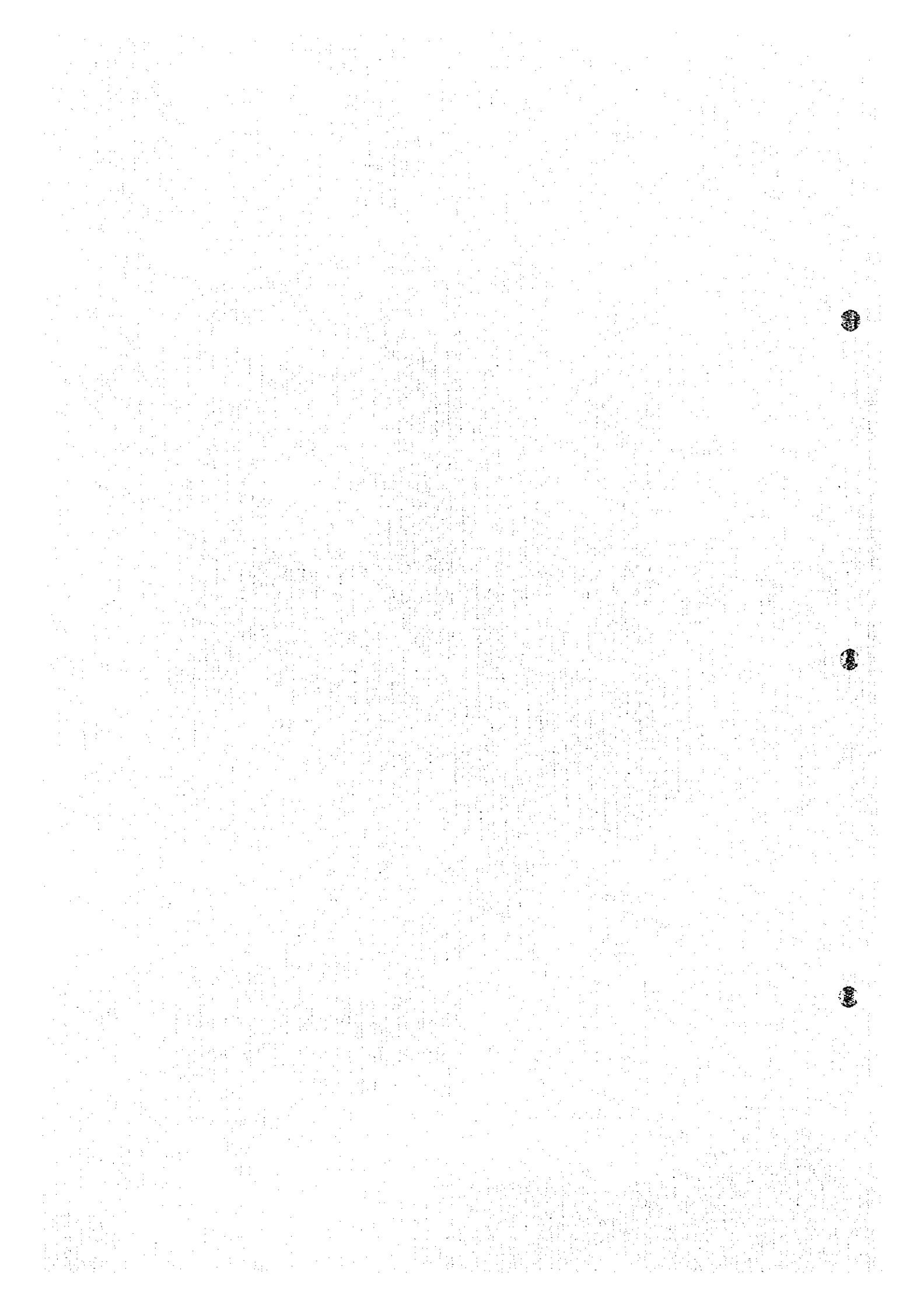


**CHAPTER 7**

**ECONOMIC AND FINANCIAL EVALUATION  
OF PROJECT**



Appendix 7.1-1 Annual Disbursement of Construction Cost (Alternative A)

(JDs: 1,000)

Cost item	Distribution																				
	1997			1998			1999			2000			2001			2002			2003		
	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total
Construction works for countermeasure	0	0	0	0	0	0	1,042	808	1,850	1,042	808	1,850	1,042	808	1,850	1,042	808	1,850	1,042	808	1,850
Engineering cost for supervision	100	0	100	100	0	100	100	100	0	100	100	0	100	100	0	100	100	0	100	100	0
Compensation cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	100	0	100	100	0	100	1,142	808	1,950	1,142	808	1,950	1,142	808	1,950	1,142	808	1,950	1,142	808	1,950
Administration	0	50	50	0	50	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0
Sub-total	100	50	150	100	50	150	1,142	858	2,000	1,142	858	2,000	1,142	858	2,000	1,142	858	2,000	1,142	858	2,000
Physical contingency	5	3	8	5	3	8	57	43	100	57	43	100	57	43	100	57	43	100	57	43	100
Sub-total	105	53	158	105	53	158	1,199	901	2,100	1,199	901	2,100	1,199	901	2,100	1,199	901	2,100	1,199	901	2,100
Price contingency	3	5	8	6	11	17	111	298	409	151	418	569	191	550	741	233	695	928	276	854	1,130
Total	108	58	166	111	64	175	1,311	1,199	2,509	1,350	1,319	2,669	1,390	1,451	2,841	1,432	1,596	3,028	1,475	1,755	3,230
Financial cost (Total-Price cont.)	105	53	158	105	53	158	1,199	901	2,100	1,199	901	2,100	1,199	901	2,100	1,199	901	2,100	1,199	901	2,100
Economic cost	90	52	142	142	184	326	1,184	815	1,999	1,184	815	1,999	1,184	815	1,999	1,184	815	1,999	1,184	815	1,999

(JDs: 1,000)

Cost item	Distribution																	
	2004			2005			2006			2007			2008			Total		
	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total
Construction works for countermeasure	1,042	808	1,850	1,042	808	1,850	1,042	808	1,850	1,042	808	1,850	1,042	808	1,850	10,422	8,078	18,500
Engineering cost for supervision	100	0	100	100	0	100	100	100	0	100	100	0	100	100	0	1,200	0	1,200
Compensation cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	1,142	808	1,950	1,142	808	1,950	1,142	808	1,950	1,142	808	1,950	1,142	808	1,950	11,622	8,078	19,700
Administration	0	50	50	0	50	50	0	50	0	50	0	50	0	50	0	600	0	600
Sub-total	1,142	858	2,000	1,142	858	2,000	1,142	858	2,000	1,142	858	2,000	1,142	858	2,000	11,622	8,678	20,300
Physical contingency	57	43	100	57	43	100	57	43	100	57	43	100	57	43	100	581	434	1,015
Sub-total	1,199	901	2,100	1,199	901	2,100	1,199	901	2,100	1,199	901	2,100	1,199	901	2,100	12,203	9,112	21,315
Price contingency	320	1,030	1,350	366	1,223	1,589	412	1,435	1,848	461	1,669	2,130	511	1,926	2,437	3,040	10,115	13,155
Total	1,519	1,931	3,450	1,565	2,124	3,689	1,612	2,336	3,948	1,660	2,570	4,230	1,710	2,827	4,537	15,244	19,227	34,470
Financial cost (Total-Price cont.)	1,199	901	2,100	1,199	901	2,100	1,199	901	2,100	1,199	901	2,100	1,199	901	2,100	12,203	9,112	21,315
Economic cost	1,184	815	1,999	1,184	815	1,999	1,184	815	1,999	1,184	815	1,999	1,184	815	1,999	12,023	8,255	20,278

Appendix 7.1-2 Annual Disbursement of Construction Cost (Alternative B)

(IDs: 1,000)

Cost item	Distribution												Total								
	1997			1998			1999			2000			2001			2002			2003		
	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total
Construction works for countermeasure	0	0	0	0	0	0	1,489	1,154	2,643	1,741	1,349	3,090	1,705	1,321	3,026	1,719	1,332	3,051	1,716	1,330	3,045
Engineering cost for supervision	140	0	140	140	0	140	143	0	143	167	0	167	164	0	164	165	0	165	165	0	165
Compensation cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	140	0	140	140	0	140	1,632	1,154	2,786	1,908	1,349	3,257	1,868	1,321	3,190	1,884	1,332	3,216	1,880	1,330	3,210
Administration	0	70	70	0	70	70	0	71	71	0	71	84	0	82	82	0	82	82	0	82	82
Sub-total	140	70	210	140	70	210	1,632	1,225	2,857	1,908	1,433	3,340	1,868	1,403	3,271	1,884	1,415	3,298	1,880	1,412	3,292
Physical contingency	7	4	11	7	4	11	82	61	143	95	72	167	93	70	164	94	71	165	94	71	165
Sub-total	147	74	221	147	74	221	1,713	1,287	3,000	2,003	1,504	3,507	1,962	1,473	3,435	1,978	1,485	3,463	1,974	1,483	3,457
Price contingency	4	7	12	6	15	24	159	426	585	251	698	950	312	899	1,212	384	1,146	1,530	454	1,407	1,860
Sub-total	151	81	232	156	89	245	1,872	1,713	3,585	2,254	2,202	4,457	2,274	2,373	4,647	2,362	2,631	4,993	2,628	2,889	5,317
Total	147	74	221	147	74	221	1,713	1,287	3,000	2,003	1,504	3,507	1,962	1,473	3,435	1,978	1,485	3,463	1,974	1,483	3,457
Financial cost (Total-Price const.)	126	73	199	126	73	199	1,692	1,164	2,856	1,978	1,301	3,339	1,937	1,333	3,270	1,953	1,344	3,297	1,950	1,342	3,291
Economic cost																					

(IDs: 1,000)

Cost item	Distribution												Total					
	2004			2005			2006			2007			2008			Total		
	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total
Construction works for countermeasure	1,449	1,123	2,573	1,455	1,128	2,583	1,453	1,127	2,580	1,453	1,126	2,579	1,453	1,126	2,579	15,634	12,116	27,750
Engineering cost for supervision	139	0	139	140	0	140	139	0	139	139	0	139	139	0	139	1,780	0	1,780
Compensation cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	1,588	1,123	2,712	1,595	1,128	2,723	1,592	1,126	2,718	1,592	1,126	2,718	1,592	1,126	2,718	17,414	12,116	29,530
Administration	0	70	70	0	70	70	0	70	70	0	70	70	0	70	70	0	70	890
Sub-total	1,588	1,193	2,781	1,595	1,198	2,792	1,592	1,197	2,791	1,592	1,195	2,787	1,592	1,196	2,788	17,414	13,006	30,420
Physical contingency	79	60	139	80	60	140	80	60	140	80	60	140	80	60	140	39	871	650
Sub-total	1,668	1,252	2,920	1,674	1,257	2,932	1,671	1,257	2,923	1,671	1,255	2,927	1,672	1,256	2,928	18,284	13,657	31,941
Price contingency	445	1,432	1,877	510	1,708	2,218	576	2,003	2,579	642	2,326	2,968	712	2,685	3,397	4,459	14,753	19,212
Sub-total	2,113	2,685	4,798	2,185	2,965	5,150	2,247	3,260	5,511	2,314	3,581	5,895	2,384	3,941	6,325	22,743	28,410	51,153
Total	1,668	1,252	2,920	1,674	1,257	2,932	1,671	1,257	2,927	1,671	1,255	2,927	1,672	1,256	2,928	18,284	13,657	31,941
Financial cost (Total-Price const.)	1,647	1,133	2,780	1,654	1,138	2,791	1,651	1,136	2,786	1,651	1,136	2,786	1,651	1,136	2,787	18,017	12,372	30,389
Economic cost																		

Appendix 7.1-3 Annual Disbursement of Construction Cost (Alternative C)

(IDs: 1,000)

Cost item	Distribution																				
	1997			1998			1999			2000			2001			2002			2003		
	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total
Construction works for countermeasure	0	0	0	0	0	0	2,174	1,685	3,858	2,174	1,685	3,859	2,154	1,670	3,824	2,154	1,669	3,823	2,090	1,620	3,709
Engineering cost for supervision	200	0	200	200	0	200	209	0	209	209	0	209	207	0	207	207	0	207	201	0	201
Compensation cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	200	0	200	200	0	200	2,382	1,685	4,067	2,383	1,685	4,068	2,361	1,670	4,031	2,360	1,669	4,030	2,290	1,620	3,910
Administration	0	100	100	0	100	104	0	104	104	0	104	0	103	103	0	103	103	0	100	100	100
Sub-total	200	100	300	200	100	300	2,382	1,789	4,171	2,383	1,789	4,172	2,361	1,773	4,134	2,360	1,773	4,133	2,290	1,720	4,010
Physical contingency	10	5	15	10	5	15	119	89	209	209	89	209	118	89	207	118	89	207	115	86	201
Sub-total	210	105	315	210	105	315	2,501	1,878	4,380	2,502	1,879	4,381	2,479	1,862	4,341	2,478	1,861	4,340	2,405	1,806	4,211
Price contingency	6	11	17	13	22	35	232	622	854	314	872	1,186	395	1,137	1,531	481	1,436	1,917	553	1,713	2,266
Total	216	116	332	223	127	350	2,733	2,500	5,233	2,816	2,751	5,567	2,874	2,998	5,872	2,959	3,297	6,257	2,957	3,519	6,476
Financial cost (Total-Price conti.)	210	105	315	210	105	315	2,501	1,878	4,380	2,502	1,879	4,381	2,479	1,862	4,341	2,478	1,861	4,340	2,405	1,806	4,211
Economic cost	180	105	285	180	105	285	2,470	1,700	4,170	2,471	1,700	4,171	2,448	1,685	4,133	2,447	1,684	4,132	2,375	1,634	4,009

(IDs: 1,000)

Cost item	Distribution																	
	2004			2005			2006			2007			2008			Total		
	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total	FC	I.C.	Sub-total
Construction works for countermeasure	2,089	1,619	3,708	2,020	1,565	3,585	2,020	1,566	3,586	1,985	1,538	3,523	1,985	1,538	3,523	20,845	16,155	37,000
Engineering cost for supervision	200	0	200	194	0	194	194	0	194	190	0	190	190	0	190	2,400	0	2,400
Compensation cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	2,290	1,619	3,909	2,214	1,565	3,779	2,214	1,566	3,780	2,175	1,538	3,714	2,175	1,538	3,714	23,245	16,155	39,400
Administration	0	100	100	0	97	97	0	97	97	0	95	95	0	95	95	0	1,200	1,200
Sub-total	2,290	1,719	4,009	2,214	1,662	3,876	2,214	1,663	3,877	2,175	1,634	3,809	2,175	1,634	3,809	23,245	17,355	40,600
Physical contingency	114	86	200	111	83	194	111	83	194	109	82	190	109	82	190	1,162	868	2,030
Sub-total	2,404	1,805	4,209	2,324	1,745	4,070	2,325	1,746	4,071	2,284	1,715	3,999	2,284	1,715	3,999	24,407	18,223	42,630
Price contingency	641	2,065	2,706	708	2,370	3,079	800	2,783	3,582	878	3,179	4,056	973	3,668	4,641	5,993	19,876	25,869
Total	3,045	3,870	6,915	3,033	4,116	7,148	3,125	4,528	7,653	3,162	4,894	8,056	3,257	5,333	8,640	30,400	38,099	68,499
Financial cost (Total-Price conti.)	2,404	1,805	4,209	2,324	1,745	4,070	2,325	1,746	4,071	2,284	1,715	3,999	2,284	1,715	3,999	24,407	18,223	42,630
Economic cost	2,374	1,634	4,008	2,295	1,579	3,875	2,296	1,580	3,876	2,256	1,552	3,808	2,256	1,552	3,808	24,047	16,509	40,556

Appendix 7.1-4 Annual Disbursement of Construction Cost (Alternative D)

(JPY 1,000)

Cost item	Distribution																				
	1997			1998			1999			2000			2001			2002			2003		
	FC	I.C	Sub-total	FC	I.C	Sub-total	FC	I.C	Sub-total	FC	I.C	Sub-total	FC	I.C	Sub-total	FC	I.C	Sub-total	FC	I.C	Sub-total
Construction works for countermeasure	0	0	0	0	0	0	2,497	1,955	4,452	2,730	2,116	4,846	2,710	2,100	4,810	2,699	2,092	4,791	2,599	2,014	4,613
Engineering cost for supervision	250	0	250	250	0	250	240	0	240	262	0	262	260	0	260	259	0	259	249	0	249
Compensation cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	250	0	250	250	0	250	2,736	1,955	4,691	2,992	2,116	5,108	2,970	2,100	5,070	2,958	2,092	5,050	2,848	2,014	4,862
Administration	0	125	125	0	125	125	0	120	120	131	131	0	130	130	130	0	129	129	0	125	125
Sub-total	250	125	375	250	125	375	2,736	2,075	4,811	2,992	2,247	5,239	2,970	2,230	5,200	2,958	2,221	5,179	2,848	2,139	4,987
Physical contingency	13	6	19	13	6	19	137	103	240	150	112	262	148	112	260	148	111	259	142	107	249
Sub-total	263	131	394	263	131	394	2,873	2,178	5,051	3,142	2,359	5,501	3,118	2,342	5,460	3,106	2,332	5,438	2,991	2,246	5,236
Price contingency	770	144	415	278	159	437	3,139	2,877	6,016	3,536	3,454	6,990	3,615	3,771	7,386	3,708	4,132	7,840	3,678	4,376	8,054
Total	263	131	394	263	131	394	2,873	2,158	5,031	3,142	2,359	5,501	3,118	2,342	5,460	3,106	2,332	5,438	2,991	2,246	5,236
Financial cost (Total-Price cont.)	225	131	356	225	131	356	2,837	1,952	4,789	3,102	2,135	5,237	3,079	2,119	5,198	3,067	2,110	5,177	2,953	2,032	4,985
Economic cost																					

(JPY 1,000)

Cost item	Distribution																	
	2004			2005			2006			2007			2008			Total		
	FC	I.C	Sub-total	FC	I.C	Sub-total	FC	I.C	Sub-total	FC	I.C	Sub-total	FC	I.C	Sub-total	FC	I.C	Sub-total
Construction works for countermeasure	2,573	1,794	4,367	2,645	2,050	4,694	2,618	2,029	4,647	2,578	1,998	4,576	2,408	1,866	4,274	26,056	20,194	46,250
Engineering cost for supervision	247	0	247	254	0	254	251	0	251	247	0	247	231	0	231	3,000	0	3,000
Compensation cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	2,820	1,794	4,614	2,898	2,050	4,948	2,869	2,029	4,898	2,825	1,998	4,823	2,639	1,866	4,505	29,056	20,194	49,250
Administration	0	123	123	0	127	127	0	126	126	0	124	124	0	116	116	0	1,500	1,500
Sub-total	2,820	2,117	4,937	2,898	2,177	5,075	2,869	2,155	5,024	2,825	2,122	4,947	2,639	1,982	4,621	29,056	21,694	50,750
Physical contingency	161	106	267	145	109	254	143	108	251	141	106	247	132	99	231	1,453	1,085	2,538
Sub-total	2,981	2,223	5,204	3,043	2,285	5,329	3,013	2,262	5,275	2,967	2,228	5,194	2,771	2,081	4,852	30,509	22,779	53,288
Price contingency	790	2,542	3,332	928	3,103	4,031	1,036	3,606	4,642	1,140	4,128	5,268	1,180	4,450	5,630	7,565	25,039	32,604
Total	3,770	4,766	8,536	3,971	5,389	9,360	4,049	5,868	9,917	4,106	6,356	10,463	3,951	6,531	10,482	38,053	47,818	85,871
Financial cost (Total-Price cont.)	2,961	2,223	5,184	3,043	2,285	5,329	3,013	2,262	5,275	2,967	2,228	5,194	2,771	2,081	4,852	30,509	22,779	53,288
Economic cost	2,924	2,012	4,935	3,005	2,068	5,073	2,975	2,047	5,022	2,929	2,016	4,945	2,736	1,883	4,619	30,059	20,637	50,695

Appendix 7.1-5 Annual Disbursement of Construction Cost (Alternative E)

(JDs: 1,000)

Cost item	Distribution																						
	1997			1998			1999			2000			2001			2002			2003				
	FC	I.C	Sub-total	FC	I.C	Sub-total	FC	I.C	Sub-total	FC	I.C	Sub-total	FC	I.C	Sub-total	FC	I.C	Sub-total	FC	I.C	Sub-total		
Construction works for countermeasure	0	0	0	0	0	0	2,865	2,220	5,085	3,364	2,608	5,972	3,415	2,647	6,062	3,593	2,630	6,223	3,439	2,665	6,104		
Engineering cost for supervision	330	0	330	0	330	0	275	323	0	323	328	0	328	326	0	328	326	0	326	330	0	330	
Compensation cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	330	0	330	0	330	0	330	340	2,220	5,360	3,687	2,608	6,295	3,743	2,647	6,390	3,719	2,630	6,349	3,769	2,665	6,434	
Administration	0	165	165	0	165	165	0	137	137	0	161	161	0	164	164	0	163	163	0	165	165	0	165
Sub-total	330	165	495	330	165	495	3,440	2,358	5,497	3,687	2,769	6,456	3,743	2,811	6,553	3,719	2,793	6,511	3,769	2,830	6,599		
Physical contingency	17	8	25	17	8	25	157	118	275	184	138	323	187	141	328	186	140	326	188	142	330		
Sub-total	347	173	520	347	173	520	3,297	2,476	5,772	3,872	2,907	6,779	3,930	2,951	6,881	3,905	2,932	6,837	3,957	2,972	6,929		
Price contingency	10	17	28	21	36	57	306	819	1,125	486	1,349	1,835	626	1,802	2,428	758	2,262	3,020	910	2,819	3,729		
Total	357	191	547	368	210	577	3,602	3,295	6,897	4,358	4,257	8,614	4,556	4,753	9,309	4,662	5,195	9,857	4,867	5,791	10,658		
Financial cost (Total-Price conti.)	347	173	520	347	173	520	3,297	2,476	5,772	3,872	2,907	6,779	3,930	2,951	6,881	3,905	2,932	6,837	3,957	2,972	6,929		
Economic cost	297	173	470	297	173	470	3,255	2,240	5,495	3,823	2,631	6,454	3,881	2,670	6,551	3,856	2,653	6,509	3,908	2,689	6,597		

(JDs: 1,000)

Cost item	Distribution																	
	2004			2005			2006			2007			2008			Total		
	FC	I.C	Sub-total	FC	I.C	Sub-total	FC	I.C	Sub-total	FC	I.C	Sub-total	FC	I.C	Sub-total	FC	I.C	Sub-total
Construction works for countermeasure	3,420	2,651	6,071	3,448	2,672	6,120	3,454	2,677	6,131	3,473	2,692	6,164	3,010	2,333	5,343	33,282	25,794	59,076
Engineering cost for supervision	328	0	328	331	0	331	333	0	333	289	0	289	289	0	289	3,853	0	3,853
Compensation cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	3,748	2,651	6,399	3,779	2,672	6,451	3,786	2,677	6,463	3,806	2,692	6,498	3,299	2,333	5,632	37,135	25,794	62,929
Administration	0	164	164	0	165	165	0	166	166	0	167	167	0	144	144	0	1,927	1,927
Sub-total	3,748	2,815	6,563	3,779	2,838	6,616	3,786	2,843	6,628	3,806	2,858	6,664	3,299	2,477	5,776	37,135	27,721	64,856
Physical contingency	187	141	328	189	142	331	189	142	331	190	143	333	165	124	289	1,857	1,386	3,243
Sub-total	3,936	2,956	6,891	3,968	2,979	6,947	3,975	2,985	6,960	3,996	3,001	6,998	3,464	2,601	6,065	38,992	29,107	68,099
Price contingency	1,050	3,380	4,430	1,209	4,046	5,255	1,367	4,757	6,124	1,536	5,561	7,097	1,475	5,563	7,037	9,753	32,413	42,166
Total	4,986	6,336	11,321	5,177	7,025	12,202	5,342	7,742	13,084	5,532	8,563	14,094	4,939	8,164	13,102	48,745	61,520	110,265
Financial cost (Total-Price conti.)	3,936	2,956	6,891	3,968	2,979	6,947	3,975	2,985	6,960	3,996	3,001	6,998	3,464	2,601	6,065	38,992	29,107	68,099
Economic cost	3,887	2,675	6,561	3,918	2,686	6,614	3,925	2,701	6,626	3,946	2,716	6,662	3,421	2,354	5,774	38,414	26,371	64,785

# Appendix 7.2-1 Calculation of Electricity Loss To Be Reduced (Alternative A)

Year in order	Year	Low voltage system (L.V.)				Medium voltage system (M.V.)				Total electricity loss reduced (kWh/yr)			
		Unbalance (kWh/yr)	Capacitor (kWh/yr)	New line (kWh/yr)	Power (kWh/yr)	Unbalance (kWh/yr)	Capacitor (kWh/yr)	New line (kWh/yr)	Power (kWh/yr)	Unbalance (kWh/yr)	Capacitor (kWh/yr)	New line (kWh/yr)	Power (kWh/yr)
1	1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	2000	743.4	681.0	107.7	3,160	71	2,895	65	4,581	103	997.0	67	93
5	2001	1,651.8	1,361.0	2,360.8	7,021	157	5,789	130	10,034	225	1,994.0	134	1,367
6	2002	2,752.6	2,043.0	3,879.7	11,700	262	8,684	195	16,490	370	2,991.0	201	2,171
7	2003	4,077.4	3,074.0	5,642.1	17,331	389	11,578	260	23,981	538	3,988.0	268	3,065
8	2004	4,529.8	3,405.0	7,733.8	19,253	432	14,473	325	32,872	737	4,985.0	336	3,854
9	2005	5,032.2	3,806.0	10,188.1	21,389	480	17,367	390	43,304	971	5,982.0	403	4,723
10	2006	5,590.7	4,267.0	13,046.4	23,763	533	20,262	434	55,452	1,244	6,979.0	470	5,681
11	2007	6,210.9	4,618.0	16,412.0	26,399	592	23,156	519	69,758	1,565	7,976.0	537	6,751
12	2008	6,900.0	5,129.0	20,635.5	29,323	658	26,051	584	87,709	1,967	8,973.0	604	8,001
13	2009	7,335.6	5,410.0	23,863.0	31,179	699	28,945	649	101,427	2,275	9,970.0	671	9,008
14	2010	7,682.9	5,610.0	25,201.8	32,655	732	28,945	649	107,118	2,403	9,970.0	671	9,336
15	2011	7,929.7	5,790.0	26,451.6	33,702	756	28,945	649	112,430	2,522	9,970.0	671	9,628
16	2012	8,060.0	5,810.0	27,601.1	34,258	768	28,945	649	117,316	2,631	9,970.0	671	9,878
17	2013	8,060.0	5,810.0	28,641.3	34,258	768	28,945	649	121,737	2,731	9,970.0	671	10,080
18	2014	8,060.0	5,810.0	29,555.8	34,258	768	28,945	649	125,624	2,818	9,970.0	671	10,259
19	2015	8,060.0	5,810.0	30,328.5	34,258	768	28,945	649	128,908	2,891	9,970.0	671	10,409
20	2016	8,060.0	5,810.0	30,943.3	34,258	768	28,945	649	131,521	2,950	9,970.0	671	10,529
21	2017	8,060.0	5,810.0	31,377.4	34,258	768	28,945	649	133,367	2,991	9,970.0	671	10,614
22	2018	8,060.0	5,810.0	31,575.7	34,258	768	28,945	649	134,200	3,010	9,970.0	671	10,653
2024	8,060.0	5,810.0	31,575.7	34,258	768	28,945	649	134,200	3,010	9,970.0	671	10,653	
2025	8,226.1	6,200.0	28,917.2	2,880	26,463	594	26,051	584	122,910	2,757	8,973.0	604	9,484
2026	4,276.4	426	26,170.5	2,607	18,176	408	23,326	523	111,235	2,495	7,976.0	537	8,284
2027	2,203.6	219	4,767.0	2,524	9,366	210	20,262	434	99,166	2,224	6,979.0	470	7,026
2028	0.0	0	4,086.0	407	20,451.7	2,037	0	390	86,928	1,950	5,982.0	403	5,742
2029	0.0	0	3,405.0	339	17,419.4	1,735	0	325	74,039	1,661	4,985.0	336	4,859
2030	0.0	0	2,724.0	271	14,259.1	1,420	0	260	60,607	1,359	3,988.0	268	3,950
2031	0.0	0	2,043.0	203	10,985.5	1,094	0	195	46,693	1,047	2,991.0	201	3,019
2032	0.0	0	1,362.0	136	7,507.9	748	0	130	31,912	716	1,994.0	134	2,049
2033	0.0	0	681.0	68	3,319.4	333	0	65	14,104	318	997.0	67	644

