,267	267,513	83,603	351,116	212,850
2043	39,951	97,231	137,182	267,513	83,603	351,116	213,934
2044	30,929	97,231	128,159	267,513	83,603	351,116	222,957
2045	79,202	97,231	176,433	267,513	83,603	351,116	174,683
2046	75,460	97,231	172,691	267,513	83,603	351,116	178,425
2047	136,291	97,231	233,522	267,513	83,603	351,116	117,595
2048	32,779	97,231	130,010	267,513	83,603	351,116	221,107
2049	-488,344	97,231	-391,114	267,513	83,603	351,116	742,230

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (6) Economic Evaluation of Multi-purpose Projects

1) Xingo Dam Pipeline	Project Cost	304,598	(R\$ 000)
	EIRR	15.2	(%)
	NPV	65,372	(R\$ 000)
	B/C	1.33	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Water Supply	Irrigation	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	40,633	0	40,633	0	0	0	-40,633
2004	40,634	908	41,542	606	5,001	5,608	-35,934
2005	38,228	1,861	40,089	1,351	10,002	11,354	-28,736
2006	17,599	2,895	20,494	2,531	15,003	17,535	-2,960
2007	17,600	3,702	21,302	2,916	20,005	22,920	1,619
2008	17,601	4,508	22,110	3,301	25,006	28,306	6,197
2009	17,602	5,315	22,917	3,685	30,007	33,692	10,775
2010	38,233	6,122	44,355	4,070	35,008	39,078	-5,277
2011	38,234	7,433	45,667	5,546	40,009	45,555	-112
2012	38,235	8,850	47,084	7,778	45,010	52,788	5,704
2013	0	10,370	10,370	10,347	50,011	60,358	49,988
2014	0	10,684	10,684	11,361	50,011	61,372	50,688
2015	0	10,998	10,998	12,374	50,011	62,386	51,387
2016	0	11,489	11,489	13,981	50,011	63,992	52,503
2017	0	11,980	11,980	15,588	50,011	65,599	53,619
2018	16,560	12,470	29,031	17,194	50,011	67,206	38,175
2019	16,560	12,961	29,521	18,801	50,011	68,812	39,291
2020	16,560	13,452	30,012	20,407	50,011	70,419	40,407
2021	13,905	13,452	27,356	20,407	50,011	70,419	43,063
2022	13,905	13,452	27,356	20,407	50,011	70,419	43,063
2023	13,905	13,452	27,356	20,407	50,011	70,419	43,063
2024	13,905	13,452	27,356	20,407	50,011	70,419	43,063
2025	16,560	13,452	30,012	20,407	50,011	70,419	40,407
2026	16,560	13,452	30,012	20,407	50,011	70,419	40,407
2027	16,560	13,452	30,012	20,407	50,011	70,419	40,407
2028	0	13,452	13,452	20,407	50,011	70,419	56,967
2029	0	13,452	13,452	20,407	50,011	70,419	56,967
2030	0	13,452	13,452	20,407	50,011	70,419	56,967
2031	0	13,452	13,452	20,407	50,011	70,419	56,967
2032	0	13,452	13,452	20,407	50,011	70,419	56,967
2033	16,560	13,452	30,012	20,407	50,011	70,419	40,407
2034	16,560	13,452	30,012	20,407	50,011	70,419	40,407
2035	16,560	13,452	30,012	20,407	50,011	70,419	40,407
2036	13,905	13,452	27,356	20,407	50,011	70,419	43,063
2037	13,905	13,452	27,356	20,407	50,011	70,419	43,063
2038	13,905	13,452	27,356	20,407	50,011	70,419	43,063
2039	13,905	13,452	27,356	20,407	50,011	70,419	43,063
2040	16,560	13,452	30,012	20,407	50,011	70,419	40,407
2041	16,560	13,452	30,012	20,407	50,011	70,419	40,407
2042	16,560	13,452	30,012	20,407	50,011	70,419	40,407
2043	10,404	13,452	23,856	20,407	50,011	70,419	46,563
2044	10,404	13,452	23,856	20,407	50,011	70,419	46,563
2045	7,997	13,452	21,448	20,407	50,011	70,419	48,970
2046	3,692	13,452	17,143	20,407	50,011	70,419	53,276
2047	3,692	13,452	17,143	20,407	50,011	70,419	53,276
2048	20,252	13,452	33,704	20,407	50,011	70,419	36,715
2049	-89,545	13,452	-76,093	20,407	50,011	70,419	146,512

Note: Investment cost includes project cost, replacement cost and salvage value.