Marginal capacity cost (kWh/kWh/yr): 99.6  
 Marginal energy cost (kWh/kWh): 0.02243  
 Marginal energy cost (kWh/kWh): 0.02243  
 Marginal capacity cost (kWh/kWh/yr): 67.32  
 Marginal energy cost (kWh/kWh): 0.02055  
 mWh coefficient: 4.2504  
 mWh coefficient: 4.3263  
 mWh coefficient: 4.3263



## Appendix 7.2-2 Calculation of Electricity Loss To Be Reduced (Alternative B)

Year in order	Year	Low voltage system (L.V.)						Medium voltage system (M.V.)						Total electricity loss reduced (IDk./1,000)									
		Unbalance (mWh) (IDk./1,000)	Capacitor (mWh) (IDk./1,000)	Power (mWh) (IDk./1,000)	New line (mWh) (IDk./1,000)	Unbalance (mWh) (IDk./1,000)	Capacitor (mWh) (IDk./1,000)	Power (mWh) (IDk./1,000)	New line (mWh) (IDk./1,000)	Unbalance (mWh) (IDk./1,000)	Capacitor (mWh) (IDk./1,000)	Power (mWh) (IDk./1,000)	New line (mWh) (IDk./1,000)										
1	1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0									
2	1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0									
3	1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0									
4	2000	743.4	74	681.0	68	1,261.7	126	3,160	65	5,363	120	997.0	67	0.0	0.0	683							
5	2001	1,651.8	165	1,486.0	136	2,761.9	275	7,021	157	5,789	130	11,739	263	1,994.0	134	659.3	44	9,023	185	2,984	61	1,551	
6	2002	2,752.6	274	2,478.0	203	4,512.1	449	11,700	262	8,684	195	19,178	430	2,991.0	201	1,403.3	94	13,538	278	6,352	131	2,519	
7	2003	4,077.4	406	3,671.0	271	6,561.8	654	17,331	389	11,578	280	27,890	626	3,988.0	268	2,253.1	152	18,051	371	10,198	210	3,606	
8	2004	4,529.8	451	4,078.0	339	8,991.6	896	19,253	432	14,473	325	38,218	857	4,985.0	336	3,384.2	228	22,564	464	15,318	315	4,641	
9	2005	5,032.3	501	4,531.0	407	11,814.8	1,177	21,389	480	17,367	390	50,218	1,126	5,982.0	403	4,603.7	310	27,076	556	20,838	428	5,778	
10	2006	5,590.7	557	5,033.0	475	15,154.0	1,509	23,763	533	20,262	454	64,411	1,445	6,979.0	470	5,114.4	344	31,589	649	23,149	476	6,912	
11	2007	6,210.9	619	5,592.0	543	19,085.1	1,901	26,399	592	23,156	519	81,119	1,820	7,976.0	537	6,749.5	454	36,102	742	30,550	628	8,254	
12	2008	6,900.0	687	6,213.0	610	23,615.2	2,352	29,328	658	26,051	584	100,374	2,251	8,973.0	604	7,498.3	505	40,614	835	33,940	697	9,784	
13	2009	7,335.6	731	6,604.0	678	27,038.2	2,753	31,179	699	28,945	649	117,473	2,635	9,970.0	671	9,220.4	621	45,127	927	41,734	858	11,222	
14	2010	7,682.9	765	6,918.0	719	29,186.6	2,907	32,655	732	28,945	649	124,055	2,783	9,970.0	671	9,302.5	660	45,127	927	46,726	960	12,098	
15	2011	7,929.1	790	7,139.0	748	30,630.1	3,051	33,702	756	28,945	649	130,190	2,920	9,970.0	671	10,781.0	726	45,127	927	48,798	1,003	12,456	
16	2012	8,060.0	803	7,257.0	778	31,958.7	3,183	34,258	768	28,945	649	140,942	3,161	9,970.0	671	11,772.9	752	45,127	927	50,572	1,039	12,753	
17	2013	8,060.0	803	7,257.0	778	31,958.7	3,183	34,258	768	28,945	649	140,942	3,161	9,970.0	671	11,772.9	752	45,127	927	50,572	1,039	12,753	
18	2014	8,060.0	803	7,257.0	778	31,958.7	3,183	34,258	768	28,945	649	140,942	3,161	9,970.0	671	11,772.9	752	45,127	927	50,572	1,039	12,753	
19	2015	8,060.0	803	7,257.0	778	31,958.7	3,183	34,258	768	28,945	649	140,942	3,161	9,970.0	671	11,772.9	752	45,127	927	50,572	1,039	12,753	
20	2016	8,060.0	803	7,257.0	778	31,958.7	3,183	34,258	768	28,945	649	140,942	3,161	9,970.0	671	11,772.9	752	45,127	927	50,572	1,039	12,753	
21	2017	8,060.0	803	7,257.0	778	31,958.7	3,183	34,258	768	28,945	649	140,942	3,161	9,970.0	671	11,772.9	752	45,127	927	50,572	1,039	12,753	
22	2018	8,060.0	803	7,257.0	778	31,958.7	3,183	34,258	768	28,945	649	140,942	3,161	9,970.0	671	11,772.9	752	45,127	927	50,572	1,039	12,753	
2024	2024	8,060.0	803	7,257.0	778	31,958.7	3,183	34,258	768	28,945	649	140,942	3,161	9,970.0	671	11,772.9	752	45,127	927	50,572	1,039	12,753	
2025	2025	6,226.1	620	5,606.0	610	23,456.9	2,332	26,463	594	26,051	584	142,205	3,190	8,973.0	604	12,168.2	819	40,614	835	35,077	1,132	12,220	
2026	2026	4,276.4	426	3,850.0	347	16,245.8	1,612	18,176	408	23,326	523	123,557	2,884	7,976.0	537	10,611.9	714	36,102	742	48,033	987	10,780	
2027	2027	2,203.6	219	2,084.0	179	10,084.3	1,000	11,366	210	20,262	454	114,694	2,573	6,979.0	470	9,096.3	612	31,589	649	41,173	846	9,196	
2028	2028	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
2029	2029	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
2030	2030	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
2031	2031	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
2032	2032	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
2033	2033	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0

Marginal capacity cost (IDk./kWh/Year): 99.6  
 Marginal energy cost (IDk./kWh): 0.02243  
 Marginal energy cost (IDk./kWh): 0.02055  
 mWh coefficient: 4.5263  
 mWh coefficient: 67.32  
 mWh coefficient: 4.5263  
 mWh coefficient: 0.02055

### Appendix 7.2-3 Calculation of Electricity Loss To Be Reduced (Alternative C)

Year in order	Low voltage system (LV)										Medium voltage systems (MV)										Total electricity loss reduced (Dk./kWh)		
	Unbalance (kWh)		Power Capacitor (kWh)		New line (kWh)		Unbalance (kWh)		Energy Capacitor (kWh)		New line (kWh)		Capacitor (kWh)		New line (kWh)		Energy (kWh)		Capacitor (kWh)			New line (kWh)	
	(Dk./1,000)	(kWh)	(Dk./1,000)	(kWh)	(Dk./1,000)	(kWh)	(Dk./1,000)	(kWh)	(Dk./1,000)	(kWh)	(Dk./1,000)	(kWh)	(Dk./1,000)	(kWh)	(Dk./1,000)	(kWh)	(Dk./1,000)	(kWh)	(Dk./1,000)	(kWh)		(Dk./1,000)	(kWh)
1	1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	2000	743.4	74	681.0	68	1,469.4	146	3,160	71	2,895	65	6,246	140	997.0	67	0.0	0.0	0.0	0.0	4.513	93	0	0
5	2001	1,651.8	165	1,562.0	136	3,207.8	319	7,021	157	5,789	130	13,634	306	1,994.0	134	1,825.5	123	9,025	185	8,263	170	8,263	170
6	2002	2,732.6	274	2,043.0	203	5,213.5	519	11,700	262	8,684	195	22,159	497	2,991.0	201	2,028.1	137	13,538	278	9,180	189	9,180	189
7	2003	4,077.4	406	2,724.0	271	7,600.6	757	17,331	389	11,478	260	35,306	725	3,988.0	268	4,441.2	299	18,051	371	20,102	413	4,159	413
8	2004	4,529.8	451	3,405.0	339	10,348.5	1,033	19,253	432	14,473	325	44,070	988	4,985.0	336	4,934.0	332	22,564	464	22,333	459	5,158	459
9	2005	5,032.3	501	4,086.0	407	13,651.0	1,360	21,389	480	17,367	390	58,022	1,301	5,982.0	403	7,920.5	533	27,076	556	35,851	737	6,668	737
10	2006	5,590.7	557	4,767.0	475	17,517.6	1,745	23,763	533	20,262	454	74,457	1,670	6,979.0	470	8,799.3	592	31,589	649	39,828	818	7,964	818
11	2007	6,210.9	619	5,448.0	543	21,997.6	2,191	26,399	592	23,156	519	92,499	2,097	7,976.0	537	12,437.3	837	36,102	742	56,295	1,157	9,234	1,157
12	2008	6,900.0	687	6,129.0	610	27,180.5	2,707	29,328	658	26,051	584	115,528	2,591	8,973.0	604	13,817.1	930	40,614	835	62,540	1,285	11,492	1,285
13	2009	7,335.6	731	6,810.0	678	31,766.1	3,164	32,655	699	28,945	649	135,019	3,028	9,970.0	671	17,624.1	1,186	45,127	927	79,772	1,639	13,374	1,639
14	2010	7,682.9	765	6,810.0	678	33,542.8	3,341	32,655	732	28,945	649	142,570	3,198	9,970.0	671	18,736.8	1,261	45,127	927	84,808	1,743	13,967	1,743
15	2011	7,929.1	790	6,810.0	678	35,196.9	3,506	33,702	756	28,945	649	149,601	3,356	9,970.0	671	19,647.6	1,323	45,127	927	88,931	1,828	14,483	1,828
16	2012	8,060.0	803	6,810.0	678	36,720.1	3,657	34,258	768	28,945	649	156,075	3,501	9,970.0	671	20,616.0	1,388	45,127	927	93,314	1,918	14,961	1,918
17	2013	8,060.0	803	6,810.0	678	38,092.5	3,794	34,258	768	28,945	649	161,908	3,632	9,970.0	671	21,346.8	1,437	45,127	927	96,622	1,986	15,346	1,986
18	2014	8,060.0	803	6,810.0	678	39,300.3	3,914	34,258	768	28,945	649	167,042	3,747	9,970.0	671	22,123.8	1,489	45,127	927	100,179	2,058	15,706	2,058
19	2015	8,060.0	803	6,810.0	678	40,317.8	4,016	34,258	768	28,945	649	171,367	3,844	9,970.0	671	22,645.0	1,524	45,127	927	102,498	2,106	15,987	2,106
20	2016	8,060.0	803	6,810.0	678	41,181.3	4,095	34,258	768	28,945	649	174,769	3,920	9,970.0	671	23,199.1	1,562	45,127	927	105,006	2,158	16,232	2,158
21	2017	8,060.0	803	6,810.0	678	41,678.9	4,151	34,258	768	28,945	649	177,152	3,974	9,970.0	671	23,483.5	1,581	45,127	927	106,293	2,184	16,387	2,184
22	2018	8,060.0	803	6,810.0	678	41,974.6	4,181	34,258	768	28,945	649	178,409	4,002	9,970.0	671	23,783.8	1,601	45,127	927	107,662	2,212	16,493	2,212
2024	8,060.0	803	6,810.0	678	41,974.6	4,181	34,258	768	28,945	649	178,409	4,002	9,970.0	671	23,783.8	1,601	45,127	927	107,662	2,212	16,493	2,212	
2025	6,226.1	620	6,129.0	610	38,549.8	3,820	26,463	594	26,051	584	163,002	3,656	8,973.0	604	23,783.8	1,601	40,614	835	107,662	2,212	15,137	2,212	
2026	4,276.4	426	5,488.0	547	34,631.0	3,449	18,176	408	23,326	523	147,196	3,302	7,976.0	537	19,476.4	1,311	36,102	742	88,156	1,812	13,056	1,812	
2027	2,203.6	219	4,767.0	475	30,904.0	3,078	9,366	210	20,262	454	131,354	2,946	6,979.0	470	19,476.4	1,311	31,589	649	88,156	1,812	11,625	1,812	
2028	0.0	0	4,086.0	407	26,583.1	2,648	0	0	17,367	390	112,989	2,534	5,982.0	403	14,681.5	988	27,076	556	66,453	1,366	9,292	1,366	
2029	0.0	0	3,405.0	339	22,262.3	2,217	0	0	14,473	325	94,624	2,122	4,985.0	336	14,681.5	988	22,564	464	66,453	1,366	8,157	1,366	
2030	0.0	0	2,724.0	271	17,941.4	1,787	0	0	11,578	260	76,258	1,710	3,988.0	268	9,886.5	666	18,051	371	44,749	920	6,253	920	
2031	0.0	0	2,043.0	203	13,620.5	1,357	0	0	8,684	195	57,893	1,299	2,991.0	201	9,886.5	666	13,538	278	44,749	920	5,118	920	
2032	0.0	0	1,362.0	136	9,299.7	926	0	0	5,789	130	39,527	887	1,994.0	134	5,091.6	343	9,025	185	23,046	474	3,214	474	
2033	0.0	0	681.0	68	4,978.8	496	0	0	2,895	65	21,162	475	997.0	67	5,091.6	343	4,513	93	23,046	474	2,080	474	
Remarks		99.6	Marginal capacity cost (Dk./kWh/year):	99.6	Marginal energy cost (Dk./kWh):	0.022543	Marginal capacity cost (Dk./kWh/year):	67.32	Marginal energy cost (Dk./kWh):	0.02055													

### Appendix 7.2-4 Calculation of Electricity Loss To Be Reduced (Alternative D)

Year in order	Year	Low voltage system (11kV)						Medium voltage system (33kV)						Total	
		Unbalance (kWh/1,000)	Capacitor (kWh/1,000)	New line (kWh/1,000)	Unbalance (mWh)	Capacitor (mWh)	New line (mWh)	Unbalance (kWh/1,000)	Capacitor (kWh/1,000)	New line (kWh/1,000)	Unbalance (mWh)	Capacitor (mWh)	New line (mWh)	Energy loss reduced (kWh/1,000)	Energy loss reduced (mWh)
1	1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	2000	743.4	681.0	1,808.9	180	3,160	71	2,895	65	7,689	172	997.0	0	4,513	93
5	2001	1,651.8	1,365.0	3,913.9	390	7,021	157	5,789	134	16,636	373	1,994.0	134	9,025	185
6	2002	2,752.6	2,742.0	6,494.6	634	11,700	262	8,684	195	27,039	606	2,991.0	201	13,538	278
7	2003	4,077.4	4,066.0	9,230.6	919	17,331	389	11,578	260	39,234	880	3,988.0	268	18,051	371
8	2004	4,529.8	4,511.0	12,623.9	1,257	19,253	432	14,473	325	53,657	1,204	4,985.0	336	22,564	464
9	2005	5,032.3	5,014.0	16,611.9	1,655	21,389	480	17,367	390	70,607	1,584	5,982.0	403	27,076	556
10	2006	5,590.7	5,572.0	21,242.0	2,116	23,763	533	20,262	454	90,287	2,025	6,979.0	470	31,589	649
11	2007	6,210.9	6,192.0	26,611.9	2,651	29,328	592	25,156	519	113,111	2,537	7,976.0	537	35,947.3	742
12	2008	6,900.0	6,882.0	32,801.8	3,267	36,051	658	31,421	584	139,421	3,127	8,973.0	604	40,614	835
13	2009	7,335.6	7,317.0	38,196.5	3,804	41,779	699	36,945	649	162,350	3,642	9,970.0	671	45,127	927
14	2010	7,682.9	7,665.0	40,326.2	4,016	44,342	732	39,610	699	179,821	4,033	9,970.0	671	45,127	927
15	2011	7,929.1	7,912.0	42,306.8	4,214	46,520	756	41,264	722	194,510	4,363	9,970.0	671	45,127	927
16	2012	8,060.0	8,043.0	44,125.0	4,395	48,520	768	42,752	732	209,591	4,614	9,970.0	671	45,127	927
17	2013	8,060.0	8,043.0	45,762.8	4,528	50,290	768	43,502	732	225,596	4,999	9,970.0	671	45,127	927
18	2014	8,060.0	8,043.0	47,194.6	4,701	52,895	768	44,250	732	242,141	5,384	9,970.0	671	45,127	927
19	2015	8,060.0	8,043.0	48,393.4	4,820	55,140	768	44,998	732	259,276	5,769	9,970.0	671	45,127	927
20	2016	8,060.0	8,043.0	49,334.6	4,914	57,128	768	45,746	732	276,901	6,154	9,970.0	671	45,127	927
21	2017	8,060.0	8,043.0	50,000.2	4,979	58,853	768	46,494	732	295,026	6,539	9,970.0	671	45,127	927
22	2018	8,060.0	8,043.0	50,332.7	5,013	59,346	768	47,242	732	313,651	6,924	9,970.0	671	45,127	927
2024	2024	8,060.0	8,043.0	50,332.7	5,013	59,346	768	47,242	732	332,276	7,309	9,970.0	671	45,127	927
2025	2025	6,226.1	6,209.0	45,870.5	4,569	49,439	594	44,051	584	194,968	4,373	8,973.0	604	30,481.4	2,052
2026	2026	4,276.4	4,260.0	31,375.2	4,121	33,496	408	30,326	523	175,861	3,945	7,976.0	537	26,172.0	1,762
2027	2027	2,203.6	2,190.0	16,677.0	2,168	18,509	210	20,262	454	156,527	3,517	6,979.0	470	24,781.5	1,668
2028	2028	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2029	2029	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2030	2030	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2031	2031	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2032	2032	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2033	2033	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Year	Unbalance (kWh/1,000)	Capacitor (kWh/1,000)	New line (kWh/1,000)	Unbalance (mWh)	Capacitor (mWh)	New line (mWh)	Unbalance (kWh/1,000)	Capacitor (kWh/1,000)	New line (kWh/1,000)	Unbalance (mWh)	Capacitor (mWh)	New line (mWh)	Energy loss reduced (kWh/1,000)	Energy loss reduced (mWh)
2024	8,060.0	8,043.0	50,332.7	5,013	59,346	4,799	9,970.0	671	30,481.4	2,052	45,127	927	137,968	2,835
2025	6,226.1	6,209.0	45,870.5	4,569	49,439	4,373	8,973.0	604	30,481.4	2,052	40,614	835	137,968	2,835
2026	4,276.4	4,260.0	31,375.2	4,121	33,496	3,945	7,976.0	537	26,172.0	1,762	36,102	742	118,462	2,434
2027	2,203.6	2,190.0	16,677.0	2,168	18,509	3,517	6,979.0	470	24,781.5	1,668	31,589	649	112,169	2,305
2028	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2030	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2031	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2032	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2033	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Year	Unbalance (kWh/1,000)	Capacitor (kWh/1,000)	New line (kWh/1,000)	Unbalance (mWh)	Capacitor (mWh)	New line (mWh)	Unbalance (kWh/1,000)	Capacitor (kWh/1,000)	New line (kWh/1,000)	Unbalance (mWh)	Capacitor (mWh)	New line (mWh)	Energy loss reduced (kWh/1,000)	Energy loss reduced (mWh)
2024	8,060.0	8,043.0	50,332.7	5,013	59,346	4,799	9,970.0	671	30,481.4	2,052	45,127	927	137,968	2,835
2025	6,226.1	6,209.0	45,870.5	4,569	49,439	4,373	8,973.0	604	30,481.4	2,052	40,614	835	137,968	2,835
2026	4,276.4	4,260.0	31,375.2	4,121	33,496	3,945	7,976.0	537	26,172.0	1,762	36,102	742	118,462	2,434
2027	2,203.6	2,190.0	16,677.0	2,168	18,509	3,517	6,979.0	470	24,781.5	1,668	31,589	649	112,169	2,305
2028	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2030	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2031	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2032	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2033	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Year	Unbalance (kWh/1,000)	Capacitor (kWh/1,000)	New line (kWh/1,000)	Unbalance (mWh)	Capacitor (mWh)	New line (mWh)	Unbalance (kWh/1,000)	Capacitor (kWh/1,000)	New line (kWh/1,000)	Unbalance (mWh)	Capacitor (mWh)	New line (mWh)	Energy loss reduced (kWh/1,000)	Energy loss reduced (mWh)
2024	8,060.0	8,043.0	50,332.7	5,013	59,346	4,799	9,970.0	671	30,481.4	2,052	45,127	927	137,968	2,835
2025	6,226.1	6,209.0	45,870.5	4,569	49,439	4,373	8,973.0	604	30,481.4	2,052	40,614	835	137,968	2,835
2026	4,276.4	4,260.0	31,375.2	4,121	33,496	3,945	7,976.0	537	26,172.0	1,762	36,102	742	118,462	2,434
2027	2,203.6	2,190.0	16,677.0	2,168	18,509	3,517	6,979.0	470	24,781.5	1,668	31,589	649	112,169	2,305
2028	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2030	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2031	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2032	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2033	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Year	Unbalance (kWh/1,000)	Capacitor (kWh/1,000)	New line (kWh/1,000)	Unbalance (mWh)	Capacitor (mWh)	New line (mWh)	Unbalance (kWh/1,000)	Capacitor (kWh/1,000)	New line (kWh/1,000)	Unbalance (mWh)	Capacitor (mWh)	New line (mWh)	Energy loss reduced (kWh/1,000)	Energy loss reduced (mWh)
2024	8,060.0	8,043.0	50,332.7	5,013	59,346	4,799	9,970.0	671	30,481.4	2,052	45,127	927	137,968	2,835
2025	6,226.1	6,209.0	45,870.5	4,569	49,439	4,373	8,973.0	604	30,481.4	2,052	40,614	835	137,968	2,835
2026	4,276.4	4,260.0	31,375.2	4,121	33,496	3,945	7,976.0	537	26,172.0	1,762	36,102	742	118,462	2,434
2027	2,203.6	2,190.0	16,677.0	2,168	18,509	3,517	6,979.0	470	24,781.5	1,668	31,589	649	112,169	2,305
2028	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2030	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2031	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2032	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2033	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Year	Unbalance (kWh/1,000)	Capacitor (kWh/1,000)	New line (kWh/1,000)	Unbalance (mWh)	Capacitor (mWh)	New line (mWh)	Unbalance (kWh/1,000)	Capacitor (kWh/1,000)	New line (kWh/1,000)	Unbalance (mWh)	Capacitor (mWh)	New line (mWh)	Energy
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# Appendix 7.2-5 Calculation of Electricity Loss To Be Reduced (Alternative E)

Year in order	Year	Low voltage system (L.V.)						Medium voltage system (M.V.)						Total electricity loss reduced (JKs./1,000)
		Unbalance (kW) (JKs./1,000)	Capacitor (kW) (JKs./1,000)	New line (kW) (JKs./1,000)	Unbalance (mWh) (JKs./1,000)	Capacitor (mWh) (JKs./1,000)	New line (mWh) (JKs./1,000)	Unbalance (kW) (JKs./1,000)	Capacitor (kW) (JKs./1,000)	New line (kW) (JKs./1,000)	Unbalance (mWh) (JKs./1,000)	Capacitor (mWh) (JKs./1,000)	New line (mWh) (JKs./1,000)	
1	1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	2000	743.4	74	2,176.1	217	3,160	71	2,895	207	9,249	67	0.0	0	0
5	2001	1,651.8	165	4,668.4	465	7,021	157	5,789	445	19,843	134	1,825.5	123	8,263
6	2002	2,752.6	274	7,584.9	755	11,700	262	8,684	195	32,239	201	3,572.6	226	13,538
7	2003	4,077.4	406	11,002.9	1,096	17,331	389	11,578	260	46,767	268	6,072.4	409	18,051
8	2004	4,529.8	451	12,407.7	1,498	19,253	432	14,473	325	63,929	336	8,212.9	553	22,564
9	2005	5,032.3	501	13,866.0	1,965	21,389	480	17,367	390	83,837	403	12,104.2	815	27,076
10	2006	5,590.7	557	15,323.3	2,505	23,763	533	20,262	434	106,907	470	15,163.7	1,021	31,589
11	2007	6,210.9	619	16,848.0	3,127	26,399	592	23,156	519	133,430	537	20,540.4	1,383	36,102
12	2008	6,900.0	687	18,429.0	3,837	29,328	658	26,051	584	163,757	604	24,834.6	1,672	40,614
13	2009	7,335.6	731	19,910.0	4,447	31,179	699	28,945	649	189,755	671	30,227.4	2,035	45,127
14	2010	7,682.9	765	20,410.0	4,694	32,655	732	28,945	649	200,295	671	32,188.9	2,167	45,127
15	2011	7,929.1	790	20,910.0	4,923	33,702	766	28,945	649	210,074	671	33,865.2	2,280	45,127
16	2012	8,060.0	803	21,410.0	5,132	34,258	768	28,945	649	219,017	671	35,457.7	2,387	45,127
17	2013	8,060.0	803	21,410.0	5,320	34,258	768	28,945	649	227,029	671	36,925.8	2,486	45,127
18	2014	8,060.0	803	21,410.0	5,483	34,258	768	28,945	649	233,983	671	38,295.1	2,578	45,127
19	2015	8,060.0	803	21,410.0	5,619	34,258	768	28,945	649	239,775	671	39,378.2	2,651	45,127
20	2016	8,060.0	803	21,410.0	5,724	34,258	768	28,945	649	244,286	671	40,324.5	2,715	45,127
21	2017	8,060.0	803	21,410.0	5,797	34,258	768	28,945	649	247,403	671	40,907.7	2,754	45,127
22	2018	8,060.0	803	21,410.0	5,835	34,258	768	28,945	649	249,016	671	41,306.9	2,781	45,127
2024	2024	8,060.0	803	21,410.0	5,835	34,258	768	28,945	649	249,016	671	41,306.9	2,781	45,127
2025	2025	8,060.0	803	21,410.0	5,835	34,258	768	28,945	649	249,016	671	41,306.9	2,781	45,127
2026	2026	8,060.0	803	21,410.0	5,835	34,258	768	28,945	649	249,016	671	41,306.9	2,781	45,127
2027	2027	8,060.0	803	21,410.0	5,835	34,258	768	28,945	649	249,016	671	41,306.9	2,781	45,127
2028	2028	8,060.0	803	21,410.0	5,835	34,258	768	28,945	649	249,016	671	41,306.9	2,781	45,127
2029	2029	8,060.0	803	21,410.0	5,835	34,258	768	28,945	649	249,016	671	41,306.9	2,781	45,127
2030	2030	8,060.0	803	21,410.0	5,835	34,258	768	28,945	649	249,016	671	41,306.9	2,781	45,127
2031	2031	8,060.0	803	21,410.0	5,835	34,258	768	28,945	649	249,016	671	41,306.9	2,781	45,127
2032	2032	8,060.0	803	21,410.0	5,835	34,258	768	28,945	649	249,016	671	41,306.9	2,781	45,127
2033	2033	8,060.0	803	21,410.0	5,835	34,258	768	28,945	649	249,016	671	41,306.9	2,781	45,127

Marginal capacity cost (JKs./kWh/year): 99.6  
 Marginal energy cost (JKs./kWh): 0.02244  
 mWh coefficient: 4.2504  
 Marginal energy cost (JKs./kWh/year): 67.32  
 mWh coefficient: 4.5263  
 Marginal energy cost (JKs./kWh): 0.02055

Appendix 7.3-1 Calculation of Economic Internal Rate of Return (Alternative A)

Year in order	Year	Cost (1,000JDs)			Total	Benefit in total (JDs.1,000)	Negative benefit(sunk C) (JDs.1,000)	Net benefit (JDs.1,000)	Cash balance (JDs.1,000)
		Construction cost		O/M cost					
		F/C	L/C						
1	1997	90	52	0	142	0	0	0	-142
2	1998	90	52	0	142	0	0	0	-142
3	1999	1,184	815	50	2,049	0	0	0	-2,049
4	2000	1,184	815	100	2,099	648	194	454	-1,645
5	2001	1,184	815	150	2,149	1,367	410	957	-1,192
6	2002	1,184	815	200	2,199	2,171	651	1,520	-679
7	2003	1,184	815	250	2,249	3,065	920	2,146	-103
8	2004	1,184	815	300	2,299	3,854	1,156	2,698	399
9	2005	1,184	815	350	2,349	4,723	1,417	3,306	957
10	2006	1,184	815	400	2,399	5,681	1,704	3,977	1,578
11	2007	1,184	815	450	2,449	6,751	2,025	4,726	2,277
12	2008	1,184	815	500	2,499	8,001	2,400	5,601	3,102
13	2009			500	500	9,008	2,702	6,306	5,806
14	2010			500	500	9,336	2,801	6,535	6,035
15	2011			500	500	9,628	2,888	6,740	6,240
16	2012			500	500	9,878	2,963	6,915	6,415
17	2013			500	500	10,080	3,024	7,056	6,556
18	2014			500	500	10,259	3,078	7,181	6,681
19	2015			500	500	10,409	3,123	7,286	6,786
20	2016			500	500	10,529	3,159	7,370	6,870
21	2017			500	500	10,614	3,184	7,430	6,930
22	2018			500	500	10,653	3,196	7,457	6,957
23	2019			500	500	10,653	3,196	7,457	6,957
24	2020			500	500	10,653	3,196	7,457	6,957
25	2021			500	500	10,653	3,196	7,457	6,957
26	2022			500	500	10,653	3,196	7,457	6,957
27	2023			500	500	10,653	3,196	7,457	6,957
28	2024			500	500	10,653	3,196	7,457	6,957
29	2025			450	450	9,484	2,845	6,639	6,189
30	2026			400	400	8,284	2,485	5,799	5,399
31	2027			350	350	7,026	2,108	4,918	4,568
32	2028			300	300	5,742	1,723	4,019	3,719
33	2029			250	250	4,859	1,458	3,401	3,151
34	2030			200	200	3,950	1,185	2,765	2,565
35	2031			150	150	3,019	906	2,113	1,963
36	2032			100	100	2,049	615	1,434	1,334
37	2033			50	50	944	283	661	611
<b>Total</b>		<b>12,020</b>	<b>8,254</b>	<b>12,999</b>	<b>33,273</b>	<b>245,930</b>			<b>138,878</b>

In the condition of discount rate at 12 %:

Present value:	11,235	31,985	22,390	11,155
Internal rate of return (EIRR):				24.91%
B/C				1.99

Appendix 7.3-2 Calculation of Economic Internal Rate of Return (Alternative B)

Year in order	Year	Cost (1,000JDs.)			Total	Benefit in total (JDs.1,000)	Negative benefit(sunk C) (JDs.1,000)	Net benefit (JDs.1,000)	Cash balance (JDs.1,000)
		Construction cost		O/M cost					
		F/C	L/C						
1	1997	126	73	0	199	0	0	0	-199
2	1998	126	73	0	199	0	0	0	-199
3	1999	1,692	1,164	71	2,927	0	0	0	-2,927
4	2000	1,978	1,361	155	3,494	683	205	478	-3,016
5	2001	1,937	1,333	237	3,507	1,551	465	1,086	-2,421
6	2002	1,953	1,344	319	3,616	2,519	756	1,763	-1,853
7	2003	1,950	1,342	401	3,693	3,606	1,082	2,524	-1,169
8	2004	1,647	1,133	471	3,251	4,641	1,392	3,249	-2
9	2005	1,654	1,138	541	3,333	5,778	1,733	4,045	712
10	2006	1,653	1,137	610	3,400	6,912	2,074	4,838	1,438
11	2007	1,651	1,136	680	3,467	8,354	2,506	5,848	2,381
12	2008	1,651	1,136	750	3,537	9,784	2,935	6,849	3,312
13	2009			750	750	11,222	3,367	7,855	7,105
14	2010			750	750	11,685	3,506	8,180	7,430
15	2011			750	750	12,098	3,629	8,469	7,719
16	2012			750	750	12,456	3,737	8,719	7,969
17	2013			750	750	12,753	3,826	8,927	8,177
18	2014			750	750	13,007	3,902	9,105	8,355
19	2015			750	750	13,215	3,965	9,251	8,501
20	2016			750	750	13,390	4,017	9,373	8,623
21	2017			750	750	13,505	4,052	9,454	8,704
22	2018			750	750	13,577	4,073	9,504	8,754
23	2019			750	750	13,577	4,073	9,504	8,754
24	2020			750	750	13,577	4,073	9,504	8,754
25	2021			750	750	13,577	4,073	9,504	8,754
26	2022			750	750	13,577	4,073	9,504	8,754
27	2023			750	750	13,577	4,073	9,504	8,754
28	2024			750	750	13,577	4,073	9,504	8,754
29	2025			675	675	12,320	3,696	8,624	7,949
30	2026			600	600	10,780	3,234	7,546	6,946
31	2027			525	525	9,196	2,759	6,437	5,912
32	2028			450	450	7,581	2,274	5,307	4,857
33	2029			375	375	6,310	1,893	4,417	4,042
34	2030			300	300	5,045	1,514	3,532	3,232
35	2031			225	225	4,003	1,201	2,802	2,577
36	2032			150	150	2,605	782	1,824	1,674
37	2033			75	75	1,496	449	1,047	972
<b>Total</b>		<b>18,018</b>	<b>12,370</b>	<b>19,610</b>	<b>49,998</b>	<b>311,534</b>			<b>168,076</b>
In the condition of discount rate at 12 %:									
Present value:					17,086	39,675		27,772	10,687
Internal rate of return (EIRR):									20.08%
B/C									1.63

Appendix 7.3-3 Calculation of Economic Internal Rate of Return (Alternative C)

Year in order	Year	Cost (1,000JDs.)			Total	Benefit in total (JDs. 1,000)	Negative benefit(sunk C) (JDs. 1,000)	Net benefit (JDs. 1,000)	Cash balance (JDs. 1,000)
		Construction cost		O/M cost					
		F/C	L/C						
1	1997	180	105	0	285	0	0	0	-285
2	1998	180	105	0	285	0	0	0	-285
3	1999	2,470	1,700	104	4,274	0	0	0	-4,274
4	2000	2,471	1,700	209	4,380	724	217	507	-3,873
5	2001	2,448	1,685	312	4,445	1,825	548	1,278	-3,167
6	2002	2,447	1,684	415	4,546	2,756	827	1,929	-2,617
7	2003	2,375	1,634	515	4,524	4,159	1,248	2,911	-1,613
8	2004	2,374	1,634	616	4,624	5,158	1,547	3,611	-1,013
9	2005	2,295	1,579	712	4,586	6,668	2,000	4,668	81
10	2006	2,296	1,580	809	4,685	7,964	2,389	5,575	890
11	2007	2,256	1,552	905	4,713	9,834	2,950	6,884	2,171
12	2008	2,256	1,552	1,000	4,808	11,492	3,448	8,044	3,237
13	2009			1,000	1,000	13,374	4,012	9,362	8,362
14	2010			1,000	1,000	13,967	4,190	9,777	8,777
15	2011			1,000	1,000	14,483	4,345	10,138	9,138
16	2012			1,000	1,000	14,961	4,488	10,473	9,473
17	2013			1,000	1,000	15,346	4,604	10,742	9,742
18	2014			1,000	1,000	15,706	4,712	10,994	9,994
19	2015			1,000	1,000	15,987	4,796	11,191	10,191
20	2016			1,000	1,000	16,232	4,870	11,362	10,362
21	2017			1,000	1,000	16,387	4,916	11,471	10,471
22	2018			1,000	1,000	16,493	4,948	11,545	10,545
23	2019			1,000	1,000	16,493	4,948	11,545	10,545
24	2020			1,000	1,000	16,493	4,948	11,545	10,545
25	2021			1,000	1,000	16,493	4,948	11,545	10,545
26	2022			1,000	1,000	16,493	4,948	11,545	10,545
27	2023			1,000	1,000	16,493	4,948	11,545	10,545
28	2024			1,000	1,000	16,493	4,948	11,545	10,545
29	2025			900	900	15,137	4,541	10,596	9,696
30	2026			800	800	13,056	3,917	9,139	8,339
31	2027			700	700	11,625	3,488	8,138	7,438
32	2028			600	600	9,292	2,788	6,504	5,904
33	2029			500	500	8,157	2,447	5,710	5,210
34	2030			400	400	6,253	1,876	4,377	3,977
35	2031			300	300	5,118	1,535	3,583	3,283
36	2032			200	200	3,214	964	2,250	2,050
37	2033			100	100	2,080	624	1,456	1,356
<b>Total</b>		<b>24,048</b>	<b>16,510</b>	<b>26,097</b>	<b>66,655</b>	<b>376,406</b>			<b>196,830</b>

In the condition of discount rate at 12 %:

Present value:	22,716	47,016	32,911	10,195
Internal rate of return (EIRR):				17.80%
B/C				1.15

Appendix 7.3-4 Calculation of Economic Internal Rate of Return (Alternative D)

Year in order	Year	Cost (1,000JDs)			Total	Benefit in total (JDs,1,000)	Negative benefit(sunk C) (JDs,1,000)	Net benefit (JDs,1,000)	Cash balance (JDs,1,000)
		Construction cost		O/M cost					
		F/C	L/C						
1	1997	225	131	0	356	0	0	0	-356
2	1998	225	131	0	356	0	0	0	-356
3	1999	2,837	1,952	120	4,909	0	0	0	-4,909
4	2000	3,102	2,135	251	5,488	790	237	553	-4,935
5	2001	3,079	2,119	381	5,579	1,963	589	1,374	-4,205
6	2002	3,067	2,110	510	5,687	3,078	923	2,155	-3,532
7	2003	2,953	2,032	635	5,620	4,586	1,376	3,210	-2,409
8	2004	2,924	2,012	758	5,694	5,836	1,751	4,085	-1,609
9	2005	3,005	2,068	885	5,958	7,485	2,246	5,240	-718
10	2006	2,975	2,047	1,010	6,032	9,081	2,724	6,357	324
11	2007	2,929	2,016	1,134	6,079	11,232	3,370	7,862	1,783
12	2008	2,736	1,883	1,250	5,869	13,271	3,981	9,290	3,421
13	2009			1,250	1,250	15,401	4,620	10,781	9,531
14	2010			1,250	1,250	16,111	4,833	11,278	10,028
15	2011			1,250	1,250	16,744	5,023	11,721	10,471
16	2012			1,250	1,250	17,320	5,196	12,124	10,874
17	2013			1,250	1,250	17,800	5,340	12,460	11,210
18	2014			1,250	1,250	18,235	5,471	12,765	11,515
19	2015			1,250	1,250	18,589	5,577	13,012	11,762
20	2016			1,250	1,250	18,885	5,666	13,220	11,970
21	2017			1,250	1,250	19,076	5,723	13,353	12,103
22	2018			1,250	1,250	19,196	5,759	13,437	12,187
23	2019			1,250	1,250	19,196	5,759	13,437	12,187
24	2020			1,250	1,250	19,196	5,759	13,437	12,187
25	2021			1,250	1,250	19,196	5,759	13,437	12,187
26	2022			1,250	1,250	19,196	5,759	13,437	12,187
27	2023			1,250	1,250	19,196	5,759	13,437	12,187
28	2024			1,250	1,250	19,196	5,759	13,437	12,187
29	2025			1,125	1,125	17,676	5,303	12,373	11,248
30	2026			1,000	1,000	15,444	4,633	10,811	9,811
31	2027			875	875	13,630	4,089	9,541	8,666
32	2028			750	750	11,238	3,371	7,867	7,117
33	2029			625	625	9,750	2,925	6,825	6,200
34	2030			500	500	7,732	2,320	5,412	4,912
35	2031			375	375	6,175	1,853	4,323	3,948
36	2032			250	250	3,927	1,178	2,749	2,499
37	2033			125	125	2,316	695	1,621	1,496
<b>Total</b>		<b>30,057</b>	<b>20,636</b>	<b>32,558</b>	<b>83,251</b>	<b>437,743</b>			<b>223,170</b>
In the condition of discount rate at 12 %:									
Present value:					28,214	54,025		37,818	9,604
Internal rate of return (EIRR):									16.45%
B/C									1.34



Appendix 7.3-5 Calculation of Economic Internal Rate of Return (Alternative E)

Year in order	Year	Cost (1,000JDs.)			Total	Benefit in total (JDs. 1,000)	Negative benefit(sunk C) (JDs. 1,000)	Net benefit (JDs. 1,000)	Cash balance (JDs. 1,000)
		Construction cost		O/M cost					
		F/C	L/C						
1	1997	297	173	0	470	0	0	0	-470
2	1998	297	173	0	470	0	0	0	-470
3	1999	3,255	2,240	137	5,632	0	0	0	-5,632
4	2000	3,823	2,631	299	6,753	862	259	603	-6,149
5	2001	3,881	2,670	463	7,014	2,110	633	1,477	-5,537
6	2002	3,856	2,653	625	7,134	3,431	1,029	2,402	-4,733
7	2003	3,906	2,689	790	7,385	5,084	1,525	3,559	-3,826
8	2004	3,887	2,675	954	7,516	6,595	1,979	4,617	-2,900
9	2005	3,918	2,696	1,120	7,734	8,522	2,557	5,965	-1,768
10	2006	3,925	2,701	1,285	7,911	10,471	3,141	7,330	-581
11	2007	3,946	2,716	1,452	8,114	12,964	3,889	9,075	961
12	2008	3,421	2,354	1,596	7,371	15,471	4,641	10,830	3,459
13	2009			1,596	1,596	17,905	5,372	12,534	10,938
14	2010			1,596	1,596	18,771	5,631	13,140	11,544
15	2011			1,596	1,596	19,536	5,861	13,675	12,079
16	2012			1,596	1,596	20,227	6,068	14,159	12,563
17	2013			1,596	1,596	20,830	6,249	14,581	12,985
18	2014			1,596	1,596	21,368	6,410	14,958	13,362
19	2015			1,596	1,596	21,808	6,542	15,266	13,670
20	2016			1,596	1,596	22,166	6,650	15,516	13,920
21	2017			1,596	1,596	22,403	6,721	15,682	14,086
22	2018			1,596	1,596	22,541	6,762	15,779	14,183
23	2019			1,596	1,596	22,541	6,762	15,779	14,183
24	2020			1,596	1,596	22,541	6,762	15,779	14,183
25	2021			1,596	1,596	22,541	6,762	15,779	14,183
26	2022			1,596	1,596	22,541	6,762	15,779	14,183
27	2023			1,596	1,596	22,541	6,762	15,779	14,183
28	2024			1,596	1,596	22,541	6,762	15,779	14,183
29	2025			1,436	1,436	20,844	6,253	14,591	13,154
30	2026			1,277	1,277	18,453	5,536	12,917	11,640
31	2027			1,117	1,117	16,210	4,863	11,347	10,230
32	2028			958	958	13,618	4,085	9,533	8,575
33	2029			798	798	11,703	3,511	8,192	7,394
34	2030			638	638	9,301	2,790	6,511	5,872
35	2031			479	479	7,291	2,187	5,104	4,625
36	2032			319	319	4,705	1,412	3,294	2,974
37	2033			160	160	2,617	785	1,832	1,672
<b>Total</b>		<b>38,412</b>	<b>26,371</b>	<b>41,439</b>	<b>106,222</b>	<b>513,053</b>			<b>252,916</b>
In the condition of discount rate at 12 %:									
Present value:					35,687	62,613		43,829	8,142
Internal rate of return (EIRR):									15.04%
B/C									1.23

Appendix 7.4 Estimation of Average Unit Expenses in Jordan

Items	Annual situation									
	1991		1992		1993		1994		1995	
	Total (JDs.1,000)	Unit R. (Fils/kWh)	Total (JDs.1,000)	Unit R. (Fils/kWh)	Total (JDs.1,000)	Unit R. (Fils/kWh)	Total (JDs.1,000)	Unit R. (Fils/kWh)	Total (JDs.1,000)	Unit R. (Fils/kWh)
NEPCO	62,003	20.66	71,339	19.80	84,191	21.23	97,962	29.22	108,918	23.25
Electricity sold(gWh)	3,002	-	3,613	-	3,966	-	3,352	-	4,685	-
IDECO	12,654	33.92	13,937	33.58	16,925	36.79	19,739	38.18	21,972	38.15
Electricity sold(gWh)	373	-	415	-	460	-	517	-	576	-
JEPKO	47,102	31.40	52,459	30.25	64,994	33.59	77,679	35.47	84,259	35.37
Electricity sold(gWh)	1,500	-	1,754	-	1,935	-	2,190	-	2,382	-
Total/weighted average (Fils/kWh)										
Total operation cost	121,759	24.98	137,935	23.94	166,110	26.11	195,380	32.24	215,149	28.15
Electricity sold(gWh)	4,875	-	5,762	-	6,361	-	6,059	-	7,643	-

Resources: 1. Cost of Production, NEPCO.

2. Some Financial Indicators for JEPKO, JEPKO.

3. IDECO Cost of Production, IDECO.

Total operation cost includes expenses on operation, maintenance and administration.

(Note)

Appendix 7.5-1 Calculation of Financial Internal Rate of Return (Alternative A)

Average unit electricity cost to be reduced (Fils/kWh):

29.00

Year in order	Year	Cost (1,000)JDs.)			Financial Benefit						Probable financial revenue (JDs.1,000)	Negative benefit (sunk cost) (JDs.1,000)	Net benefit (JDs.1,000)	Cash balance (JDs.1,000)	
		Construction cost	O/M cost	Total	Electricity to be reduced (mWh)										
					LV system			MV system							
		F/C	L/C	Un-balance	Capa-citor	New line	Capa-citor	New line	Total						
1	1997	105	53	0	158						0	0	0	0	-158
2	1998	105	53	0	158						0	0	0	0	-158
3	1999	1,199	901	53	2,153						0	0	0	0	-2,153
4	2000	1,199	901	105	2,205	3,160	2,895	4,581	4,513		15,149	439	132	308	-1,897
5	2001	1,199	901	158	2,258	7,021	5,789	10,034	9,025	0	31,869	924	277	647	-1,611
6	2002	1,199	901	210	2,310	11,700	8,684	16,490	13,538	0	50,412	1,462	439	1,023	-1,287
7	2003	1,199	901	263	2,363	17,331	11,578	23,981	18,051	0	70,941	2,057	617	1,440	-922
8	2004	1,199	901	315	2,415	19,253	14,473	32,872	22,564	0	89,162	2,586	776	1,810	-605
9	2005	1,199	901	368	2,468	21,389	17,367	43,304	27,076	0	109,136	3,165	949	2,215	-252
10	2006	1,199	901	420	2,520	23,763	20,262	55,452	31,589	0	131,066	3,801	1,140	2,661	141
11	2007	1,199	901	473	2,573	26,399	23,156	69,758	36,102	0	155,415	4,507	1,352	3,155	582
12	2008	1,199	901	525	2,625	29,328	26,051	87,709	40,614	0	183,702	5,327	1,598	3,729	1,104
13	2009			525	525	31,179	28,945	101,427	45,127	0	206,678	5,994	1,798	4,196	3,671
14	2010			525	525	32,655	28,945	107,118	45,127	0	213,845	6,202	1,860	4,341	3,816
15	2011			525	525	33,702	28,945	112,430	45,127	0	220,204	6,386	1,916	4,470	3,945
16	2012			525	525	34,258	28,945	117,316	45,127	0	225,646	6,544	1,963	4,581	4,056
17	2013			525	525	34,258	28,945	121,737	45,127	0	230,067	6,672	2,002	4,670	4,145
18	2014			525	525	34,258	28,945	125,624	45,127	0	233,954	6,785	2,035	4,749	4,224
19	2015			525	525	34,258	28,945	128,908	45,127	0	237,238	6,880	2,064	4,816	4,291
20	2016			525	525	34,258	28,945	131,521	45,127	0	239,851	6,956	2,087	4,869	4,344
21	2017			525	525	34,258	28,945	133,367	45,127	0	241,697	7,009	2,103	4,906	4,381
22	2018			525	525	34,258	28,945	134,209	45,127	0	242,539	7,034	2,110	4,924	4,399
23	2019			525	525	34,258	28,945	134,209	45,127	0	242,539	7,034	2,110	4,924	4,399
24	2020			525	525	34,258	28,945	134,209	45,127	0	242,539	7,034	2,110	4,924	4,399
25	2021			525	525	34,258	28,945	134,209	45,127	0	242,539	7,034	2,110	4,924	4,399
26	2022			525	525	34,258	28,945	134,209	45,127	0	242,539	7,034	2,110	4,924	4,399
27	2023			525	525	34,258	28,945	134,209	45,127	0	242,539	7,034	2,110	4,924	4,399
28	2024			525	525	34,258	28,945	134,209	45,127	0	242,539	7,034	2,110	4,924	4,399
29	2025			473	473	26,463	26,051	122,910	40,614	0	216,038	6,265	1,880	4,386	3,913
30	2026			420	420	18,176	23,326	111,235	36,102	0	188,839	5,476	1,643	3,833	3,413
31	2027			368	368	9,366	20,262	99,166	31,589	0	160,383	4,651	1,395	3,256	2,888
32	2028			315	315	0	17,367	86,928	27,076	0	131,371	3,810	1,143	2,667	2,352
33	2029			263	263	0	14,473	74,039	22,564	0	111,076	3,221	966	2,255	1,992
34	2030			210	210	0	11,578	60,607	18,051	0	90,236	2,617	785	1,832	1,622
35	2031			158	158	0	8,684	46,693	13,538	0	68,915	1,999	600	1,399	1,241
36	2032			105	105	0	5,789	31,912	9,025	0	46,726	1,355	407	949	844
37	2033			53	53	0	2,895	14,194	451	0	17,540	509	153	356	304
Total		12,200	9,116	13,650	34,966						162,835				79,019

In the condition of discount rate at 12 %:

Present value:	11,817	21,275	14,893	3,075
Internal rate of return (FIRR):				15.73%
B/C				1.26

Appendix 7.5-2 Calculation of Financial Internal Rate of Return (Alternative B)