Appendix-2 (6) Economic Evaluation of Multi-purpose Projects

2) Vaza Barris Dam	Project Cost	175,444	(R\$ 000)
	EIRR	12.9	(%)
	NPV	24,864	(R\$ 000)
	B/C	1.26	

Year	Cost			Benefit			Net Cash Flow
	Investment	O&M	Total	Water	Irrigation	Total	
1999	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0
2004	17,586	0	17,586	0	0	0	-17,586
2005	17,586	0	17,586	0	0	0	-17,586
2006	47,215	0	47,215	0	0	0	-47,215
2007	4,541	862	5,403	2,403	2,346	4,748	-655
2008	4,541	1,150	5,691	2,710	4,691	7,402	1,711
2009	31,714	1,437	33,151	3,018	7,037	10,055	-23,096
2010	0	2,563	2,563	6,650	9,383	16,033	13,470
2011	0	2,796	2,796	7,575	9,383	16,957	14,161
2012	0	3,030	3,030	8,499	9,383	17,882	14,852
2013	25,088	3,263	28,351	9,423	9,383	18,806	-9,545
2014	0	4,783	4,783	15,521	9,383	24,904	20,120
2015	27,173	5,129	32,302	16,907	9,383	26,290	-6,012
2016	0	7,301	7,301	25,222	9,383	34,605	27,304
2017	0	7,968	7,968	27,901	9,383	37,284	29,316
2018	0	8,635	8,635	30,580	9,383	39,963	31,328
2019	0	9,302	9,302	33,259	9,383	42,642	33,340
2020	0	9,969	9,969	35,938	9,383	45,321	35,351
2021	10,267	9,969	20,236	35,938	9,383	45,321	25,084
2022	3,084	9,969	13,054	35,938	9,383	45,321	32,267
2023	3,084	9,969	13,054	35,938	9,383	45,321	32,267
2024	8,842	9,969	18,811	35,938	9,383	45,321	26,510
2025	0	9,969	9,969	35,938	9,383	45,321	35,351
2026	0	9,969	9,969	35,938	9,383	45,321	35,351
2027	0	9,969	9,969	35,938	9,383	45,321	35,351
2028	7,183	9,969	17,152	35,938	9,383	45,321	28,169
2029	0	9,969	9,969	35,938	9,383	45,321	35,351
2030	5,757	9,969	15,727	35,938	9,383	45,321	29,594
2031	0	9,969	9,969	35,938	9,383	45,321	35,351
2032	0	9,969	9,969	35,938	9,383	45,321	35,351
2033	0	9,969	9,969	35,938	9,383	45,321	35,351
2034	0	9,969	9,969	35,938	9,383	45,321	35,351
2035	0	9,969	9,969	35,938	9,383	45,321	35,351
2036	10,267	9,969	20,236	35,938	9,383	45,321	25,084
2037	3,084	9,969	13,054	35,938	9,383	45,321	32,267
2038	3,084	9,969	13,054	35,938	9,383	45,321	32,267
2039	8,842	9,969	18,811	35,938	9,383	45,321	26,510
2040	0	9,969	9,969	35,938	9,383	45,321	35,351
2041	0	9,969	9,969	35,938	9,383	45,321	35,351
2042	0	9,969	9,969	35,938	9,383	45,321	35,351
2043	7,183	9,969	17,152	35,938	9,383	45,321	28,169
2044	0	9,969	9,969	35,938	9,383	45,321	35,351
2045	5,757	9,969	15,727	35,938	9,383	45,321	29,594
2046	2,463	9,969	12,433	35,938	9,383	45,321	32,888
2047	1,241	9,969	11,211	35,938	9,383	45,321	34,110
2048	1,241	9,969	11,211	35,938	9,383	45,321	34,110
2049	-54,646	9,969	-44,676	35,938	9,383	45,321	89,997

Note: Investment cost includes project cost, replacement cost and salvage value.