		Average unit electricity cost to be reduced (Fils/kWh):											29.00		
Year in order	Year	Cost (1,000JDs)			Total	Financial Benefit					Probable financial revenue (JDs 1,000)	Negative benefit (sunk cost) (JDs 1,000)	Net benefit (JDs 1,000)	Cash balance (JDs 1,000)	
		Construction cost	O/M cost	F/C		L/C	Electricity to be reduced (mWh)								
							LV system		MV system						
		Un-balance	Capacitor	New line		Capacitor	New line	Total							
1	1997	147	74	0	221						0	0	0	0	-221
2	1998	147	74	0	221						0	0	0	0	-221
3	1999	1,713	1,287	75	3,075						0	0	0	0	-3,075
4	2000	2,003	1,504	163	3,670	3,160	2,895	5,363	4,513		15,931	462	139	323	-3,346
5	2001	1,962	1,473	249	3,684	7,021	5,789	11,739	9,025	2,984	36,558	1,060	318	742	-2,941
6	2002	1,978	1,485	335	3,798	11,700	8,684	19,178	13,538	6,352	59,452	1,724	517	1,207	-2,591
7	2003	1,974	1,483	422	3,879	17,331	11,578	27,890	18,051	10,192	85,042	2,466	740	1,726	-2,152
8	2004	1,668	1,252	495	3,415	19,253	14,473	38,218	22,564	15,318	109,826	3,185	955	2,229	-1,185
9	2005	1,674	1,257	568	3,499	21,389	17,367	50,218	27,076	20,838	136,888	3,970	1,191	2,779	-720
10	2006	1,674	1,257	641	3,572	23,763	20,262	64,411	31,589	23,149	163,174	4,732	1,420	3,312	-260
11	2007	1,671	1,255	714	3,640	26,399	23,156	81,119	36,102	30,550	197,326	5,722	1,717	4,006	365
12	2008	1,672	1,256	787	3,715	29,328	26,051	100,374	40,614	33,940	230,307	6,679	2,004	4,675	960
13	2009			787	787	31,179	28,945	117,473	45,127	41,734	264,458	7,669	2,301	5,368	4,581
14	2010			787	787	32,655	28,945	124,055	45,127	44,369	275,151	7,979	2,394	5,586	4,799
15	2011			787	787	33,702	28,945	130,190	45,127	46,726	284,690	8,256	2,477	5,779	4,992
16	2012			787	787	34,258	28,945	135,837	45,127	48,798	292,965	8,496	2,549	5,947	5,160
17	2013			787	787	34,258	28,945	140,942	45,127	50,572	299,844	8,695	2,609	6,087	5,300
18	2014			787	787	34,258	28,945	145,425	45,127	51,937	305,692	8,865	2,660	6,206	5,419
19	2015			787	787	34,258	28,945	149,221	45,127	52,911	310,462	9,003	2,701	6,302	5,515
20	2016			787	787	34,258	28,945	152,226	45,127	53,947	314,503	9,121	2,736	6,384	5,597
21	2017			787	787	34,258	28,945	154,325	45,127	54,494	317,149	9,197	2,759	6,438	5,651
22	2018			787	787	34,258	28,945	155,434	45,127	55,077	318,841	9,246	2,774	6,472	5,685
23	2019			787	787	34,258	28,945	155,434	45,127	55,077	318,841	9,246	2,774	6,472	5,685
24	2020			787	787	34,258	28,945	155,434	45,127	55,077	318,841	9,246	2,774	6,472	5,685
25	2021			787	787	34,258	28,945	155,434	45,127	55,077	318,841	9,246	2,774	6,472	5,685
26	2022			787	787	34,258	28,945	155,434	45,127	55,077	318,841	9,246	2,774	6,472	5,685
27	2023			787	787	34,258	28,945	155,434	45,127	55,077	318,841	9,246	2,774	6,472	5,685
28	2024			787	787	34,258	28,945	155,434	45,127	55,077	318,841	9,246	2,774	6,472	5,685
29	2025			708	708	26,463	26,051	142,205	40,614	55,077	290,410	8,422	2,527	5,895	5,187
30	2026			630	630	18,176	23,326	128,557	36,102	48,033	254,194	7,372	2,211	5,160	4,531
31	2027			551	551	9,366	20,262	114,694	31,589	41,173	217,084	6,295	1,889	4,407	3,856
32	2028			472	472	0	17,367	100,461	27,076	34,381	179,285	5,199	1,560	3,639	3,167
33	2029			394	394	0	14,473	85,497	22,564	26,130	148,664	4,311	1,293	3,018	2,624
34	2030			315	315	0	11,578	70,134	18,051	18,567	118,330	3,432	1,029	2,402	2,087
35	2031			236	236	0	8,684	53,802	13,538	18,567	94,591	2,743	823	1,920	1,684
36	2032			157	157	0	5,789	36,464	9,025	9,806	61,084	1,771	531	1,240	1,083
37	2033			79	79	0	2,895	18,673	451	9,806	31,825	923	277	646	567
Total		18,283	13,657	20,582	52,522						212,474				96,210

In the condition of discount rate at 12 %:

Present value:	17,964	27,095	18,966	1,002
Internal rate of return (FIRR):				12.80%
B/C				1.06

Appendix 7.5-3 Calculation of Financial Internal Rate of Return (Alternative C)

		Average unit electricity cost to be reduced (Fils/kWh):											29.00		
Year in order	Year	Cost (1,000JDs.)				Financial Benefit						Probable financial revenue (JDs.1,000)	Negative benefit (sunk cost) (JDs.1,000)	Net benefit (JDs.1,000)	Cash balance (JDs.1,000)
		Construction cost		O/M cost	Total	Electricity to be reduced (mWh)					Total				
		F/C	L/C			LV system		MV system							
				Un-balance	Capacitor	New line	Capacitor	New line	Total						
1	1997	210	105	0	315						0	0	0	0	-315
2	1998	210	105	0	315						0	0	0	0	-315
3	1999	2,501	1,878	109	4,488						0	0	0	0	-4,488
4	2000	2,502	1,879	219	4,600	3,160	2,895	6,246	4,513		16,814	488	146	341	-4,259
5	2001	2,479	1,862	328	4,669	7,021	5,789	13,634	9,025	8,263	43,732	1,268	380	888	-3,781
6	2002	2,478	1,861	436	4,775	11,700	8,684	22,159	13,538	9,180	65,261	1,893	568	1,325	-3,450
7	2003	2,405	1,806	541	4,752	17,331	11,578	32,306	18,051	20,102	99,368	2,882	865	2,017	-2,735
8	2004	2,404	1,805	647	4,856	19,253	14,473	44,070	22,564	22,333	122,693	3,558	1,067	2,491	-2,365
9	2005	2,324	1,745	748	4,817	21,389	17,367	58,022	27,076	35,851	159,705	4,631	1,389	3,242	-1,575
10	2006	2,325	1,746	850	4,921	23,763	20,262	74,457	31,589	39,828	189,899	5,507	1,652	3,855	-1,066
11	2007	2,284	1,715	950	4,949	26,399	23,156	93,499	36,102	56,295	235,451	6,828	2,048	4,780	-169
12	2008	2,284	1,715	1,050	5,049	29,328	26,051	115,528	40,614	62,540	274,061	7,948	2,384	5,563	514
13	2009			1,050	1,050	31,179	28,945	135,019	45,127	79,772	320,042	9,281	2,784	6,497	5,447
14	2010			1,050	1,050	32,655	28,945	142,570	45,127	84,808	334,105	9,689	2,907	6,782	5,732
15	2011			1,050	1,050	33,702	28,945	149,601	45,127	88,931	346,306	10,043	3,013	7,030	5,980
16	2012			1,050	1,050	34,258	28,945	156,075	45,127	93,314	357,719	10,374	3,112	7,262	6,212
17	2013			1,050	1,050	34,258	28,945	161,908	45,127	96,622	366,860	10,639	3,192	7,447	6,397
18	2014			1,050	1,050	34,258	28,945	167,042	45,127	100,139	375,511	10,890	3,267	7,623	6,573
19	2015			1,050	1,050	34,258	28,945	171,367	45,127	102,498	382,195	11,084	3,325	7,759	6,709
20	2016			1,050	1,050	34,258	28,945	174,769	45,127	105,006	388,105	11,255	3,377	7,879	6,829
21	2017			1,050	1,050	34,258	28,945	177,152	45,127	106,293	391,775	11,361	3,408	7,953	6,903
22	2018			1,050	1,050	34,258	28,945	178,409	45,127	107,662	394,401	11,438	3,431	8,006	6,956
23	2019			1,050	1,050	34,258	28,945	178,409	45,127	107,662	394,401	11,438	3,431	8,007	6,957
24	2020			1,050	1,050	34,258	28,945	178,409	45,127	107,662	394,401	11,438	3,431	8,007	6,957
25	2021			1,050	1,050	34,258	28,945	178,409	45,127	107,662	394,401	11,438	3,431	8,007	6,957
26	2022			1,050	1,050	34,258	28,945	178,409	45,127	107,662	394,401	11,438	3,431	8,007	6,957
27	2023			1,050	1,050	34,258	28,945	178,409	45,127	107,662	394,401	11,438	3,431	8,007	6,957
28	2024			1,050	1,050	34,258	28,945	178,409	45,127	107,662	394,401	11,438	3,431	8,007	6,957
29	2025			945	945	26,463	26,051	163,002	40,614	107,662	363,792	10,550	3,165	7,385	6,440
30	2026			840	840	18,176	23,326	147,196	36,102	88,156	312,956	9,076	2,723	6,353	5,513
31	2027			735	735	9,366	20,262	131,354	31,589	88,156	280,727	8,141	2,442	5,699	4,964
32	2028			630	630	0	17,367	112,989	27,076	66,453	223,885	6,493	1,948	4,545	3,915
33	2029			525	525	0	14,473	94,624	22,564	66,453	198,114	5,745	1,724	4,022	3,497
34	2030			420	420	0	11,578	76,258	18,051	44,749	150,636	4,368	1,311	3,058	2,638
35	2031			315	315	0	8,684	57,893	13,538	44,749	124,864	3,621	1,086	2,535	2,220
36	2032			210	210	0	5,789	39,527	9,025	23,046	77,387	2,244	673	1,571	1,361
37	2033			105	105	0	2,895	21,162	451	23,046	47,554	1,379	414	965	860
Total		24,406	18,222	27,403	70,031							261,302			112,880

In the condition of discount rate at 12%:

Present value:	23,884	32,583	22,808	-1,075
Internal rate of return (FIRR):				11.36%
B/C				0.95

Appendix 7.5-4 Calculation of Financial Internal Rate of Return (Alternative D)

Year in order	Year	Cost (1,000 JDs.)		O/M cost	Total	Average unit electricity cost to be reduced (Fils/kWh):					Financial Benefit		Probable financial revenue (JDs. 1,000)	Negative benefit (sunk cost) (JDs. 1,000)	Net benefit (JDs. 1,000)	Cash balance (JDs. 1,000)
		29.00														
		Electricity to be reduced (mWh)														
		LV system				MV system										
F/C	L/C	Un-balance	Capa-citor	New line	Capa-citor	New line	Total									
1	1997	263	131	0	394						0	0	0	0	-394	
2	1998	263	131	0	394						0	0	0	0	-394	
3	1999	2,873	2,158	126	5,157						0	0	0	0	-5,157	
4	2000	3,142	2,359	263	5,764	3,160	2,895	7,689	4,513		18,257	529	159	371	-5,394	
5	2001	3,118	2,342	400	5,860	7,021	5,789	16,636	9,025	8,263	46,734	1,355	407	949	-4,911	
6	2002	3,106	2,332	536	5,974	11,700	8,684	27,039	13,538	11,966	72,927	2,115	634	1,480	-4,493	
7	2003	2,991	2,246	667	5,904	17,331	11,578	39,234	18,051	23,198	109,392	3,172	952	2,221	-3,683	
8	2004	2,961	2,223	796	5,980	19,253	14,473	53,657	22,564	29,038	138,985	4,031	1,209	2,821	-3,159	
9	2005	3,043	2,285	929	6,257	21,389	17,367	70,607	27,076	42,632	179,071	5,193	1,558	3,635	-2,622	
10	2006	3,013	2,262	1,061	6,336	23,763	20,262	90,287	31,589	50,864	216,765	6,286	1,886	4,400	-1,936	
11	2007	2,967	2,228	1,191	6,386	26,399	23,156	113,111	36,102	70,372	269,140	7,805	2,342	5,464	-923	
12	2008	2,771	2,081	1,313	6,165	29,328	26,051	139,421	40,614	81,820	317,234	9,200	2,760	6,440	275	
13	2009			1,313	1,313	31,179	28,945	162,350	45,127	101,612	369,213	10,707	3,212	7,495	6,182	
14	2010			1,313	1,313	32,655	28,945	171,402	45,127	108,028	386,157	11,199	3,360	7,839	6,526	
15	2011			1,313	1,313	33,702	28,945	179,821	45,127	113,616	401,211	11,635	3,491	8,145	6,832	
16	2012			1,313	1,313	34,258	28,945	187,549	45,127	119,160	415,039	12,036	3,611	8,425	7,112	
17	2013			1,313	1,313	34,258	28,945	194,510	45,127	123,703	426,543	12,370	3,711	8,659	7,346	
18	2014			1,313	1,313	34,258	28,945	200,596	45,127	128,105	437,031	12,674	3,802	8,872	7,559	
19	2015			1,313	1,313	34,258	28,945	205,691	45,127	131,489	445,510	12,920	3,876	9,044	7,731	
20	2016			1,313	1,313	34,258	28,945	209,692	45,127	134,668	452,690	13,128	3,938	9,190	7,877	
21	2017			1,313	1,313	34,258	28,945	212,478	45,127	136,461	457,269	13,261	3,978	9,283	7,970	
22	2018			1,313	1,313	34,258	28,945	213,934	45,127	137,968	460,232	13,347	4,004	9,343	8,030	
23	2019			1,313	1,313	34,258	28,945	213,934	45,127	137,968	460,232	13,347	4,004	9,343	8,030	
24	2020			1,313	1,313	34,258	28,945	213,934	45,127	137,968	460,232	13,347	4,004	9,343	8,030	
25	2021			1,313	1,313	34,258	28,945	213,934	45,127	137,968	460,232	13,347	4,004	9,343	8,030	
26	2022			1,313	1,313	34,258	28,945	213,934	45,127	137,968	460,232	13,347	4,004	9,343	8,030	
27	2023			1,313	1,313	34,258	28,945	213,934	45,127	137,968	460,232	13,347	4,004	9,343	8,030	
28	2024			1,313	1,313	34,258	28,945	213,934	45,127	137,968	460,232	13,347	4,004	9,343	8,030	
29	2025			1,182	1,182	26,463	26,051	194,968	40,614	137,968	426,064	12,356	3,707	8,649	7,467	
30	2026			1,050	1,050	18,176	23,326	175,861	36,102	118,462	371,927	10,786	3,236	7,550	6,500	
31	2027			919	919	9,366	20,262	156,527	31,589	112,169	329,913	9,567	2,870	6,697	5,778	
32	2028			788	788	0	17,367	136,652	27,076	90,757	271,852	7,884	2,365	5,519	4,731	
33	2029			657	657	0	14,473	115,819	22,564	83,999	236,855	6,869	2,061	4,808	4,152	
34	2030			525	525	0	11,578	94,046	18,051	63,465	187,140	5,427	1,628	3,799	3,274	
35	2031			394	394	0	8,684	71,604	13,538	56,830	150,656	4,369	1,311	3,058	2,664	
36	2032			263	263	0	5,789	48,384	9,025	31,694	94,892	2,752	826	1,926	1,664	
37	2033			131	131	0	2,895	24,511	451	25,376	53,233	1,544	463	1,081	949	
Total		30,511	22,778	34,199	87,488							304,598			125,731	

on the condition of discount rate at 12%:  
Present value: 29,670 37,500 26,250 -3,421  
Internal rate of return (FIRR): 10.33%  
3/C 0.88

Appendix 7.5-5 Calculation of Financial Internal Rate of Return (Alternative E)

		Average unit electricity cost to be reduced (Fils/kWh):										29.00			
Year in order	Year	Cost (1,000JDs)				Financial Benefit					Probable financial revenue (JDs 1,000)	Negative benefit (sunk cost) (JDs 1,000)	Net benefit (JDs 1,000)	Cash balance (JDs 1,000)	
		Construction cost		O/M cost	Total	Electricity to be reduced (mWh)									
		F/C	L/C			LV system			MV system						
				Un-balance	Capa-citor	New line	Capa-citor	New line	Total						
1	1997	347	173	0	520						0	0	0	0	-520
2	1998	347	173	0	520						0	0	0	0	-520
3	1999	3,297	2,476	144	5,917						0	0	0	0	-5,917
4	2000	3,872	2,907	314	7,093	3,160	2,895	9,249	4,513		19,817	575	172	402	-6,691
5	2001	3,930	2,951	486	7,367	7,021	5,789	19,843	9,025	8,263	49,941	1,448	434	1,014	-6,353
6	2002	3,905	2,932	657	7,494	11,700	8,684	32,239	13,538	15,198	81,359	2,359	708	1,652	-5,842
7	2003	3,957	2,972	830	7,759	17,331	11,578	46,767	18,051	27,486	121,213	3,515	1,055	2,461	-5,298
8	2004	3,936	2,956	1,002	7,894	19,253	14,473	63,929	22,564	37,174	157,393	4,564	1,369	3,195	-4,699
9	2005	3,968	2,979	1,176	8,123	21,389	17,367	83,837	27,076	54,787	204,456	5,929	1,779	4,150	-3,972
10	2006	3,975	2,985	1,350	8,310	23,763	20,262	106,907	31,589	68,635	251,156	7,284	2,185	5,098	-3,211
11	2007	3,996	3,001	1,525	8,522	26,399	23,156	133,430	36,102	92,972	312,059	9,050	2,715	6,335	-2,187
12	2008	3,464	2,601	1,677	7,742	29,328	26,051	163,757	40,614	112,409	372,159	10,793	3,238	7,555	-187
13	2009			1,677	1,677	31,179	28,945	189,755	45,127	136,818	431,824	12,523	3,757	8,766	7,089
14	2010			1,677	1,677	32,655	28,945	200,295	45,127	145,697	452,719	13,129	3,939	9,190	7,513
15	2011			1,677	1,677	33,702	28,945	210,074	45,127	153,284	471,132	13,663	4,099	9,564	7,887
16	2012			1,677	1,677	34,258	28,945	219,017	45,127	160,492	487,839	14,147	4,244	9,903	8,226
17	2013			1,677	1,677	34,258	28,945	227,029	45,127	167,137	502,496	14,572	4,372	10,201	8,524
18	2014			1,677	1,677	34,258	28,945	233,983	45,127	173,335	515,648	14,954	4,486	10,468	8,791
19	2015			1,677	1,677	34,258	28,945	239,775	45,127	178,238	526,343	15,264	4,579	10,685	9,008
20	2016			1,677	1,677	34,258	28,945	244,286	45,127	182,521	535,137	15,519	4,656	10,863	9,186
21	2017			1,677	1,677	34,258	28,945	247,403	45,127	185,160	540,893	15,686	4,706	10,980	9,303
22	2018			1,677	1,677	34,258	28,945	249,016	45,127	186,967	544,313	15,785	4,736	11,050	9,373
23	2019			1,677	1,677	34,258	28,945	249,016	45,127	186,967	544,313	15,785	4,736	11,050	9,373
24	2020			1,677	1,677	34,258	28,945	249,016	45,127	186,967	544,313	15,785	4,736	11,050	9,373
25	2021			1,677	1,677	34,258	28,945	249,016	45,127	186,967	544,313	15,785	4,736	11,050	9,373
26	2022			1,677	1,677	34,258	28,945	249,016	45,127	186,967	544,313	15,785	4,736	11,050	9,373
27	2023			1,677	1,677	34,258	28,945	249,016	45,127	186,967	544,313	15,785	4,736	11,050	9,373
28	2024			1,677	1,677	34,258	28,945	249,016	45,127	186,967	544,313	15,785	4,736	11,050	9,373
29	2025			1,509	1,509	26,463	26,051	226,200	40,614	186,967	506,295	14,683	4,405	10,278	8,768
30	2026			1,342	1,342	18,176	23,326	203,615	36,102	167,462	448,681	13,012	3,904	9,108	7,767
31	2027			1,174	1,174	9,366	20,262	180,585	31,589	153,867	395,669	11,474	3,442	8,032	6,858
32	2028			1,006	1,006	0	17,367	156,912	27,076	131,730	333,085	9,659	2,898	6,762	5,755
33	2029			839	839	0	14,473	132,141	22,564	117,996	287,174	8,328	2,498	5,830	4,991
34	2030			671	671	0	11,578	106,770	18,051	91,292	227,691	6,603	1,981	4,622	3,951
35	2031			503	503	0	8,684	80,684	13,538	76,572	179,478	5,205	1,561	3,643	3,140
36	2032			335	335	0	5,789	54,102	9,025	46,256	115,172	3,340	1,002	2,338	2,003
37	2033			168	168	0	2,895	27,170	451	30,429	60,945	1,767	530	1,237	1,069
Total		38,994	29,106	43,539	111,639							359,541			140,040
In the condition of discount rate at 12%:															
Present value:					37,532							43,701		30,591	-6,941
Internal rate of return (FIRR):															9.27%
B/C															0.82

### Appendix 7.6 Parameters for Repayability Analysis

Item	Unit	Value				
		Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
<b>OM Cost</b>						
Total financial project cost including D/D stage	JDs.1,000	34,471	51,153	68,499	85,871	110,265
Cost for D/D stage	JDs.1,000	341	477	682	852	1,124
Financial construction cost	JDs.1,000	34,130	50,676	67,817	85,019	109,141
OM cost percentage to construction cost	%	2.50%	2.50%	2.50%	2.50%	2.50%
OM cost	JDs.1,000	853	1,267	1,693	2,125	2,729
<b>Average unit electricity cost to be reduced</b>						
Calculated unit electricity cost in 1995	Fils/kWh	28.15	28.15	28.15	28.15	28.15
Envisaged annual price increase	%	3.03%	3.03%	3.03%	3.03%	3.03%
Envisaged electricity cost to be reduced	Fils/kWh	29.00	29.00	29.00	29.00	29.00
<b>Estimation of Annual Probable Revenue</b>						
Annual energy to be reduced	mWh	242,539	318,841	394,401	460,232	544,313
Annual probable revenue in Dinar	JDs.1,000	7,034	9,246	11,438	13,347	15,785
Exchange rate as of 1996 (mid rate)	Fils/US\$	709	709	709	709	709
Annual probable revenue in US\$	US\$1,000	9,922	13,041	16,132	18,825	22,263
<b>Foreign Loan Conditions</b>						
Interest rate	%	2.70%	2.70%	2.70%	2.70%	2.70%
Repayment period	Year	30	30	30	30	30
Grace period	Year	10	10	10	10	10
Capital recovery factor		0.06537	0.06537	0.06537	0.06537	0.06537
Total amount of foreign loan in Dinar	JDs.1,000	29,354	43,616	58,353	73,140	93,861
Foreign currency portion in construction cost	JDs.1,000	15,025	22,436	29,961	37,504	48,020
Local currency portion in construction cost	JDs.1,000	19,105	28,240	37,856	47,515	61,121
Interest to be paid for foreign loan	JDs.1,000	11,489	17,255	22,953	28,740	36,704
Equal annual repayment amount of capital	JDs.1,000	1,468	2,181	2,918	3,657	4,693
<b>Local Loan Conditions</b>						
Interest rate	%	10.00%	10.00%	10.00%	10.00%	10.00%
Repayment period	Year	7	7	7	7	7
Grace period	Year	2	2	2	2	2
Capital recovery factor		0.26380	0.26380	0.26380	0.26380	0.26380
Total amount of local loan in Dinar	JDs.1,000	4,776	7,060	9,464	11,879	15,280
Interest to be paid for foreign loan	JDs.1,000	1,911	2,824	3,776	4,752	6,112



**Appendix 7.7-1 Repayability Analysis of the Project (Alternative A)**

(JDs.1,000)

Year in order	Year	Out flow								In flow				Cash balance			
		Construction cost by portion			Foreign loan		Local loan			O/M cost	Total out flow	Foreign borrow	Local borrow		Interest during const- ruction	Revenue	Total in flow
		FC	LC	Total	Interest	Re- pay- ment	Interest	Re- pay- ment									
1	1999	1,311	1,199	2,510	0	0	0	0	0	2,510	2,210	300	0	2,510	0		
2	2000	1,350	1,319	2,669	60	0	30	0	63	2,821	2,339	330	90	439	3,198	376	
3	2001	1,390	1,451	2,841	123	0	63	60	129	3,216	2,478	363	186	924	3,951	735	
4	2002	1,432	1,596	3,028	190	0	93	126	201	3,637	2,629	399	283	1,462	4,773	1,136	
5	2003	1,475	1,755	3,230	261	0	121	198	276	4,086	2,791	439	381	2,057	5,668	1,582	
6	2004	1,519	1,931	3,450	336	0	145	278	357	4,566	2,967	483	481	2,586	6,517	1,951	
7	2005	1,565	2,124	3,689	416	0	165	366	443	5,079	3,158	531	581	3,165	7,435	2,356	
8	2006	1,612	2,336	3,948	501	0	182	403	535	5,569	3,364	584	683	3,801	8,432	2,863	
9	2007	1,660	2,570	4,230	592	0	200	443	634	6,099	3,588	643	792	4,507	9,529	3,430	
10	2008	1,710	2,827	4,537	689	0	220	487	740	6,673	3,830	707	909	5,327	10,773	4,100	
11	2009				793	1,468	242	536	853	3,891			0	5,994	5,994	2,103	
12	2010				753	1,468	188	589	853	3,851			0	6,202	6,202	2,351	
13	2011				713	1,468	129	493	853	3,656			0	6,386	6,386	2,730	
14	2012				674	1,468	80	387	853	3,461			0	6,544	6,544	3,083	
15	2013				634	1,468	41	270	853	3,266			0	6,672	6,672	3,406	
16	2014				594	1,468	14	141	853	3,071				6,785	6,785	3,714	
17	2015				555	1,468	0	0	853	2,876				6,880	6,880	4,004	
18	2016				515	1,468			853	2,836				6,956	6,956	4,120	
19	2017				475	1,468			853	2,796				7,009	7,009	4,213	
20	2018				436	1,468			853	2,757				7,034	7,034	4,277	
21	2019				396	1,468			853	2,717				7,034	7,034	4,317	
22	2020				357	1,468			853	2,678				7,034	7,034	4,356	
23	2021				317	1,468			853	2,638				7,034	7,034	4,396	
24	2022				277	1,468			853	2,598				7,034	7,034	4,436	
25	2023				238	1,468			853	2,559				7,034	7,034	4,475	
26	2024				198	1,468			853	2,519				7,034	7,034	4,515	
27	2025				158	1,468			768	2,394				6,265	6,265	3,871	
28	2026				119	1,468			682	2,269				5,476	5,476	3,207	
29	2027				79	1,468			597	2,144				4,651	4,651	2,507	
30	2028				40	1,468			512	2,019				3,810	3,810	1,791	
31	2029				0				427	426				3,221	3,221	2,795	
32	2030								341	341				2,617	2,617	2,276	
33	2031								256	256				1,999	1,999	1,743	
34	2032								171	171				1,355	1,355	1,184	
35	2033								85	85				509	509	424	
<b>Total</b>										<b>102,534</b>					<b>201,354</b>	<b>98,820</b>	

(Note)

- |  |        |
|--|--------|
| (1) Interest rate of foreign loan:                             | 2.70%  |
| (2) Equal annual repayment amount of capital for foreign loan: | 1,468  |
| (3) Interest rate of local loan:                               | 10.00% |
| (4) Operation and maintenance cost:                            | 853    |
| (5) Annual revenue:  | 7,034  |

Appendix 7.7-2 Repayability Analysis of the Project (Alternative B)

(IDs 1,000)

Year in order	Year	Out flow								In flow				Cash balance			
		Construction cost by portion			Foreign loan		Local loan			O/M cost	Total out flow	Foreign borrow	Local borrow		Interest during const- ruction	Revenue	Total in flow
		FC	LC	Total	Interest	Re- pay- ment	Interest	Re- pay- ment	Re- pay- ment								
1	1999	1,872	1,713	3,585	0	0	0	0	0	3,585	3,157	428	0	3,585	0		
2	2000	2,254	2,202	4,456	85	0	43	0	90	4,674	3,906	551	128	462	5,046	372	
3	2001	2,274	2,373	4,647	191	0	98	86	201	5,222	4,054	593	289	1,060	5,996	773	
4	2002	2,362	2,631	4,993	300	0	149	196	317	5,955	4,335	658	449	1,224	7,166	1,211	
5	2003	2,428	2,889	5,317	417	0	195	314	442	6,685	4,595	722	612	2,466	8,395	1,710	
6	2004	2,113	2,685	4,798	541	0	236	446	575	6,596	4,127	671	777	3,185	8,760	2,164	
7	2005	2,185	2,965	5,150	653	0	258	590	695	7,346	4,409	741	911	3,970	10,031	2,685	
8	2006	2,250	3,260	5,510	772	0	273	639	824	8,018	4,695	815	1,045	4,732	11,287	3,269	
9	2007	2,314	3,581	5,895	898	0	291	677	961	8,723	5,000	895	1,189	5,722	12,806	4,083	
10	2008	2,384	3,941	6,325	1,033	0	313	722	1,109	9,501	5,340	985	1,346	6,679	14,350	4,849	
11	2009				1,178	2,181	339	769	1,267	5,734			0	7,669	7,669	1,935	
12	2010				1,119	2,181	262	822	1,267	5,650			0	7,979	7,979	2,329	
13	2011				1,060	2,181	180	687	1,267	5,375			0	8,256	8,256	2,881	
14	2012				1,001	2,181	111	539	1,267	5,099			0	8,496	8,496	3,397	
15	2013				942	2,181	57	376	1,267	4,823			0	8,695	8,695	3,872	
16	2014				883	2,181	20	197	1,267	4,548				8,865	8,865	4,317	
17	2015				824	2,181	0	0	1,267	4,272				9,003	9,003	4,731	
18	2016				765	2,181			1,267	4,213				9,121	9,121	4,908	
19	2017				707	2,181			1,267	4,155				9,197	9,197	5,042	
20	2018				648	2,181			1,267	4,096				9,246	9,246	5,150	
21	2019				589	2,181			1,267	4,037				9,246	9,246	5,209	
22	2020				530	2,181			1,267	3,978				9,246	9,246	5,268	
23	2021				471	2,181			1,267	3,919				9,246	9,246	5,327	
24	2022				412	2,181			1,267	3,860				9,246	9,246	5,386	
25	2023				353	2,181			1,267	3,801				9,246	9,246	5,445	
26	2024				294	2,181			1,267	3,742				9,246	9,246	5,504	
27	2025				235	2,181			1,140	3,557				8,422	8,422	4,865	
28	2026				177	2,181			1,014	3,371				7,372	7,372	4,001	
29	2027				118	2,181			887	3,186				6,295	6,295	3,109	
30	2028				59	2,181			760	3,000				5,199	5,199	2,199	
31	2029				0				634	633				4,311	4,311	3,678	
32	2030								507	507				3,432	3,432	2,925	
33	2031								380	380				2,743	2,743	2,363	
34	2032								253	253				1,771	1,771	1,518	
35	2033								127	127				923	923	796	
Total										152,622					269,892	117,271	

(Note)

- (1) Interest rate of foreign loan: 2.70%
- (2) Equal annual repayment amount of capital for foreign loan: 2,181
- (3) Interest rate of local loan: 10.00%
- (4) Operation and maintenance cost: 1,267
- (5) Annual revenue: 9,246

Appendix 7.7-3 Repayability Analysis of the Project (Alternative C)

(JDs 1,000)

Year in order	Year	Out flow								In flow				Cash balance			
		Construction cost by portion			Foreign loan		Local loan			O/M cost	Total out flow	Foreign borrow	Local borrow		Interest during const- ruction	Revenue	Total in flow
		FC	LC	Total	Interest	Re- pay- ment	Interest	Re- pay- ment									
1	1999	2,733	2,500	5,233	0	0	0	0	0	5,233	4,608	625	0	5,233	0		
2	2000	2,816	2,751	5,567	124	0	63	0	131	5,885	4,879	688	187	488	6,242	357	
3	2001	2,874	2,998	5,872	256	0	131	125	270	6,654	5,123	750	387	1,268	7,527	873	
4	2002	2,959	3,297	6,256	394	0	194	263	417	7,524	5,432	824	588	1,893	8,737	1,214	
5	2003	2,957	3,519	6,476	541	0	250	412	573	8,253	5,596	880	791	2,882	10,149	1,896	
6	2004	3,045	3,870	6,915	692	0	297	577	735	9,216	5,948	968	989	3,558	11,462	2,246	
7	2005	3,033	4,116	7,149	853	0	336	753	908	9,999	6,120	1,029	1,188	4,631	12,968	2,970	
8	2006	3,125	4,528	7,653	1,018	0	363	822	1,087	10,943	6,521	1,132	1,381	5,507	14,541	3,599	
9	2007	3,162	4,894	8,056	1,194	0	394	890	1,278	11,812	6,833	1,224	1,588	6,828	16,472	4,660	
10	2008	3,257	5,283	8,540	1,379	0	428	967	1,479	12,792	7,219	1,321	1,806	7,948	18,294	5,502	
11	2009				1,574	2,918	463	1,046	1,693	7,694			0	9,281	9,281	1,587	
12	2010				1,495	2,918	358	1,135	1,693	7,599			0	9,689	9,689	2,090	
13	2011				1,416	2,918	245	941	1,693	7,213			0	10,043	10,043	2,830	
14	2012				1,337	2,918	151	735	1,693	6,834			0	10,374	10,374	3,540	
15	2013				1,258	2,918	77	509	1,693	6,456			0	10,639	10,639	4,183	
16	2014				1,180	2,918	26	264	1,693	6,081				10,890	10,890	4,809	
17	2015				1,101	2,918	0	0	1,693	5,712				11,084	11,084	5,372	
18	2016				1,022	2,918			1,693	5,333				11,255	11,255	5,622	
19	2017				943	2,918			1,693	5,554				11,361	11,361	5,807	
20	2018				864	2,918			1,693	5,475				11,438	11,438	5,963	
21	2019				786	2,918			1,693	5,397				11,438	11,438	6,041	
22	2020				707	2,918			1,693	5,318				11,438	11,438	6,120	
23	2021				628	2,918			1,693	5,239				11,438	11,438	6,199	
24	2022				549	2,918			1,693	5,160				11,438	11,438	6,278	
25	2023				471	2,918			1,693	5,082				11,438	11,438	6,356	
26	2024				392	2,918			1,693	5,003				11,438	11,438	6,435	
27	2025				313	2,918			1,524	4,755				10,550	10,550	5,795	
28	2026				234	2,918			1,354	4,507				9,076	9,076	4,569	
29	2027				155	2,918			1,185	4,258				8,141	8,141	3,883	
30	2028				77	2,918			1,016	4,010				6,493	6,493	2,483	
31	2029				0				847	847				5,745	5,745	4,899	
32	2030								677	677				4,368	4,368	3,691	
33	2031								508	508				3,621	3,621	3,113	
34	2032								339	339				2,244	2,244	1,905	
35	2033								169	169				1,379	1,379	1,210	
Total										203,829					337,926	134,097	

(Note)

- (1) Interest rate of foreign loan: 2.70%
- (2) Equal annual repayment amount of capital for foreign loan: 2,918
- (3) Interest rate of local loan: 10.00%
- (4) Operation and maintenance cost: 1,693
- (5) Annual revenue: 11,438

Appendix 7.7-4 Repayability Analysis of the Project (Alternative D)

(JDs.1,000)

Year in order	Year	Out flow								In flow				Cash balance			
		Construction cost by portion			Foreign loan		Local loan			O/M cost	Total out flow	Foreign borrow	Local borrow		Interest during const- ruction	Revenue	Total in flow
		FC	LC	Total	Interest	Re- pay- ment	Interest	Re- pay- ment									
1	1999	3,139	2,872	6,011	0	0	0	0	0	6,011	5,293	718	0	6,011	0		
2	2000	3,536	3,454	6,990	143	0	72	0	150	7,355	6,127	864	215	529	7,734	379	
3	2001	3,615	3,771	7,386	308	0	158	144	325	8,321	6,443	943	466	1,355	9,207	886	
4	2002	3,708	4,132	7,840	482	0	238	316	510	9,386	6,807	1,033	720	2,115	10,675	1,289	
5	2003	3,678	4,376	8,054	666	0	310	505	706	10,240	6,960	1,094	976	3,172	12,202	1,961	
6	2004	3,750	4,766	8,516	854	0	369	711	907	11,357	7,325	1,192	1,223	4,031	13,770	2,413	
7	2005	3,971	5,389	9,360	1,052	0	417	930	1,120	12,879	8,013	1,347	1,468	5,193	16,021	3,143	
8	2006	4,049	5,868	9,917	1,268	0	458	1,025	1,354	14,022	8,450	1,467	1,726	6,286	17,929	3,907	
9	2007	4,106	6,356	10,462	1,496	0	503	1,122	1,602	15,184	8,873	1,589	1,999	7,805	20,266	5,081	
10	2008	3,951	6,531	10,482	1,736	0	549	1,227	1,863	15,857	8,849	1,633	2,285	9,200	21,967	6,110	
11	2009				1,975	3,657	590	1,338	2,125	9,685			0	10,707	10,707	1,022	
12	2010				1,876	3,657	456	1,446	2,125	9,560			0	11,199	11,199	1,639	
13	2011				1,777	3,657	312	1,207	2,125	9,078			0	11,635	11,635	2,557	
14	2012				1,679	3,657	191	938	2,125	8,589			0	12,036	12,036	3,447	
15	2013				1,580	3,657	97	644	2,125	8,103			0	12,370	12,370	4,267	
16	2014				1,481	3,657	33	327	2,125	7,622				12,674	12,674	5,052	
17	2015				1,382	3,657	0	0	2,125	7,164				12,920	12,920	5,756	
18	2016				1,284	3,657			2,125	7,066				13,128	13,128	6,062	
19	2017				1,185	3,657			2,125	6,967				13,261	13,261	6,294	
20	2018				1,086	3,657			2,125	6,868				13,347	13,347	6,479	
21	2019				987	3,657			2,125	6,769				13,347	13,347	6,578	
22	2020				889	3,657			2,125	6,671				13,347	13,347	6,676	
23	2021				790	3,657			2,125	6,572				13,347	13,347	6,775	
24	2022				691	3,657			2,125	6,473				13,347	13,347	6,874	
25	2023				592	3,657			2,125	6,374				13,347	13,347	6,973	
26	2024				494	3,657			2,125	6,276				13,347	13,347	7,071	
27	2025				395	3,657			1,913	5,964				12,356	12,356	6,392	
28	2026				296	3,657			1,700	5,653				10,786	10,786	5,133	
29	2027				197	3,657			1,488	5,342				9,567	9,567	4,225	
30	2028				99	3,657			1,275	5,031				7,884	7,884	2,853	
31	2029				0				1,063	1,063				6,869	6,869	5,807	
32	2030								850	850				5,427	5,427	4,577	
33	2031								638	638				4,369	4,369	3,732	
34	2032								425	425				2,752	2,752	2,327	
35	2033								213	213				1,544	1,544	1,332	
Total									255,628					400,696	145,068		

(Note)

- (1) Interest rate of foreign loan: 2.70%
- (2) Equal annual repayment amount of capital for foreign loan: 3,657
- (3) Interest rate of local loan: 10.00%
- (4) Operation and maintenance cost: 2,125
- (5) Annual revenue: 13,347

Appendix 7.7-5 Repayability Analysis of the Project (Alternative E)

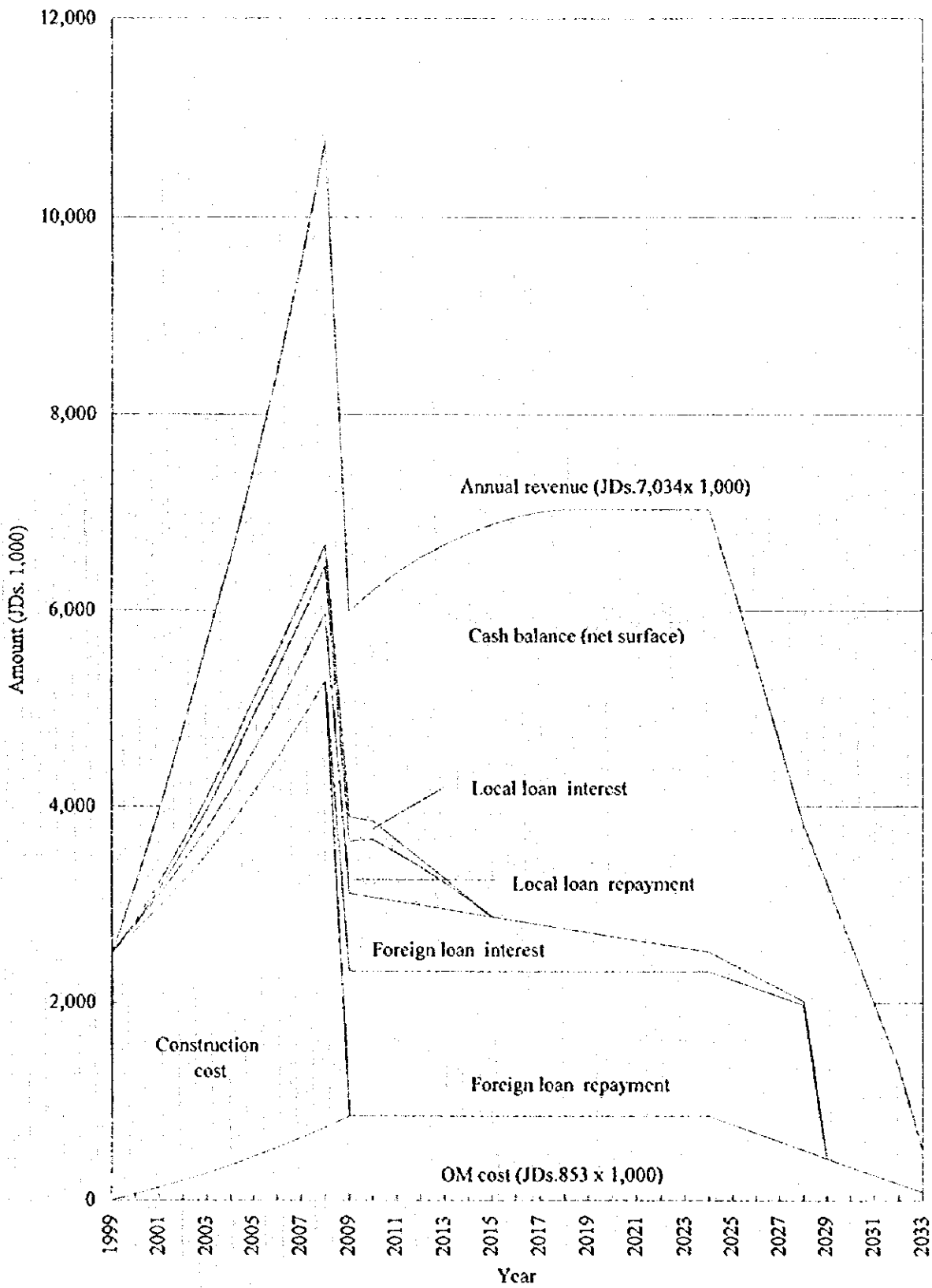
(IDr.1,000)

Year in order	Year	Out flow								In flow				Cash balance			
		Construction cost by portion			Foreign loan		Local loan			O/M cost	Total out flow	Foreign borrow	Local borrow		Interest during const- ruction	Revenue	Total in flow
		FC	LC	Total	Interest	Re- pay- ment	Interest	Re- pay- ment									
1	1999	3,602	3,295	6,897	0	0	0	0	0	6,897	6,073	824	0	6,897	0		
2	2000	4,358	4,257	8,615	164	0	82	0	172	9,034	7,551	1,064	246	575	9,436	403	
3	2001	4,556	4,753	9,309	368	0	189	165	388	10,418	8,121	1,188	557	1,448	11,314	895	
4	2002	4,662	5,195	9,857	587	0	291	378	621	11,733	8,558	1,299	878	2,359	13,094	1,361	
5	2003	4,867	5,791	10,658	818	0	383	615	867	13,342	9,210	1,448	1,201	3,515	15,374	2,033	
6	2004	4,986	6,336	11,322	1,067	0	467	875	1,133	14,864	9,738	1,584	1,533	4,564	17,419	2,556	
7	2005	5,177	7,025	12,202	1,330	0	537	1,165	1,416	16,650	10,446	1,756	1,867	5,929	19,998	3,348	
8	2006	5,342	7,742	13,084	1,612	0	597	1,317	1,722	18,331	11,149	1,936	2,208	7,284	22,576	4,246	
9	2007	5,532	8,563	14,095	1,913	0	658	1,455	2,049	20,170	11,954	2,141	2,571	9,050	25,716	5,546	
10	2008	4,939	8,164	13,103	2,236	0	727	1,604	2,401	20,071	11,062	2,041	2,963	10,793	26,859	6,788	
11	2009				2,534	4,693	771	1,773	2,729	12,499			0	12,523	12,523	24	
12	2010				2,408	4,693	593	1,892	2,729	12,314			0	13,129	13,129	815	
13	2011				2,281	4,693	404	1,575	2,729	11,682			0	13,663	13,663	1,981	
14	2012				2,154	4,693	247	1,223	2,729	11,046			0	14,147	14,147	3,101	
15	2013				2,027	4,693	124	836	2,729	10,410			0	14,572	14,572	4,162	
16	2014				1,901	4,693	41	408	2,729	9,772				14,954	14,954	5,182	
17	2015				1,774	4,693	0	0	2,729	9,196				15,264	15,264	6,068	
18	2016				1,647	4,693			2,729	9,069				15,519	15,519	6,450	
19	2017				1,521	4,693			2,729	8,943				15,686	15,686	6,743	
20	2018				1,394	4,693			2,729	8,816				15,785	15,785	6,969	
21	2019				1,267	4,693			2,729	8,689				15,785	15,785	7,096	
22	2020				1,140	4,693			2,729	8,562				15,785	15,785	7,223	
23	2021				1,014	4,693			2,729	8,436				15,785	15,785	7,349	
24	2022				887	4,693			2,729	8,309				15,785	15,785	7,476	
25	2023				760	4,693			2,729	8,182				15,785	15,785	7,603	
26	2024				634	4,693			2,729	8,056				15,785	15,785	7,729	
27	2025				507	4,693			2,456	7,656				14,683	14,683	7,027	
28	2026				380	4,693			2,183	7,256				13,012	13,012	5,756	
29	2027				253	4,693			1,910	6,857				11,474	11,474	4,617	
30	2028				127	4,693			1,637	6,457				9,659	9,659	3,202	
31	2029				0				1,365	1,365				8,328	8,328	6,964	
32	2030								1,092	1,092				6,603	6,603	5,511	
33	2031								819	819				5,205	5,205	4,386	
34	2032								546	546				3,340	3,340	2,794	
35	2033								273	273				1,767	1,767	1,494	
Total									327,811					482,708	154,896		

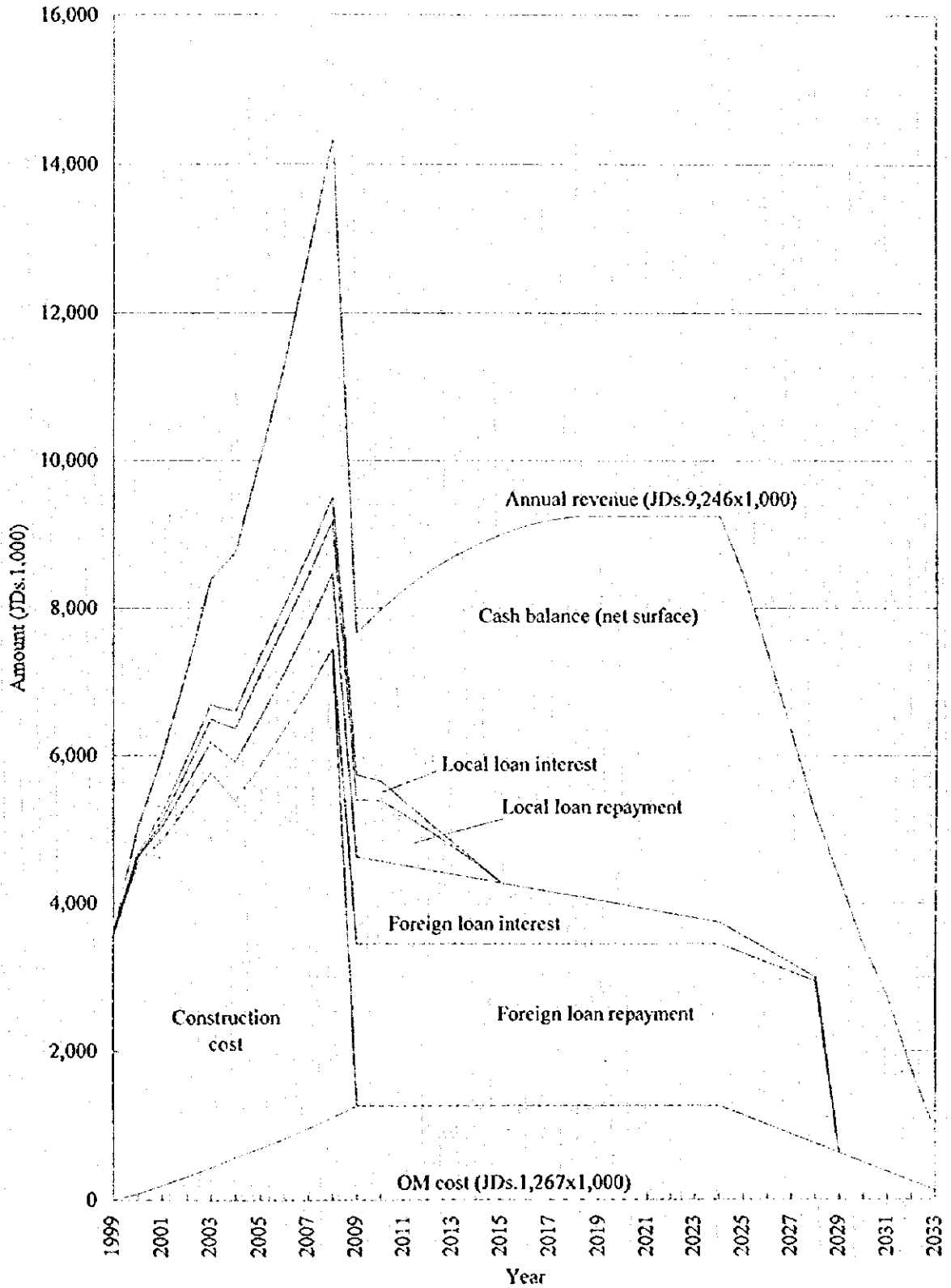
(Note)

- (1) Interest rate of foreign loan: 2.70%
- (2) Equal annual repayment amount of capital for foreign loan: 4,693
- (3) Interest rate of local loan: 10.00%
- (4) Operation and maintenance cost: 2,729
- (5) Annual revenue: 15,785

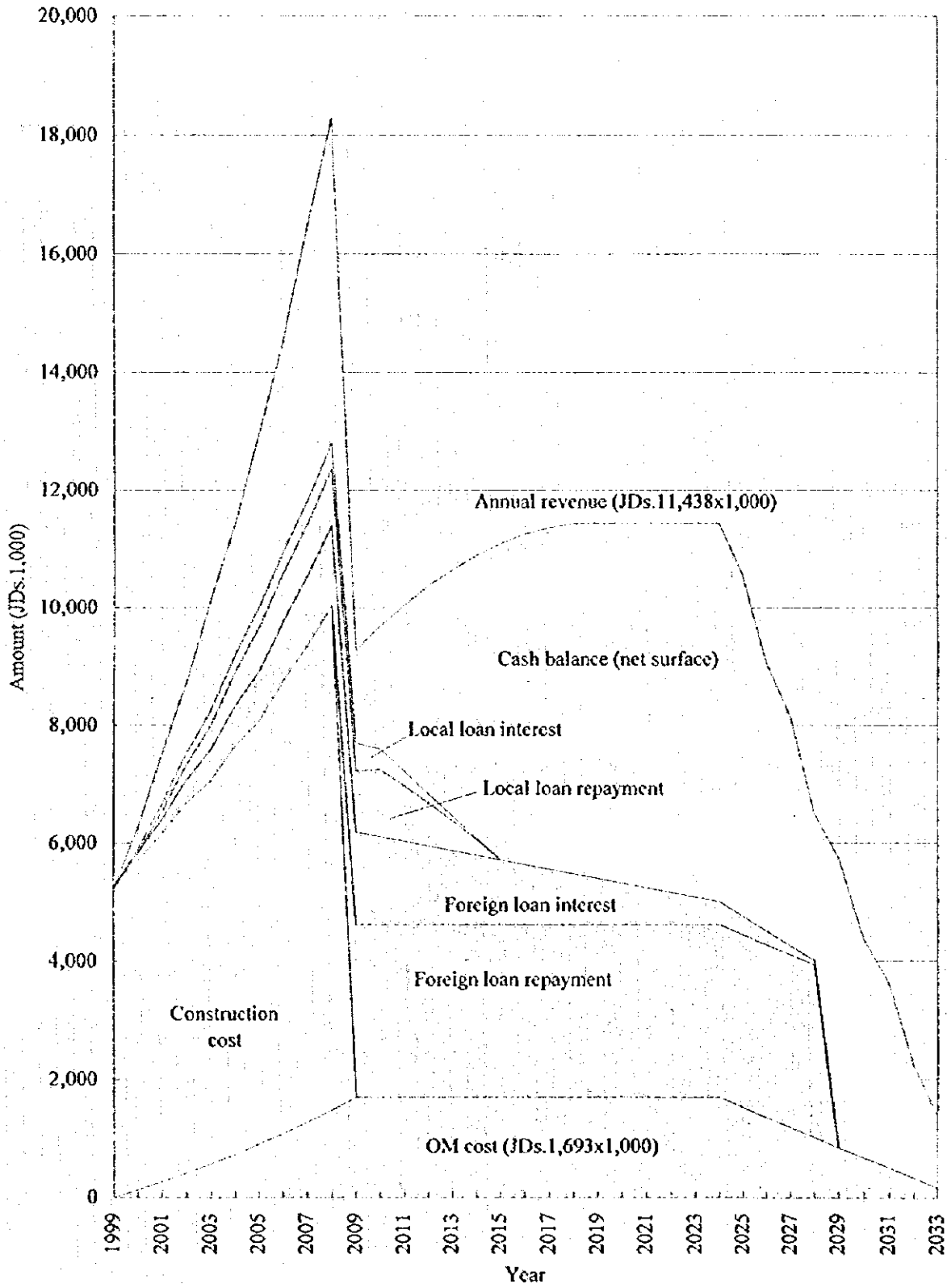
### Appendix 7.8-1 Fund Repayability Analysis (Alternative A)



Appendix 7.8-2 Fund Repayability Analysis (Alternative B)

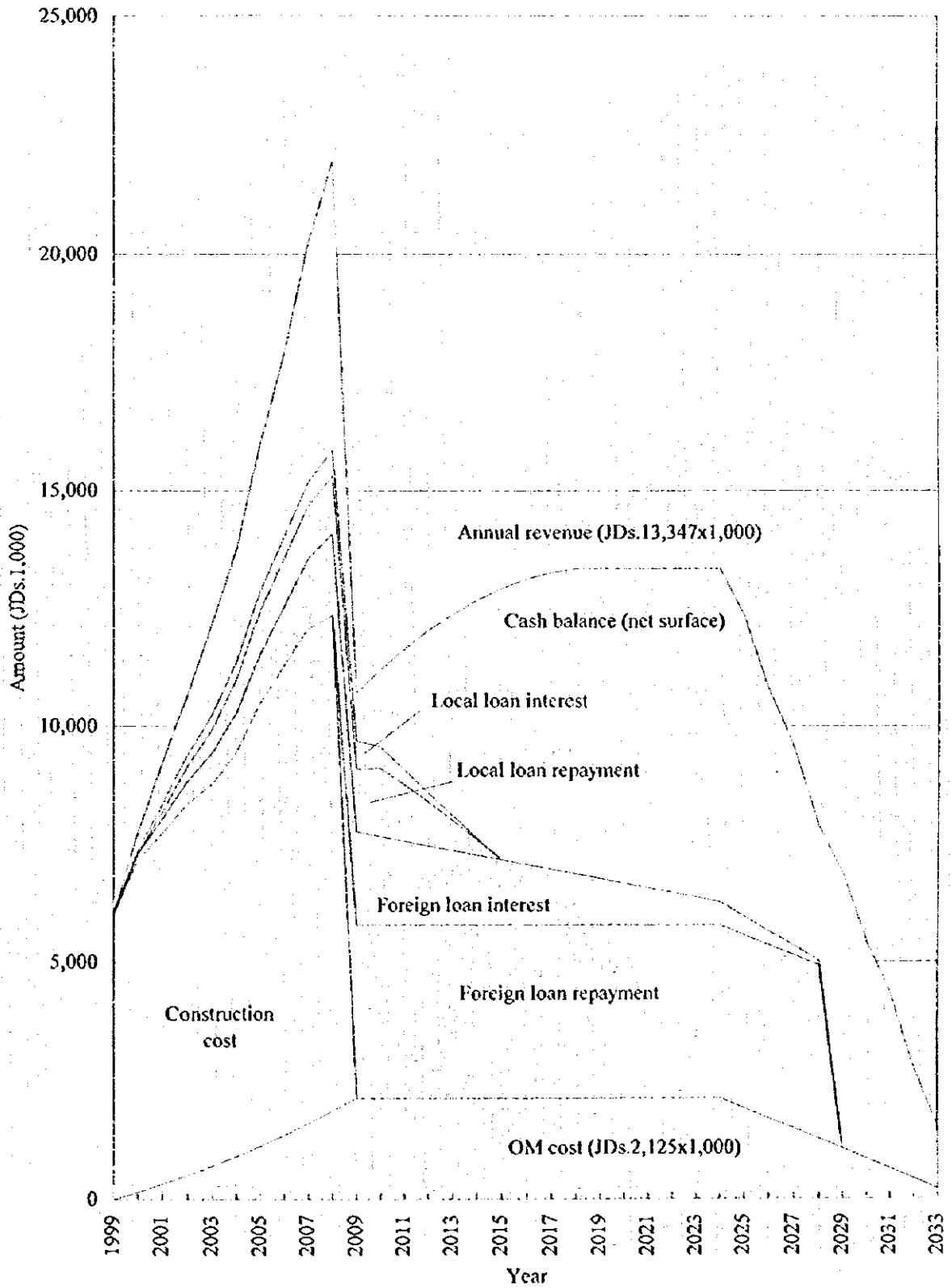


**Appendix 7.8-3 Fund Repayability Analysis (Alternative C)**

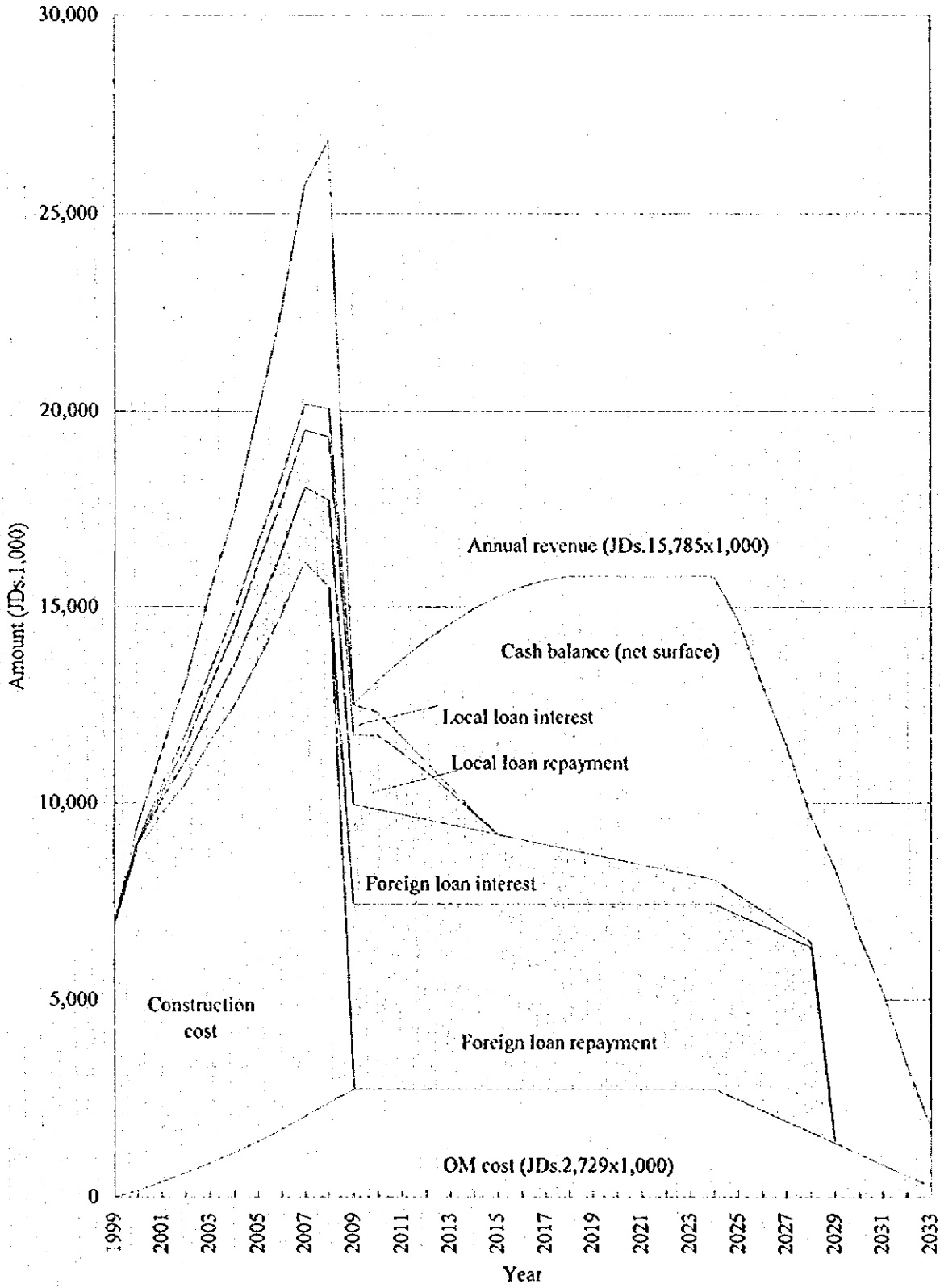




Appendix 7.8-4 Fund Repayability Analysis (Alternative D)



Appendix 7.8-5 Fund Repayability Analysis (Alternative E)



Appendix 7.9-1 Capital Recovery Analysis (Alternative A)

Year in order	Year	Investment cost		Probable revenue		Cash balance (net surplus or deficit)	
		Const- ruction cost	Accumu- lation	Annual probable revenue	Accumu- lation	Annual balance	Accumu- lation
1	1999	2,510	2,510	0	0	-2,510	-2,510
2	2000	2,669	5,179	439	439	-2,230	-4,740
3	2001	2,841	8,020	924	1,363	-1,917	-6,657
4	2002	3,028	11,048	1,462	2,825	-1,566	-8,223
5	2003	3,230	14,278	2,057	4,882	-1,173	-9,396
6	2004	3,450	17,728	2,586	7,468	-864	-10,260
7	2005	3,689	21,417	3,165	10,633	-524	-10,784
8	2006	3,948	25,365	3,801	14,434	-147	-10,931
9	2007	4,230	29,595	4,507	18,941	277	-10,654
10	2008	4,537	34,132	5,327	24,268	790	-9,864
11	2009	0		5,994	30,262	5,994	-3,870
12	2010			6,202	36,464	6,202	2,332
13	2011			6,386	42,850	6,386	8,718
14	2012			6,544	49,394	6,544	15,262
15	2013			6,672	56,066	6,672	21,934
16	2014			6,785	62,851	6,785	28,719
17	2015			6,880	69,731	6,880	35,599
18	2016			6,956	76,687	6,956	42,555
19	2017			7,009	83,696	7,009	49,564
20	2018			7,034	90,730	7,034	56,598
21	2019			7,034	97,764	7,034	63,632
22	2020			7,034	104,798	7,034	70,666
23	2021			7,034	111,832	7,034	77,700
24	2022			7,034	118,866	7,034	84,734
25	2023			7,034	125,900	7,034	91,768
26	2024			7,034	132,934	7,034	98,802
27	2025			6,265	139,199	6,265	105,067
28	2026			5,476	144,675	5,476	110,543
29	2027			4,651	149,326	4,651	115,194
30	2028			3,810	153,136	3,810	119,004
31	2029			3,221	156,357	3,221	122,225
32	2030			2,617	158,974	2,617	124,842
33	2031			1,999	160,973	1,999	126,841
34	2032			1,355	162,328	1,355	128,196
35	2033			509	162,837	509	128,705

Appendix 7.9-2 Capital Recovery Analysis (Alternative B)

Year in order	Year	Investment cost		Probable revenue		Cash balance (net surplus or deficit)	
		Const- ruction cost	Accumu- lation	Annual probable revenue	Accumu- lation	Annual balance	Accumu- lation
1	1999	3,585	3,585	0	0	-3,585	-3,585
2	2000	4,456	8,041	462	462	-3,994	-7,579
3	2001	4,647	12,688	1,060	1,522	-3,587	-11,166
4	2002	4,993	17,681	1,724	3,246	-3,269	-14,435
5	2003	5,317	22,998	2,466	5,712	-2,851	-17,286
6	2004	4,798	27,796	3,185	8,897	-1,613	-18,899
7	2005	5,150	32,946	3,970	12,867	-1,180	-20,079
8	2006	5,510	38,456	4,732	17,599	-778	-20,857
9	2007	5,895	44,351	5,722	23,321	-173	-21,030
10	2008	6,325	50,676	6,679	30,000	354	-20,676
11	2009	0		7,669	37,669	7,669	-13,007
12	2010			7,979	45,648	7,979	-5,028
13	2011			8,256	53,904	8,256	3,228
14	2012			8,496	62,400	8,496	11,724
15	2013			8,695	71,095	8,695	20,419
16	2014			8,865	79,960	8,865	29,284
17	2015			9,003	88,963	9,003	38,287
18	2016			9,121	98,084	9,121	47,408
19	2017			9,197	107,281	9,197	56,605
20	2018			9,246	116,527	9,246	65,851
21	2019			9,246	125,773	9,246	75,097
22	2020			9,246	135,019	9,246	84,343
23	2021			9,246	144,265	9,246	93,589
24	2022			9,246	153,511	9,246	102,835
25	2023			9,246	162,757	9,246	112,081
26	2024			9,246	172,003	9,246	121,327
27	2025			8,422	180,425	8,422	129,749
28	2026			7,372	187,797	7,372	137,121
29	2027			6,295	194,092	6,295	143,416
30	2028			5,199	199,291	5,199	148,615
31	2029			4,311	203,602	4,311	152,926
32	2030			3,432	207,034	3,432	156,358
33	2031			2,743	209,777	2,743	159,101
34	2032			1,771	211,548	1,771	160,872
35	2033			923	212,471	923	161,795

Appendix 7.9-3 Capital Recovery Analysis (Alternative C)

Year in order	Year	Investment cost		Probable revenue		Cash balance (net surplus or deficit)	
		Const- ruction cost	Accumu- lation	Annual probable revenue	Accumu- lation	Annual balance	Accumu- lation
1	1999	5,233	5,233	0	0	-5,233	-5,233
2	2000	5,567	10,800	488	488	-5,079	-10,312
3	2001	5,872	16,672	1,268	1,756	-4,604	-14,916
4	2002	6,256	22,928	1,893	3,649	-4,363	-19,279
5	2003	6,476	29,404	2,882	6,531	-3,594	-22,873
6	2004	6,915	36,319	3,558	10,089	-3,357	-26,230
7	2005	7,149	43,468	4,631	14,720	-2,518	-28,748
8	2006	7,653	51,121	5,507	20,227	-2,146	-30,894
9	2007	8,056	59,177	6,828	27,055	-1,228	-32,122
10	2008	8,540	67,717	7,948	35,003	-592	-32,714
11	2009	0		9,281	44,284	9,281	-23,433
12	2010			9,689	53,973	9,689	-13,744
13	2011			10,043	64,016	10,043	-3,701
14	2012			10,374	74,390	10,374	6,673
15	2013			10,639	85,029	10,639	17,312
16	2014			10,890	95,919	10,890	28,202
17	2015			11,084	107,003	11,084	39,286
18	2016			11,255	118,258	11,255	50,541
19	2017			11,361	129,619	11,361	61,902
20	2018			11,438	141,057	11,438	73,340
21	2019			11,438	152,495	11,438	84,778
22	2020			11,438	163,933	11,438	96,216
23	2021			11,438	175,371	11,438	107,654
24	2022			11,438	186,809	11,438	119,092
25	2023			11,438	198,247	11,438	130,530
26	2024			11,438	209,685	11,438	141,968
27	2025			10,550	220,235	10,550	152,518
28	2026			9,076	229,311	9,076	161,594
29	2027			8,141	237,452	8,141	169,735
30	2028			6,493	243,945	6,493	176,228
31	2029			5,745	249,690	5,745	181,973
32	2030			4,368	254,058	4,368	186,341
33	2031			3,621	257,679	3,621	189,962
34	2032			2,244	259,923	2,244	192,206
35	2033			1,379	261,302	1,379	193,585

Appendix 7.9-4 Capital Recovery Analysis (Alternative D)

Year in order	Year	Investment cost		Probable revenue		Cash balance (net surplus or deficit)	
		Const- ruction cost	Accumu- lation	Annual probable revenue	Accumu- lation	Annual balance	Accumu- lation
1	1999	6,011	6,011	0	0	-6,011	-6,011
2	2000	6,990	13,001	529	529	-6,461	-12,472
3	2001	7,386	20,387	1,355	1,884	-6,031	-18,503
4	2002	7,840	28,227	2,115	3,999	-5,725	-24,228
5	2003	8,054	36,281	3,172	7,171	-4,882	-29,110
6	2004	8,516	44,797	4,031	11,202	-4,485	-33,595
7	2005	9,360	54,157	5,193	16,395	-4,167	-37,762
8	2006	9,917	64,074	6,286	22,681	-3,631	-41,393
9	2007	10,462	74,536	7,805	30,486	-2,657	-44,050
10	2008	10,482	85,018	9,200	39,686	-1,282	-45,332
11	2009	0		10,707	50,393	10,707	-34,625
12	2010			11,199	61,592	11,199	-23,426
13	2011			11,635	73,227	11,635	-11,791
14	2012			12,036	85,263	12,036	245
15	2013			12,370	97,633	12,370	12,615
16	2014			12,674	110,307	12,674	25,289
17	2015			12,920	123,227	12,920	38,209
18	2016			13,128	136,355	13,128	51,337
19	2017			13,261	149,616	13,261	64,598
20	2018			13,347	162,963	13,347	77,945
21	2019			13,347	176,310	13,347	91,292
22	2020			13,347	189,657	13,347	104,639
23	2021			13,347	203,004	13,347	117,986
24	2022			13,347	216,351	13,347	131,333
25	2023			13,347	229,698	13,347	144,680
26	2024			13,347	243,045	13,347	158,027
27	2025			12,356	255,401	12,356	170,383
28	2026			10,786	266,187	10,786	181,169
29	2027			9,567	275,754	9,567	190,736
30	2028			7,884	283,638	7,884	198,620
31	2029			6,869	290,507	6,869	205,489
32	2030			5,427	295,934	5,427	210,916
33	2031			4,369	300,303	4,369	215,285
34	2032			2,752	303,055	2,752	218,037
35	2033			1,544	304,599	1,544	219,581

Appendix 7.9-5 Capital Recovery Analysis (Alternative E)

Year in order	Year	Investment cost		Probable revenue		Cash balance (net surplus or deficit)	
		Const- ruction cost	Accumu- lation	Annual probable revenue	Accumu- lation	Annual balance	Accumu- lation
1	1999	6,897	6,897	0	0	-6,897	-6,897
2	2000	8,615	15,512	575	575	-8,040	-14,937
3	2001	9,369	24,821	1,448	2,023	-7,861	-22,798
4	2002	9,857	34,678	2,359	4,382	-7,498	-30,296
5	2003	10,658	45,336	3,515	7,897	-7,143	-37,439
6	2004	11,322	56,658	4,564	12,461	-6,758	-44,197
7	2005	12,202	68,860	5,929	18,390	-6,273	-50,470
8	2006	13,084	81,944	7,284	25,674	-5,800	-56,270
9	2007	14,095	96,039	9,050	34,724	-5,045	-61,315
10	2008	13,103	109,142	10,793	45,517	-2,340	-63,625
11	2009	0		12,523	58,040	12,523	-51,102
12	2010			13,129	71,169	13,129	-37,973
13	2011			13,663	84,832	13,663	-24,310
14	2012			14,147	98,979	14,147	-10,163
15	2013			14,572	113,551	14,572	4,409
16	2014			14,954	128,505	14,954	19,363
17	2015			15,264	143,769	15,264	34,627
18	2016			15,519	159,288	15,519	50,146
19	2017			15,686	174,974	15,686	65,832
20	2018			15,785	190,759	15,785	81,617
21	2019			15,785	206,544	15,785	97,402
22	2020			15,785	222,329	15,785	113,187
23	2021			15,785	238,114	15,785	128,972
24	2022			15,785	253,899	15,785	144,757
25	2023			15,785	269,684	15,785	160,542
26	2024			15,785	285,469	15,785	176,327
27	2025			14,683	300,152	14,683	191,010
28	2026			13,012	313,164	13,012	204,022
29	2027			11,474	324,638	11,474	215,496
30	2028			9,659	334,297	9,659	225,155
31	2029			8,328	342,625	8,328	233,483
32	2030			6,603	349,228	6,603	240,086
33	2031			5,205	354,433	5,205	245,291
34	2032			3,340	357,773	3,340	248,631
35	2033			1,767	359,540	1,767	250,398

Appendix 7.10 Estimation of Average Unit Revenue in Jordan

Items	Annual situation									
	1991		1992		1993		1994		1995	
	Total (JDs.1,000)	Unit R. (Fils/kWh)	Total (JDs.1,000)	Unit R. (Fils/kWh)	Total (JDs.1,000)	Unit R. (Fils/kWh)	Total (JDs.1,000)	Unit R. (Fils/kWh)	Total (JDs.1,000)	Unit R. (Fils/kWh)
NEPCO	72,810	24.26	88,161	24.40	108,049	27.24	122,641	36.58	135,312	28.88
Electricity sold(gWh)	3,002	-	3,613	-	3,966	-	3,352	-	4,685	-
IDECO	10,971	29.41	12,418	29.92	14,476	31.47	16,887	32.66	18,971	32.94
Electricity sold(gWh)	373	-	415	-	460	-	517	-	576	-
JEPCO	49,849	33.23	59,958	34.58	70,823	36.60	84,567	38.62	91,900	38.58
Electricity sold(gWh)	1,500	-	1,734	-	1,935	-	2,190	-	2,382	-
Total/weighted average (Fils/kWh)	133,630	27.41	160,557	27.86	193,348	30.40	224,095	36.98	246,183	32.21
Sales amount	4,875	-	5,762	-	6,361	-	6,059	-	7,643	-
Electricity sold(cWh)										

Resources: 1. Cost of Production, NEPCO.

2. Some Financial Indicators for JEPCO, JEPSCO.

3. IDECO Cost of Production, IDECO.



### Appendix 7.11 Forecast of Operation With and Without Countermeasure

(JDs:1,000)

Year in order	Demand forecast generation rate (GWh) (%)	Operation forecast without C.M.										Operation forecast with C.M.															
		Alternative A					Alternative B					Alternative C					Alternative D					Alternative E					
		Sales income	OM cost	Cash balance	OM cost to be reduced	OM cost to be added	Sales income	OM cost	Cash balance	OM cost to be reduced	OM cost to be added	Sales income	OM cost	Cash balance	OM cost to be reduced	OM cost to be added	Sales income	OM cost	Cash balance	OM cost to be reduced	OM cost to be added	Sales income	OM cost	Cash balance	OM cost to be reduced	OM cost to be added	
0	1995	5.167	246,183	215,149	31,034	0	215,149	0	31,034	0	215,149	0	31,034	0	215,149	0	31,034	0	31,034	0	215,149	0	31,034	0	215,149	0	31,034
1	1996	5.628	268,147	234,640	33,508	0	234,640	0	33,508	0	234,640	0	33,508	0	234,640	0	33,508	0	33,508	0	234,640	0	33,508	0	234,640	0	33,508
2	1997	6.018	286,729	250,899	35,830	0	250,899	0	35,830	0	250,899	0	35,830	0	250,899	0	35,830	0	35,830	0	250,899	0	35,830	0	250,899	0	35,830
3	1998	6.407	305,263	267,117	38,146	0	267,117	0	38,146	0	267,117	0	38,146	0	267,117	0	38,146	0	38,146	0	267,117	0	38,146	0	267,117	0	38,146
4	1999	6.783	323,178	282,793	40,384	0	282,793	0	40,384	0	282,793	0	40,384	0	282,793	0	40,384	0	40,384	0	282,793	0	40,384	0	282,793	0	40,384
5	2000	7.185	342,331	299,553	42,778	439	299,114	63	43,154	462	299,091	90	43,150	488	299,065	131	43,135	529	299,024	150	43,157	575	298,978	172	43,181		
6	2001	7.571	360,722	315,646	45,076	924	314,722	129	45,871	1,060	314,586	201	45,935	1,268	314,378	270	46,074	1,355	314,291	325	46,106	1,448	314,198	388	46,136		
7	2002	7.957	379,113	331,739	47,374	1,462	330,277	201	48,635	1,724	330,015	317	48,781	1,893	329,846	417	48,850	2,115	329,624	510	48,979	2,559	329,380	621	49,112		
8	2003	8.328	396,790	347,207	49,583	2,057	345,150	276	51,364	2,466	344,741	442	51,607	2,882	344,325	573	51,892	3,172	344,035	706	52,049	3,515	343,692	867	52,231		
9	2004	8.676	413,370	361,715	51,655	2,586	359,129	357	53,884	3,185	358,530	575	54,265	3,558	358,157	735	54,478	4,031	357,684	907	54,779	4,564	357,151	1,133	55,086		
10	2005	8.977	427,711	374,265	53,447	3,165	371,100	443	56,169	3,970	370,295	695	56,722	4,631	369,634	908	57,170	5,193	369,072	1,120	57,520	5,929	368,336	1,416	57,960		
11	2006	9.262	441,290	386,147	55,144	3,801	382,346	535	58,410	4,732	381,415	824	59,052	5,507	380,640	1,087	59,564	6,286	379,861	1,354	60,076	7,294	378,803	1,722	60,706		
12	2007	9.542	454,631	397,820	56,811	4,507	393,313	634	60,684	5,722	392,098	961	61,572	6,828	390,992	1,278	62,361	7,805	390,015	1,602	63,014	9,050	388,770	2,049	63,812		
13	2008	9.824	468,067	409,577	58,490	5,327	404,250	740	63,077	6,679	402,898	1,109	64,060	7,948	401,629	1,479	64,959	9,200	400,377	1,863	65,827	10,793	398,784	2,401	66,882		
14	2009	10.114	481,894	421,668	60,216	5,994	415,674	853	65,357	7,669	413,999	1,267	66,618	9,281	412,387	1,693	67,894	10,707	410,961	2,125	68,798	12,523	409,145	2,729	70,610		
15	2010	10.406	495,796	433,842	61,955	6,202	427,640	953	67,304	7,979	425,863	1,267	68,667	9,689	424,153	1,693	69,951	11,199	422,643	2,125	71,029	13,129	420,713	2,729	72,355		
16	2011	10.703	509,927	446,206	63,720	6,386	439,820	1,053	69,253	8,256	437,950	1,267	70,709	10,043	436,163	1,693	72,070	11,635	434,571	2,125	73,230	13,663	432,543	2,729	74,684		
17	2012	10.997	523,950	458,477	65,473	6,672	464,000	1,153	71,164	8,496	449,981	1,267	72,702	10,374	448,103	1,693	74,154	12,036	446,441	2,125	75,384	14,147	444,330	2,729	76,891		
18	2013	11.289	537,887	470,672	67,214	6,785	476,031	1,253	73,033	8,695	461,977	1,267	74,642	10,639	460,033	1,693	76,145	12,370	458,302	2,125	77,459	14,572	456,100	2,729	79,057		
19	2014	11.581	551,704	482,816	68,948	6,785	476,031	1,343	74,908	8,865	473,951	1,267	76,546	10,890	471,926	1,693	78,145	12,674	470,142	2,125	79,497	14,954	467,862	2,729	81,173		
20	2015	11.875	565,779	495,079	70,700	6,880	488,199	1,433	76,727	9,003	486,076	1,267	78,436	11,084	483,995	1,693	80,091	12,920	482,159	2,125	81,495	15,264	479,815	2,729	83,215		
21	2016	12.172	579,923	507,456	72,467	6,956	500,500	1,523	78,570	9,121	498,335	1,267	80,321	11,255	496,201	1,693	82,029	13,128	494,328	2,125	83,470	15,519	491,937	2,729	85,257		
22	2017	12.475	594,364	520,092	74,272	7,009	513,083	1,613	80,428	9,197	510,895	1,267	82,202	11,361	508,731	1,693	83,940	13,261	506,831	2,125	85,408	15,686	504,466	2,729	87,229		
23	2018	12.784	609,104	532,990	76,114	7,034	525,956	1,703	82,295	9,246	523,744	1,267	84,093	11,438	521,552	1,693	85,859	13,347	519,643	2,125	87,336	15,785	517,205	2,729	89,170		

Note : C.M. means countermeasure



### Appendix 7.13 Probable Operation during Construction Period in the Case of Alternative E

(JDs.1,000)

Year in order	Demand forecast		Operation forecast without C.M.										Operation forecast with C.M.				Cost to be paid by Jordan in the case of Alternative E					
	Year	Projected generation rate (GW/h) (%)	Sales income		Income		Total revenue		Expense		OM cost		Cash balance	OM cost to be reduced	OM cost to be retained	C.M. added	Cash to balance	Local cost of construction	Interest for foreign loan	Interest for local loan	Total cost	Operation balance
			Revenue	Other	Revenue	Other	Revenue	Other	Revenue	Other	Revenue	Other										
0	1995	5,167	246,183	10,275	256,458	215,149	24,164	239,313	17,145	0	239,313	0	17,145	0	17,145	0	0	0	0	0	0	17,145
1	1996	5,628	268,147	11,192	279,339	234,640	26,353	260,993	18,346	0	260,993	0	18,346	0	18,346	0	0	0	0	0	0	18,346
2	1997	6,018	286,729	11,967	298,696	250,899	28,179	279,079	19,618	0	279,079	0	19,618	0	19,618	0	0	0	0	0	0	19,618
3	1998	6,407	305,263	12,741	318,004	267,117	30,001	297,118	20,886	0	297,118	0	20,886	0	20,886	0	0	0	0	0	0	20,886
4	1999	6,783	323,178	13,489	336,666	282,793	31,761	314,555	22,111	0	314,555	0	22,111	824	824	0	0	0	0	0	824	21,287
5	2000	7,185	342,331	14,288	356,619	299,553	33,644	333,197	23,422	575	332,622	172	23,825	1,064	1,064	164	164	82	82	1310	22,515	
6	2001	7,571	360,722	15,056	375,778	315,646	35,451	351,097	24,680	1,448	349,649	388	25,740	1,188	1,188	368	368	189	189	1,745	23,995	
7	2002	7,957	379,113	15,823	394,936	331,739	37,259	368,998	25,939	2,359	366,639	621	27,677	1,299	1,299	587	587	291	291	2,177	25,500	
8	2003	8,328	396,790	16,561	413,351	347,207	38,996	386,203	27,148	3,515	382,688	867	29,796	1,448	1,448	818	818	383	383	2,649	27,147	
9	2004	8,676	413,370	17,253	430,623	361,715	40,625	402,341	28,282	4,564	397,777	1,133	31,713	1,584	1,584	1,067	1,067	467	467	3,118	28,595	
10	2005	8,977	427,711	17,851	445,562	374,265	42,035	416,299	29,264	5,929	410,370	1,416	33,777	1,756	1,756	1,330	1,330	537	537	3,623	30,154	
11	2006	9,262	441,290	18,418	459,709	386,147	43,369	429,516	30,193	7,284	422,232	1,722	35,755	1,936	1,936	1,612	1,612	597	597	4,145	31,610	
12	2007	9,542	454,631	18,975	473,606	397,820	44,680	442,501	31,105	9,050	433,451	2,049	38,106	2,141	2,141	1,913	1,913	658	658	4,712	33,394	
13	2008	9,824	468,067	19,536	487,603	409,577	46,001	455,578	32,025	10,793	444,785	2,401	40,417	2,041	2,041	2,236	2,236	727	727	5,004	35,413	

Note : C.M. means countermeasure

**Appendix 7.14-1 Repayability Analysis of the Project (Alternative A)**  
**(In the case of 5.00 % of interest rate of foreign loan)**

(JDs.1,000)

Year in order	Year	Out flow								In flow				Cash balance				
		Construction cost by portion			Foreign loan		Local loan			O/M cost	Total out flow	Foreign borrow	Local borrow		Interest during const- ruction	Revenue	Total in flow	
		FC	LC	Total	Interest	Re- pay- ment	Interest	Re- pay- ment										
1	1999	1,311	1,199	2,510	0	0	0	0	0	2,510	2,210	300	0	2,510	0			
2	2000	1,350	1,319	2,669	111	0	30	0	63	2,872	2,339	330	140	439	3,248	376		
3	2001	1,390	1,451	2,841	227	0	63	60	129	3,321	2,478	363	290	924	4,055	735		
4	2002	1,432	1,596	3,028	351	0	93	126	201	3,799	2,629	399	445	1,462	4,935	1,136		
5	2003	1,475	1,755	3,230	483	0	121	198	276	4,308	2,791	439	603	2,057	5,890	1,582		
6	2004	1,519	1,931	3,450	622	0	145	278	357	4,852	2,967	483	767	2,586	6,803	1,951		
7	2005	1,565	2,124	3,689	771	0	165	366	443	5,434	3,158	531	936	3,165	7,790	2,356		
8	2006	1,612	2,336	3,948	929	0	182	403	535	5,996	3,364	584	1,110	3,801	8,859	2,863		
9	2007	1,660	2,570	4,230	1,097	0	200	443	634	6,603	3,588	643	1,297	4,507	10,034	3,430		
10	2008	1,710	2,827	4,537	1,276	0	220	487	740	7,260	3,830	707	1,496	5,327	11,360	4,100		
11	2009				1,468	1,468	242	536	853	4,566			0	5,994	5,994	1,428		
12	2010				1,394	1,468	188	589	853	4,493			0	6,202	6,202	1,709		
13	2011				1,321	1,468	129	493	853	4,264			0	6,386	6,386	2,122		
14	2012				1,248	1,468	80	387	853	4,035			0	6,544	6,544	2,509		
15	2013				1,174	1,468	41	270	853	3,806			0	6,672	6,672	2,866		
16	2014				1,101	1,468	14	141	853	3,577				6,785	6,785	3,208		
17	2015				1,027	1,468	0	0	853	3,348				6,880	6,880	3,532		
18	2016				954	1,468			853	3,275				6,956	6,956	3,681		
19	2017				881	1,468			853	3,202				7,009	7,009	3,807		
20	2018				807	1,468			853	3,128				7,034	7,034	3,906		
21	2019				734	1,468			853	3,055				7,034	7,034	3,979		
22	2020				660	1,468			853	2,981				7,034	7,034	4,053		
23	2021				587	1,468			853	2,908				7,034	7,034	4,126		
24	2022				514	1,468			853	2,835				7,034	7,034	4,199		
25	2023				440	1,468			853	2,761				7,034	7,034	4,273		
26	2024				367	1,468			853	2,688				7,034	7,034	4,346		
27	2025				293	1,468			853	2,614				6,265	6,265	3,651		
28	2026				220	1,468			853	2,541				5,476	5,476	2,935		
29	2027				147	1,468			853	2,468				4,651	4,651	2,183		
30	2028				73	1,468			853	2,394				3,810	3,810	1,416		
31	2029				0				853	853				3,221	3,221	2,368		
32	2030								853	853				2,617	2,617	1,764		
33	2031								853	853				1,999	1,999	1,146		
34	2032								853	853				1,355	1,355	502		
35	2033								853	853				509	509	-314		
<b>Total</b>										<b>116,159</b>						<b>204,053</b>		<b>87,894</b>

(Note)

- (1) Interest rate of foreign loan: 5.00%
- (2) Equal annual repayment amount of capital for foreign loan: 1,468
- (3) Interest rate of local loan: 10.00%
- (4) Operation and maintenance cost: 853
- (5) Annual revenue: 7,034

**Appendix 7.14-2 Repayability Analysis of the Project (Alternative B)**  
**(In the case of 5.00 % of interest rate of foreign loan)**

(JDs.1,000)

Year in order	Year	Out flow								In flow				Cash balance			
		Construction cost by portion			Foreign loan		Local loan			O/M cost	Total out flow	Foreign borrow	Local borrow		Interest during const- ruction	Revenue	Total in flow
		FC	LC	Total	Interest	Re- pay- ment	Interest	Re- pay- ment									
1	1999	1,872	1,713	3,585	0	0	0	0	0	3,585	3,157	428	0	3,585	0		
2	2000	2,254	2,202	4,456	158	0	43	0	90	4,746	3,906	551	201	462	5,119	372	
3	2001	2,274	2,373	4,647	353	0	98	86	201	5,385	4,054	593	451	1,060	6,158	773	
4	2002	2,362	2,631	4,993	556	0	149	196	317	6,210	4,335	658	704	1,724	7,421	1,211	
5	2003	2,428	2,889	5,317	773	0	195	314	442	7,041	4,595	722	967	2,466	8,750	1,710	
6	2004	2,113	2,685	4,798	1,002	0	236	446	575	7,057	4,127	671	1,238	3,185	9,221	2,164	
7	2005	2,185	2,965	5,150	1,209	0	258	590	695	7,902	4,409	741	1,467	3,970	10,587	2,685	
8	2006	2,250	3,260	5,510	1,429	0	273	639	824	8,675	4,695	815	1,702	4,732	11,944	3,269	
9	2007	2,314	3,581	5,895	1,664	0	291	677	961	9,488	5,000	895	1,955	5,722	13,572	4,083	
10	2008	2,384	3,941	6,325	1,914	0	313	722	1,109	10,382	5,340	985	2,226	6,679	15,230	4,849	
11	2009				2,181	2,181	339	769	1,267	6,737			0	7,669	7,669	932	
12	2010				2,072	2,181	262	822	1,267	6,603			0	7,979	7,979	1,376	
13	2011				1,963	2,181	180	687	1,267	6,278			0	8,256	8,256	1,978	
14	2012				1,854	2,181	111	539	1,267	5,952			0	8,496	8,496	2,544	
15	2013				1,745	2,181	57	376	1,267	5,626			0	8,695	8,695	3,069	
16	2014				1,636	2,181	20	197	1,267	5,300				8,865	8,865	3,565	
17	2015				1,527	2,181	0	0	1,267	4,975				9,003	9,003	4,029	
18	2016				1,417	2,181			1,267	4,865				9,121	9,121	4,256	
19	2017				1,308	2,181			1,267	4,756				9,197	9,197	4,441	
20	2018				1,199	2,181			1,267	4,647				9,246	9,246	4,599	
21	2019				1,090	2,181			1,267	4,538				9,246	9,246	4,708	
22	2020				981	2,181			1,267	4,429				9,246	9,246	4,817	
23	2021				872	2,181			1,267	4,320				9,246	9,246	4,926	
24	2022				763	2,181			1,267	4,211				9,246	9,246	5,035	
25	2023				654	2,181			1,267	4,102				9,246	9,246	5,144	
26	2024				545	2,181			1,267	3,993				9,246	9,246	5,253	
27	2025				436	2,181			1,267	3,884				8,422	8,422	4,538	
28	2026				327	2,181			1,267	3,775				7,372	7,372	3,597	
29	2027				218	2,181			1,267	3,666				6,295	6,295	2,629	
30	2028				109	2,181			1,267	3,557				5,199	5,199	1,642	
31	2029				0				1,267	1,267				4,311	4,311	3,044	
32	2030								1,267	1,267				3,432	3,432	2,165	
33	2031								1,267	1,267				2,743	2,743	1,476	
34	2032								1,267	1,267				1,771	1,771	504	
35	2033								1,267	1,267				923	923	344	
Total					173,022								274,059		101,037		

(Note)

- (1) Interest rate of foreign loan: 5.00%
- (2) Equal annual repayment amount of capital for foreign loan: 2,181
- (3) Interest rate of local loan: 10.00%
- (4) Operation and maintenance cost: 1,267
- (5) Annual revenue: 9,246

**Appendix 7.14-3 Repayability Analysis of the Project (Alternative C)**  
**(In the case of 5.00 % of interest rate of foreign loan)**

(JDs.1,000)

Year in order	Year	Out flow								In flow				Cash balance			
		Construction cost by portion			Foreign loan		Local loan			O/M cost	Total out flow	Foreign borrow	Local borrow		Interest during const- ruction	Revenue	Total in flow
		FC	LC	Total	Interest	Re- pay- ment	Interest	Re- pay- ment									
1	1999	2,733	2,500	5,233	0	0	0	0	0	5,233	4,608	625	0	5,233	0		
2	2000	2,816	2,751	5,567	230	0	63	0	131	5,991	4,879	688	293	488	6,348	357	
3	2001	2,874	2,998	5,872	474	0	131	125	270	6,873	5,123	750	606	1,268	7,746	873	
4	2002	2,959	3,297	6,256	730	0	194	263	417	7,860	5,432	824	924	1,893	9,073	1,214	
5	2003	2,957	3,519	6,476	1,002	0	250	412	573	8,714	5,596	880	1,252	2,882	10,610	1,896	
6	2004	3,045	3,870	6,915	1,282	0	297	577	735	9,806	5,948	968	1,579	3,558	12,052	2,246	
7	2005	3,033	4,116	7,149	1,579	0	336	753	908	10,725	6,120	1,029	1,915	4,631	13,695	2,970	
8	2006	3,125	4,528	7,653	1,885	0	363	822	1,087	11,810	6,521	1,132	2,248	5,507	15,408	3,599	
9	2007	3,162	4,894	8,056	2,211	0	394	890	1,278	12,830	6,833	1,224	2,606	6,828	17,490	4,660	
10	2008	3,257	5,283	8,540	2,553	0	428	967	1,479	13,966	7,219	1,321	2,981	7,948	19,469	5,502	
11	2009				2,914	2,918	463	1,046	1,693	9,034			0	9,281	9,281	247	
12	2010				2,768	2,918	358	1,135	1,693	8,872			0	9,689	9,689	817	
13	2011				2,622	2,918	245	941	1,693	8,419			0	10,043	10,043	1,624	
14	2012				2,476	2,918	151	735	1,693	7,973			0	10,374	10,374	2,401	
15	2013				2,330	2,918	77	509	1,693	7,527			0	10,639	10,639	3,112	
16	2014				2,184	2,918	26	264	1,693	7,086				10,890	10,890	3,804	
17	2015				2,039	2,918	0	0	1,693	6,650				11,084	11,084	4,435	
18	2016				1,893	2,918			1,693	6,504				11,255	11,255	4,751	
19	2017				1,747	2,918			1,693	6,358				11,361	11,361	5,003	
20	2018				1,601	2,918			1,693	6,212				11,438	11,438	5,226	
21	2019				1,455	2,918			1,693	6,066				11,438	11,438	5,372	
22	2020				1,309	2,918			1,693	5,920				11,438	11,438	5,518	
23	2021				1,163	2,918			1,693	5,774				11,438	11,438	5,664	
24	2022				1,017	2,918			1,693	5,628				11,438	11,438	5,810	
25	2023				871	2,918			1,693	5,482				11,438	11,438	5,956	
26	2024				725	2,918			1,693	5,336				11,438	11,438	6,102	
27	2025				580	2,918			1,693	5,191				10,550	10,550	5,360	
28	2026				434	2,918			1,693	5,045				9,076	9,076	4,031	
29	2027				288	2,918			1,693	4,899				8,141	8,141	3,242	
30	2028				142	2,918			1,693	4,753				6,493	6,493	1,740	
31	2029				0				1,693	1,693				5,745	5,745	4,052	
32	2030								1,693	1,693				4,368	4,368	2,675	
33	2031								1,693	1,693				3,621	3,621	1,928	
34	2032								1,693	1,693				2,244	2,244	551	
35	2033								1,693	1,693				1,379	1,379	-314	
Total									231,000					343,422	112,422		

(Note)

- (1) Interest rate of foreign loan: 5.00%
- (2) Equal annual repayment amount of capital for foreign loan: 2,918
- (3) Interest rate of local loan: 10.00%
- (4) Operation and maintenance cost: 1,693
- (5) Annual revenue: 11,438

**Appendix 7.14-4 Repayability Analysis of the Project (Alternative D)**  
**(In the case of 5.00 % of interest rate of foreign loan)**

(JDs.1,000)

Year in order	Year	Out flow						In flow					Cash balance			
		Construction cost by portion			Foreign loan		Local loan	O/M cost	Total out flow	Foreign borrow	Local borrow	Interest during constr- uction		Revenue	Total in flow	
		FC	LC	Total	Interest	Re- pay- ment	Interest									Re- pay- ment
1	1999	3,139	2,872	6,011	0	0	0	0	6,011	5,293	718	0	6,011	0		
2	2000	3,536	3,454	6,990	265	0	72	0	150	7,477	6,127	864	336	529	7,855	379
3	2001	3,615	3,771	7,386	571	0	158	141	325	8,584	6,443	943	729	1,355	9,470	886
4	2002	3,708	4,132	7,840	893	0	238	316	510	9,797	6,807	1,033	1,131	2,115	11,086	1,289
5	2003	3,678	4,376	8,054	1,233	0	310	505	706	10,808	6,960	1,094	1,543	3,172	12,769	1,961
6	2004	3,750	4,766	8,516	1,581	0	369	711	907	12,085	7,325	1,192	1,950	4,031	14,497	2,413
7	2005	3,971	5,389	9,360	1,948	0	417	930	1,120	13,775	8,013	1,347	2,364	5,193	16,917	3,143
8	2006	4,049	5,868	9,917	2,348	0	458	1,025	1,354	15,103	8,450	1,467	2,807	6,286	19,010	3,907
9	2007	4,106	6,356	10,462	2,771	0	503	1,122	1,602	16,459	8,873	1,589	3,273	7,805	21,540	5,081
10	2008	3,951	6,531	10,482	3,215	0	549	1,227	1,863	17,336	8,849	1,633	3,764	9,200	23,446	6,110
11	2009				3,657	3,657	590	1,338	2,125	11,367			0	10,707	10,707	-660
12	2010				3,474	3,657	456	1,446	2,125	11,158			0	11,199	11,199	41
13	2011				3,291	3,657	312	1,207	2,125	10,592			0	11,635	11,635	1,043
14	2012				3,108	3,657	191	938	2,125	10,019			0	12,036	12,036	2,017
15	2013				2,926	3,657	97	644	2,125	9,449			0	12,370	12,370	2,921
16	2014				2,743	3,657	33	327	2,125	8,884				12,674	12,674	3,790
17	2015				2,560	3,657	0	0	2,125	8,342				12,920	12,920	4,578
18	2016				2,377	3,657			2,125	8,159				13,128	13,128	4,969
19	2017				2,194	3,657			2,125	7,976				13,261	13,261	5,285
20	2018				2,011	3,657			2,125	7,793				13,347	13,347	5,554
21	2019				1,828	3,657			2,125	7,610				13,347	13,347	5,737
22	2020				1,646	3,657			2,125	7,428				13,347	13,347	5,919
23	2021				1,463	3,657			2,125	7,245				13,347	13,347	6,102
24	2022				1,280	3,657			2,125	7,062				13,347	13,347	6,285
25	2023				1,097	3,657			2,125	6,879				13,347	13,347	6,468
26	2024				914	3,657			2,125	6,696				13,347	13,347	6,651
27	2025				731	3,657			2,125	6,513				12,356	12,356	5,843
28	2026				549	3,657			2,125	6,331				10,786	10,786	4,455
29	2027				366	3,657			2,125	6,148				9,567	9,567	3,419
30	2028				183	3,657			2,125	5,965				7,884	7,884	1,919
31	2029				0				2,125	2,125				6,869	6,869	4,744
32	2030								2,125	2,125				5,427	5,427	3,302
33	2031								2,125	2,125				4,369	4,369	2,244
34	2032								2,125	2,125				2,752	2,752	627
35	2033								2,125	2,125				1,544	1,544	-581
<b>Total</b>									<b>289,673</b>					<b>407,515</b>	<b>117,842</b>	

(Note)

- (1) Interest rate of foreign loan: 5.00%
- (2) Equal annual repayment amount of capital for foreign loan: 3,657
- (3) Interest rate of local loan: 10.00%
- (4) Operation and maintenance cost: 2,125
- (5) Annual revenue: 13,347

**Appendix 7.14-5 Repayability Analysis of the Project (Alternative E)**  
**(In the case of 5.00 % of interest rate of foreign loan)**

(JDs.1,000)

Year in order	Year	Out flow								In flow				Cash balance			
		Construction cost by portion			Foreign loan		Local loan			O/M cost	Total out flow	Foreign borrow	Local borrow		Interest during const- ruction	Revenue	Total in flow
		FC	LC	Total	Interest	Re- pay- ment	Interest	Re- pay- ment									
1	1999	3,602	3,295	6,897	0	0	0	0	0	6,897	6,073	824		0	6,897	0	
2	2000	4,358	4,257	8,615	304	0	82	0	172	9,173	7,551	1,064	386	575	9,576	403	
3	2001	4,556	4,753	9,309	681	0	189	165	388	10,732	8,121	1,188	870	1,448	11,627	895	
4	2002	4,662	5,195	9,857	1,087	0	291	378	621	12,234	8,558	1,299	1,378	2,359	13,594	1,361	
5	2003	4,867	5,791	10,658	1,515	0	383	615	867	14,039	9,210	1,448	1,898	3,515	16,071	2,033	
6	2004	4,986	6,336	11,322	1,976	0	467	875	1,133	15,773	9,738	1,584	2,442	4,564	18,328	2,556	
7	2005	5,177	7,025	12,202	2,463	0	537	1,165	1,416	17,783	10,446	1,756	3,000	5,929	21,131	3,348	
8	2006	5,342	7,742	13,084	2,985	0	597	1,317	1,722	19,704	11,149	1,936	3,581	7,284	23,949	4,246	
9	2007	5,532	8,563	14,095	3,542	0	658	1,455	2,049	21,799	11,954	2,141	4,201	9,050	27,346	5,546	
10	2008	4,939	8,164	13,103	4,140	0	727	1,604	2,401	21,975	11,062	2,041	4,867	10,793	28,763	6,788	
11	2009				4,693	4,693	771	1,773	2,729	14,658				0	12,523	-2,135	
12	2010				4,458	4,693	593	1,892	2,729	14,365				0	13,129	-1,236	
13	2011				4,224	4,693	404	1,575	2,729	13,625				0	13,663	38	
14	2012				3,989	4,693	247	1,223	2,729	12,881				0	14,147	1,266	
15	2013				3,754	4,693	124	836	2,729	12,137				0	14,572	2,435	
16	2014				3,520	4,693	41	408	2,729	11,391					14,954	3,563	
17	2015				3,285	4,693	0	0	2,729	10,707					15,264	4,557	
18	2016				3,051	4,693			2,729	10,473					15,519	5,046	
19	2017				2,816	4,693			2,729	10,238					15,686	5,448	
20	2018				2,581	4,693			2,729	10,003					15,785	5,782	
21	2019				2,347	4,693			2,729	9,769					15,785	6,016	
22	2020				2,112	4,693			2,729	9,534					15,785	6,251	
23	2021				1,877	4,693			2,729	9,299					15,785	6,486	
24	2022				1,643	4,693			2,729	9,065					15,785	6,720	
25	2023				1,408	4,693			2,729	8,830					15,785	6,955	
26	2024				1,173	4,693			2,729	8,595					15,785	7,190	
27	2025				939	4,693			2,729	8,361					14,683	6,322	
28	2026				704	4,693			2,729	8,126					13,012	4,886	
29	2027				469	4,693			2,729	7,891					11,474	3,583	
30	2028				235	4,693			2,729	7,657					9,659	2,002	
31	2029				0				2,729	2,729					8,328	5,599	
32	2030								2,729	2,729					6,603	3,874	
33	2031								2,729	2,729					5,205	2,476	
34	2032								2,729	2,729					3,340	611	
35	2033								2,729	2,729					1,767	-962	
<b>Total</b>										<b>371,358</b>					<b>491,306</b>	<b>119,948</b>	

(Note)

- |  |        |
|--|--------|
| (1) Interest rate of foreign loan:                             | 5.00%  |
| (2) Equal annual repayment amount of capital for foreign loan: | 4,693  |
| (3) Interest rate of local loan:                               | 10.00% |
| (4) Operation and maintenance cost:                            | 2,729  |
| (5) Annual revenue:  | 15,785 |



**Appendix 7.15-1 Repayability Analysis of the Project (Alternative A)**  
**(In the case of 7.00 % of interest rate of foreign loan)**

(IDs, 1,000)

Year in order	Year	Out flow								In flow					Cash balance			
		Construction cost by portion			Foreign loan		Local loan			O/M cost	Total out flow	Foreign borrow	Local borrow	Interest during con- struction		Revenue	Total in flow	
		FC	LC	Total	Interest	Re- pay- ment	Interest	Re- pay- ment										
1	1999	1,311	1,199	2,510	0	0	0	0	0	2,510	2,210	300		0	2,510	0		
2	2000	1,350	1,319	2,669	155	0	30	0	63	2,916	2,339	330	185	439	3,293	376		
3	2001	1,390	1,451	2,841	318	0	63	60	129	3,412	2,478	363	381	924	4,146	735		
4	2002	1,432	1,596	3,028	492	0	93	126	201	3,940	2,629	399	585	1,462	5,075	1,136		
5	2003	1,475	1,755	3,230	676	0	121	198	276	4,501	2,791	439	797	2,057	6,084	1,582		
6	2004	1,519	1,931	3,450	871	0	145	278	357	5,101	2,967	483	1,016	2,586	7,052	1,951		
7	2005	1,565	2,124	3,689	1,079	0	165	366	443	5,742	3,158	531	1,244	3,165	8,098	2,356		
8	2006	1,612	2,336	3,948	1,300	0	182	403	535	6,368	3,364	584	1,482	3,801	9,231	2,863		
9	2007	1,660	2,570	4,230	1,536	0	200	443	634	7,042	3,588	643	1,735	4,507	10,472	3,430		
10	2008	1,710	2,827	4,537	1,787	0	220	487	740	7,770	3,830	707	2,006	5,327	11,870	4,100		
11	2009				2,055	1,468	242	536	853	5,154			0	5,994	5,994	810		
12	2010				1,952	1,468	188	589	853	5,051			0	6,202	6,202	1,152		
13	2011				1,849	1,468	129	493	853	4,792			0	6,386	6,386	1,594		
14	2012				1,747	1,468	80	387	853	4,534			0	6,544	6,544	2,010		
15	2013				1,644	1,468	41	270	853	4,276			0	6,672	6,672	2,396		
16	2014				1,541	1,468	14	141	853	4,018				6,785	6,785	2,767		
17	2015				1,438	1,468	0	0	853	3,759				6,880	6,880	3,121		
18	2016				1,336	1,468			853	3,657				6,956	6,956	3,299		
19	2017				1,233	1,468			853	3,554				7,009	7,009	3,455		
20	2018				1,130	1,468			853	3,451				7,034	7,034	3,583		
21	2019				1,027	1,468			853	3,348				7,034	7,034	3,686		
22	2020				924	1,468			853	3,245				7,034	7,034	3,789		
23	2021				822	1,468			853	3,143				7,034	7,034	3,891		
24	2022				719	1,468			853	3,040				7,034	7,034	3,994		
25	2023				616	1,468			853	2,937				7,034	7,034	4,097		
26	2024				513	1,468			853	2,834				7,034	7,034	4,200		
27	2025				411	1,468			853	2,732				6,265	6,265	3,533		
28	2026				308	1,468			853	2,629				5,476	5,476	2,847		
29	2027				205	1,468			853	2,526				4,651	4,651	2,125		
30	2028				102	1,468			853	2,423				3,810	3,810	1,387		
31	2029				0				853	853				3,221	3,221	2,368		
32	2030								853	853				2,617	2,617	1,764		
33	2031								853	853				1,999	1,999	1,146		
34	2032								853	853				1,355	1,355	502		
35	2033								853	853				509	509	-344		
<b>Total</b>										<b>124,670</b>							<b>206,400</b>	<b>81,730</b>

(Note)

- (1) Interest rate of foreign loan: 7.00%
- (2) Equal annual repayment amount of capital for foreign loan: 1,468
- (3) Interest rate of local loan: 10.00%
- (4) Operation and maintenance cost: 853
- (5) Annual revenue: 7,034

**Appendix 7.15-2 Repayability Analysis of the Project (Alternative B)**  
**(In the case of 7.00 % of interest rate of foreign loan)**

(JDs. 1,000)

Year in order	Year	Out flow							In flow					Cash balance			
		Construction cost by portion			Foreign loan		Local loan		O/M cost	Total out flow	Foreign borrow	Local borrow	Interest during const- ruction		Revenue	Total in flow	
		FC	LC	Total	Interest	Re- pay- ment	Interest	Re- pay- ment									
1	1999	1,872	1,713	3,585	0	0	0	0	0	3,585	3,157	428	0	3,585	0		
2	2000	2,254	2,202	4,456	221	0	43	0	90	4,809	3,906	551	264	462	5,182	372	
3	2001	2,274	2,373	4,647	494	0	98	86	201	5,526	4,054	593	592	1,060	6,299	773	
4	2002	2,362	2,631	4,993	778	0	149	196	317	6,433	4,335	658	927	1,724	7,644	1,211	
5	2003	2,428	2,889	5,317	1,082	0	195	314	442	7,350	4,595	722	1,276	2,466	9,059	1,710	
6	2004	2,113	2,685	4,798	1,403	0	236	446	575	7,458	4,127	671	1,639	3,185	9,622	2,164	
7	2005	2,185	2,965	5,150	1,692	0	258	590	695	8,386	4,409	741	1,950	3,970	11,070	2,685	
8	2006	2,250	3,260	5,510	2,001	0	273	639	824	9,247	4,695	815	2,274	4,732	12,516	3,269	
9	2007	2,314	3,581	5,895	2,329	0	291	677	961	10,154	5,000	895	2,620	5,722	14,237	4,083	
10	2008	2,384	3,941	6,325	2,679	0	313	722	1,109	11,147	5,340	985	2,992	6,679	15,996	4,849	
11	2009				3,053	2,181	339	769	1,267	7,609			0	7,669	7,669	60	
12	2010				2,900	2,181	262	822	1,267	7,432			0	7,979	7,979	547	
13	2011				2,748	2,181	180	687	1,267	7,063			0	8,256	8,256	1,193	
14	2012				2,595	2,181	111	539	1,267	6,693			0	8,496	8,496	1,803	
15	2013				2,442	2,181	57	376	1,267	6,324			0	8,695	8,695	2,371	
16	2014				2,290	2,181	20	197	1,267	5,955				8,865	8,865	2,910	
17	2015				2,137	2,181	0	0	1,267	5,585				9,003	9,003	3,418	
18	2016				1,984	2,181			1,267	5,432				9,121	9,121	3,689	
19	2017				1,832	2,181			1,267	5,280				9,197	9,197	3,917	
20	2018				1,679	2,181			1,267	5,127				9,246	9,246	4,119	
21	2019				1,526	2,181			1,267	4,974				9,246	9,246	4,272	
22	2020				1,374	2,181			1,267	4,822				9,246	9,246	4,424	
23	2021				1,221	2,181			1,267	4,669				9,246	9,246	4,577	
24	2022				1,068	2,181			1,267	4,516				9,246	9,246	4,730	
25	2023				916	2,181			1,267	4,364				9,246	9,246	4,882	
26	2024				763	2,181			1,267	4,211				9,246	9,246	5,035	
27	2025				610	2,181			1,267	4,058				8,422	8,422	4,364	
28	2026				458	2,181			1,267	3,906				7,372	7,372	3,466	
29	2027				305	2,181			1,267	3,753				6,295	6,295	2,542	
30	2028				152	2,181			1,267	3,600				5,199	5,199	1,599	
31	2029				0				1,267	1,267				4,311	4,311	3,044	
32	2030								1,267	1,267				3,432	3,432	2,165	
33	2031								1,267	1,267				2,743	2,743	1,476	
34	2032								1,267	1,267				1,771	1,771	501	
35	2033								1,267	1,267				923	923	-344	
<b>Total</b>															<b>185,803</b>	<b>277,681</b>	<b>91,878</b>

(Note)

- |  |        |
|--|--------|
| (1) Interest rate of foreign loan:                             | 7.00%  |
| (2) Equal annual repayment amount of capital for foreign loan: | 2,181  |
| (3) Interest rate of local loan:                               | 10.00% |
| (4) Operation and maintenance cost:                            | 1,267  |
| (5) Annual revenue:  | 9,246  |

**Appendix 7.15-3 Repayability Analysis of the Project (Alternative C)**  
(In the case of 7.00 % of interest rate of foreign loan)

(JDs.1,000)

Year in order	Year	Out flow								In flow					Cash balance		
		Construction cost by portion			Foreign loan		Local loan			O/M cost	Total out flow	Foreign borrow	Local borrow	Interest during constr- uction		Revenue	Total in flow
		FC	LC	Total	Interest	Re- pay- ment	Interest	Re- pay- ment									
1	1999	2,733	2,500	5,233	0	0	0	0	0	5,233	4,608	625		0	5,233	0	
2	2000	2,816	2,751	5,567	323	0	63	0	131	6,083	4,879	688	385	488	6,440	357	
3	2001	2,874	2,998	5,872	664	0	131	125	270	7,062	5,123	750	795	1,268	7,935	873	
4	2002	2,959	3,297	6,256	1,023	0	194	263	417	8,152	5,432	824	1,216	1,893	9,365	1,214	
5	2003	2,957	3,519	6,476	1,403	0	250	412	573	9,114	5,596	880	1,653	2,882	11,011	1,896	
6	2004	3,045	3,870	6,915	1,795	0	297	577	735	10,319	5,948	968	2,091	3,558	12,564	2,246	
7	2005	3,033	4,116	7,149	2,211	0	336	753	908	11,357	6,120	1,029	2,547	4,631	14,327	2,970	
8	2006	3,125	4,528	7,653	2,639	0	363	822	1,087	12,561	6,521	1,132	3,003	5,507	16,163	3,599	
9	2007	3,162	4,894	8,056	3,096	0	394	890	1,278	13,714	6,833	1,224	3,490	6,828	18,374	4,660	
10	2008	3,257	5,283	8,540	3,574	0	428	967	1,479	14,988	7,219	1,321	4,002	7,948	20,490	5,502	
11	2009				4,079	2,918	463	1,046	1,693	10,200			0	9,281	9,281	-919	
12	2010				3,875	2,918	358	1,135	1,693	9,979			0	9,689	9,689	-290	
13	2011				3,671	2,918	245	941	1,693	9,468			0	10,043	10,043	575	
14	2012				3,467	2,918	151	735	1,693	8,964			0	10,374	10,374	1,410	
15	2013				3,262	2,918	77	509	1,693	8,460			0	10,639	10,639	2,179	
16	2014				3,058	2,918	26	264	1,693	7,960				10,890	10,890	2,930	
17	2015				2,854	2,918	0	0	1,693	7,465				11,084	11,084	3,619	
18	2016				2,650	2,918			1,693	7,261				11,255	11,255	3,994	
19	2017				2,445	2,918			1,693	7,056				11,361	11,361	4,305	
20	2018				2,241	2,918			1,693	6,852				11,438	11,438	4,586	
21	2019				2,037	2,918			1,693	6,648				11,438	11,438	4,790	
22	2020				1,833	2,918			1,693	6,444				11,438	11,438	4,994	
23	2021				1,628	2,918			1,693	6,239				11,438	11,438	5,199	
24	2022				1,424	2,918			1,693	6,035				11,438	11,438	5,403	
25	2023				1,220	2,918			1,693	5,831				11,438	11,438	5,607	
26	2024				1,016	2,918			1,693	5,627				11,438	11,438	5,811	
27	2025				811	2,918			1,693	5,422				10,550	10,550	5,128	
28	2026				607	2,918			1,693	5,218				9,076	9,076	3,858	
29	2027				403	2,918			1,693	5,014				8,141	8,141	3,127	
30	2028				199	2,918			1,693	4,810				6,493	6,493	1,683	
31	2029				0				1,693	1,693				5,745	5,745	4,052	
32	2030								1,693	1,693				4,368	4,368	2,675	
33	2031								1,693	1,693				3,621	3,621	1,928	
34	2032								1,693	1,693				2,244	2,244	551	
35	2033								1,693	1,693				1,379	1,379	-314	
Total										248,002					348,201	100,199	

(Note)

- (1) Interest rate of foreign loan: 7.00%
- (2) Equal annual repayment amount of capital for foreign loan: 2,918
- (3) Interest rate of local loan: 10.00%
- (4) Operation and maintenance cost: 1,693
- (5) Annual revenue: 11,438

**Appendix 7.15-4 Repayability Analysis of the Project (Alternative D)**  
(In the case of 7.00 % of interest rate of foreign loan)

(IDs. 1,000)

Year in order	Year	Out flow								In flow				Cash balance			
		Construction cost			Foreign loan		Local loan			O/M cost	Total out flow	Foreign borrow	Local borrow		Interest during const- ruction	Revenue	Total in flow
		by portion			Interest	Re- pay- ment	Interest	Re- pay- ment									
		FC	LC	Total													
1	1999	3,139	2,872	6,011	0	0	0	0	0	6,011	5,293	718		0	6,011	0	
2	2000	3,536	3,454	6,990	371	0	72	0	150	7,583	6,127	864	442	529	7,961	379	
3	2001	3,615	3,771	7,386	799	0	158	144	325	8,812	6,443	943	958	1,355	9,699	886	
4	2002	3,708	4,132	7,840	1,250	0	238	316	510	10,154	6,807	1,033	1,488	2,115	11,443	1,289	
5	2003	3,678	4,376	8,054	1,727	0	310	505	706	11,301	6,960	1,094	2,037	3,172	13,263	1,961	
6	2004	3,750	4,766	8,516	2,214	0	369	711	907	12,717	7,325	1,192	2,583	4,031	15,130	2,413	
7	2005	3,971	5,389	9,360	2,727	0	417	930	1,120	14,554	8,013	1,347	3,143	5,193	17,696	3,143	
8	2006	4,049	5,868	9,917	3,288	0	458	1,025	1,354	16,042	8,450	1,467	3,746	6,286	19,949	3,907	
9	2007	4,106	6,356	10,462	3,879	0	503	1,122	1,602	17,567	8,873	1,589	4,382	7,805	22,649	5,081	
10	2008	3,951	6,531	10,482	4,500	0	549	1,227	1,863	18,622	8,849	1,633	5,050	9,200	24,732	6,110	
11	2009				5,120	3,657	590	1,338	2,125	12,830			0	10,707	10,707	-2,123	
12	2010				4,864	3,657	456	1,416	2,125	12,547			0	11,199	11,199	-1,348	
13	2011				4,608	3,657	312	1,207	2,125	11,909			0	11,635	11,635	-274	
14	2012				4,352	3,657	191	938	2,125	11,262			0	12,036	12,036	774	
15	2013				4,096	3,657	97	644	2,125	10,619			0	12,370	12,370	1,751	
16	2014				3,840	3,657	33	327	2,125	9,981				12,674	12,674	2,693	
17	2015				3,584	3,657	0	0	2,125	9,366				12,920	12,920	3,554	
18	2016				3,328	3,657			2,125	9,110				13,128	13,128	4,018	
19	2017				3,072	3,657			2,125	8,854				13,261	13,261	4,407	
20	2018				2,816	3,657			2,125	8,598				13,347	13,347	4,749	
21	2019				2,560	3,657			2,125	8,342				13,347	13,347	5,005	
22	2020				2,304	3,657			2,125	8,086				13,347	13,347	5,261	
23	2021				2,048	3,657			2,125	7,830				13,347	13,347	5,517	
24	2022				1,792	3,657			2,125	7,574				13,347	13,347	5,773	
25	2023				1,536	3,657			2,125	7,318				13,347	13,347	6,029	
26	2024				1,280	3,657			2,125	7,062				13,347	13,347	6,285	
27	2025				1,024	3,657			2,125	6,806				12,356	12,356	5,550	
28	2026				768	3,657			2,125	6,550				10,786	10,786	4,236	
29	2027				512	3,657			2,125	6,294				9,567	9,567	3,273	
30	2028				256	3,657			2,125	6,038				7,884	7,884	1,846	
31	2029				0				2,125	2,125				6,869	6,869	4,744	
32	2030								2,125	2,125				5,427	5,427	3,302	
33	2031								2,125	2,125				4,369	4,369	2,244	
34	2032								2,125	2,125				2,752	2,752	627	
35	2033								2,125	2,125				1,544	1,544	-581	
<b>Total</b>										<b>310,963</b>					<b>413,445</b>	<b>102,483</b>	

(Note)

- (1) Interest rate of foreign loan: 7.00%
- (2) Equal annual repayment amount of capital for foreign loan: 3,657
- (3) Interest rate of local loan: 10.00%
- (4) Operation and maintenance cost: 2,125
- (5) Annual revenue: 13,347

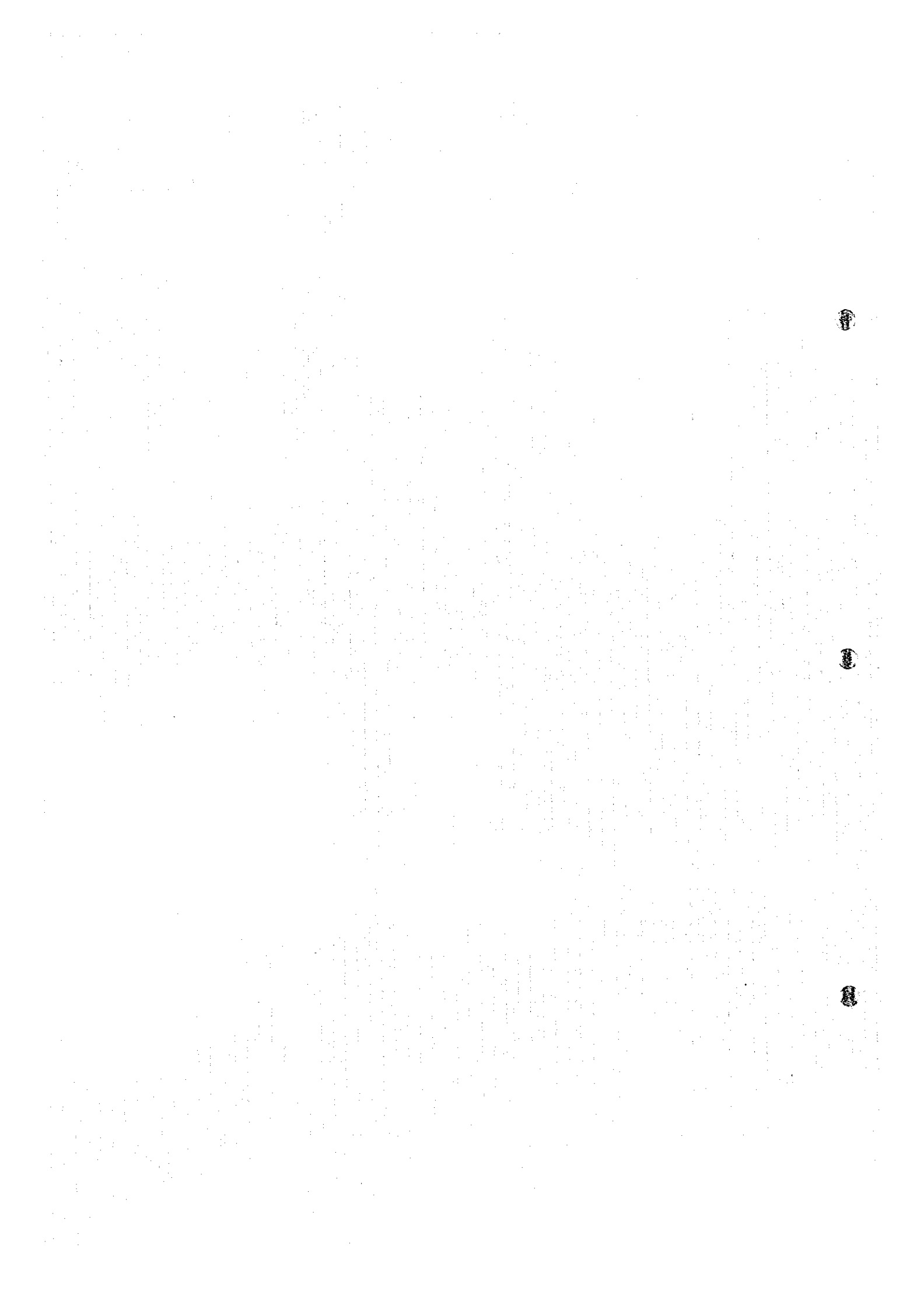
**Appendix 7.15-5 Repayability Analysis of the Project (Alternative E)  
(In the case of 7.00 % of interest rate of foreign loan)**

(JDs.1,000)

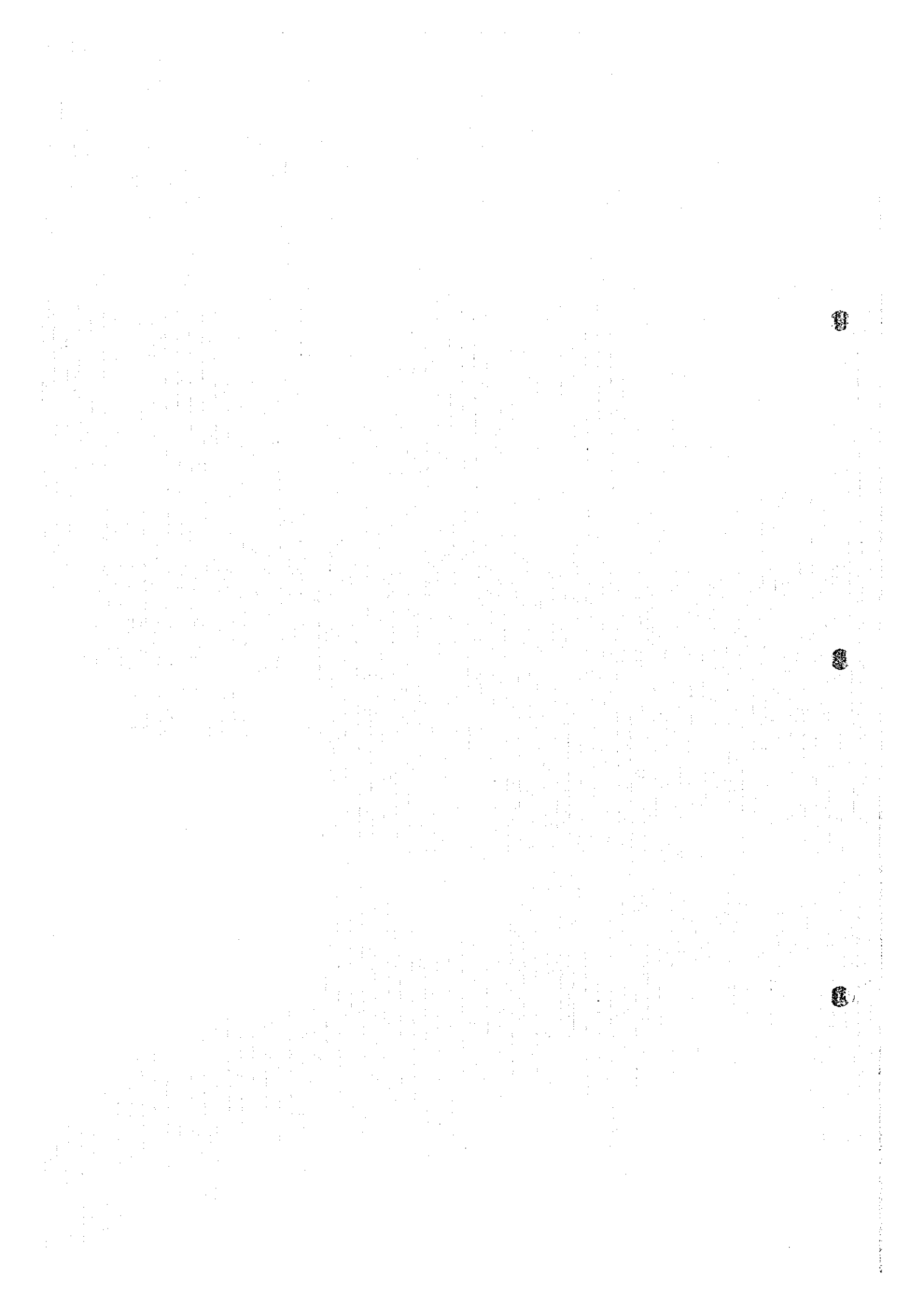
Year in order	Year	Out flow								In flow				Cash balance				
		Construction cost by portion			Foreign loan		Local loan			O/M cost	Total out flow	Foreign borrow	Local borrow		Interest		Revenue	Total in flow
		FC	LC	Total	Interest	Re- pay- ment	Interest	Re- pay- ment	during const- ruction						Total			
										Interest	Re- pay- ment							
1	1999	3,602	3,295	6,897	0	0	0	0	0	6,897	6,073	824	0	0	6,897	0		
2	2000	4,358	4,257	8,615	425	0	82	0	172	9,295	7,551	1,064	508	575	9,698	403		
3	2001	4,556	4,753	9,309	954	0	189	165	388	11,004	8,121	1,188	1,142	1,448	11,899	895		
4	2002	4,662	5,195	9,857	1,522	0	291	378	621	12,668	8,558	1,299	1,813	2,359	14,029	1,361		
5	2003	4,867	5,791	10,658	2,121	0	383	615	867	14,645	9,210	1,448	2,504	3,515	16,677	2,033		
6	2004	4,986	6,336	11,322	2,766	0	467	875	1,133	16,563	9,738	1,584	3,232	4,564	19,118	2,556		
7	2005	5,177	7,025	12,202	3,448	0	537	1,165	1,416	18,768	10,446	1,756	3,985	5,929	22,116	3,348		
8	2006	5,342	7,742	13,084	4,179	0	597	1,317	1,722	20,897	11,149	1,936	4,775	7,284	25,143	4,246		
9	2007	5,532	8,563	14,095	4,959	0	658	1,455	2,049	23,216	11,954	2,141	5,618	9,050	28,763	5,546		
10	2008	4,939	8,164	13,103	5,796	0	727	1,604	2,401	23,631	11,062	2,041	6,523	10,793	30,419	6,788		
11	2009				6,570	4,693	771	1,773	2,729	16,535			0	12,523	12,523	-4,012		
12	2010				6,242	4,693	593	1,892	2,729	16,149			0	13,129	13,129	-3,020		
13	2011				5,913	4,693	404	1,575	2,729	15,314			0	13,663	13,663	-1,651		
14	2012				5,585	4,693	247	1,223	2,729	14,477			0	14,147	14,147	-330		
15	2013				5,256	4,693	124	836	2,729	13,639			0	14,572	14,572	933		
16	2014				4,928	4,693	41	408	2,729	12,799				14,954	14,954	2,155		
17	2015				4,599	4,693	0	0	2,729	12,021				15,264	15,264	3,243		
18	2016				4,271	4,693			2,729	11,693				15,519	15,519	3,826		
19	2017				3,942	4,693			2,729	11,364				15,686	15,686	4,322		
20	2018				3,614	4,693			2,729	11,036				15,785	15,785	4,749		
21	2019				3,285	4,693			2,729	10,707				15,785	15,785	5,078		
22	2020				2,957	4,693			2,729	10,379				15,785	15,785	5,406		
23	2021				2,628	4,693			2,729	10,050				15,785	15,785	5,735		
24	2022				2,300	4,693			2,729	9,722				15,785	15,785	6,063		
25	2023				1,971	4,693			2,729	9,393				15,785	15,785	6,392		
26	2024				1,643	4,693			2,729	9,065				15,785	15,785	6,720		
27	2025				1,314	4,693			2,729	8,736				14,683	14,683	5,947		
28	2026				986	4,693			2,729	8,408				13,012	13,012	4,604		
29	2027				657	4,693			2,729	8,079				11,474	11,474	3,395		
30	2028				329	4,693			2,729	7,751				9,659	9,659	1,908		
31	2029				0				2,729	7,729				8,328	8,328	5,599		
32	2030								2,729	7,729				6,603	6,603	3,874		
33	2031								2,729	7,729				5,205	5,205	2,476		
34	2032								2,729	7,729				3,340	3,340	611		
35	2033								2,729	7,729				1,767	1,767	-962		
Total										398,547					498,783	100,237		

(Note)

- |  |        |
|--|--------|
| (1) Interest rate of foreign loan:                             | 7.00%  |
| (2) Equal annual repayment amount of capital for foreign loan: | 4,693  |
| (3) Interest rate of local loan:                               | 10.00% |
| (4) Operation and maintenance cost:                            | 2,729  |
| (5) Annual revenue:  | 15,785 |











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