

*The Study on Comprehensive Disaster Prevention
around Mayon Volcano*

DATA BOOK

V : SOCIO - ECONOMY

DT V 1 Damage Rate of Agricultural Products by Mud Flow in Case of Sabo Dam Construction (Land Use Plan: Option-2&3)

Year	Damage Rate for Difference of Agricultural Values by Return Period				
	2-Year	(5-3)-Year	(10-5)-Year	(20-10)-Year	(50-20)-Year
1	0.50000	0.20000	0.10000	0.05000	0.02000
2	0.75000	0.36000	0.19000	0.09750	0.03960
3	0.87500	0.48800	0.27100	0.14263	0.05881
4	0.93750	0.59040	0.34390	0.18549	0.07763
5	0.96875	0.67232	0.40951	0.22622	0.09608
6	0.98438	0.73786	0.46856	0.26491	0.11416
7	0.99219	0.79028	0.52170	0.30166	0.13187
8	0.99609	0.83223	0.56953	0.33658	0.14924
9	0.99805	0.86578	0.61258	0.36975	0.16625
10	0.99902	0.89263	0.65132	0.40126	0.18293
11	0.99951	0.91410	0.68619	0.43120	0.19927
12	0.99976	0.93128	0.71757	0.45964	0.21528
13	0.99988	0.94502	0.74581	0.48666	0.23098
14	0.99994	0.95602	0.77123	0.51233	0.24636
15	0.99997	0.96482	0.79411	0.53671	0.26143
16	0.99998	0.97185	0.81470	0.55987	0.27620
17	0.99999	0.97748	0.83323	0.58188	0.29068
18	1.00000	0.98199	0.84991	0.60279	0.30486
19	1.00000	0.98559	0.86491	0.62265	0.31877
20	1.00000	0.98847	0.87842	0.64151	0.33239
21	1.00000	0.99078	0.89058	0.65944	0.34574
22	1.00000	0.99262	0.90152	0.67647	0.35883
23	1.00000	0.99410	0.91137	0.69264	0.37165
24	1.00000	0.99528	0.92023	0.70801	0.38422
25	1.00000	0.99622	0.92821	0.72261	0.39654
26	1.00000	0.99698	0.93539	0.73648	0.40860
27	1.00000	0.99758	0.94185	0.74966	0.42043
28	1.00000	0.99807	0.94767	0.76217	0.43202
29	1.00000	0.99845	0.95290	0.77406	0.44338
30	1.00000	0.99876	0.95761	0.78536	0.45452
31	0.01364	0.27275	0.43640	0.49095	0.51823
32	0.00034	0.13638	0.34912	0.44186	0.49231
33	0.00001	0.06819	0.27930	0.39767	0.46770
34	0.00000	0.03409	0.22344	0.35790	0.44431
35	0.00000	0.01705	0.17875	0.32211	0.42210
36	0.00000	0.00852	0.14300	0.28990	0.40099
37	0.00000	0.00426	0.11440	0.26091	0.38094
38	0.00000	0.00213	0.09152	0.23482	0.36190
39	0.00000	0.00107	0.07322	0.21134	0.34380
40	0.00000	0.00053	0.05857	0.19020	0.32661
41	0.00000	0.00027	0.04686	0.17118	0.31028
42	0.00000	0.00013	0.03749	0.15407	0.29477
43	0.00000	0.00007	0.02999	0.13866	0.28003
44	0.00000	0.00003	0.02399	0.12479	0.26603
45	0.00000	0.00002	0.01919	0.11231	0.25273
46	0.00000	0.00001	0.01535	0.10108	0.24009
47	0.00000	0.00000	0.01228	0.09097	0.22808
48	0.00000	0.00000	0.00983	0.08188	0.21668
49	0.00000	0.00000	0.00786	0.07369	0.20585
50	0.00000	0.00000	0.00629	0.06632	0.19555

DT V 2 Damage Rate of Structural Assets by Mud Flow in Case of Sabo Dam Construction (Land Use Plan: Option-2&3)

Year	Damage Rate for Difference of Values of Sturctural Assets by Return Period				
	2-Year	(5-3)-Year	(10-5)-Year	(20-10)-Year	(50-20)-Year
1	0.75000	0.20000	0.10000	0.05000	0.02000
2	0.12500	0.10000	0.08000	0.04500	0.01900
3	0.03125	0.05000	0.06400	0.04050	0.01805
4	0.00781	0.02500	0.05120	0.03645	0.01715
5	0.00195	0.01250	0.04096	0.03281	0.01629
6	0.00049	0.00625	0.03277	0.02952	0.01548
7	0.00012	0.00313	0.02621	0.02657	0.01470
8	0.00003	0.00156	0.02097	0.02391	0.01397
9	0.00001	0.00078	0.01678	0.02152	0.01327
10	0.00000	0.00039	0.01342	0.01937	0.01260
11	0.00000	0.00020	0.01074	0.01743	0.01197
12	0.00000	0.00010	0.00859	0.01569	0.01138
13	0.00000	0.00005	0.00687	0.01412	0.01081
14	0.00000	0.00002	0.00550	0.01271	0.01027
15	0.00000	0.00001	0.00440	0.01144	0.00975
16	0.00000	0.00001	0.00352	0.01029	0.00927
17	0.00000	0.00000	0.00281	0.00927	0.00880
18	0.00000	0.00000	0.00225	0.00834	0.00836
19	0.00000	0.00000	0.00180	0.00750	0.00794
20	0.00000	0.00000	0.00144	0.00675	0.00755
21	0.00000	0.00000	0.00115	0.00608	0.00717
22	0.00000	0.00000	0.00092	0.00547	0.00681
23	0.00000	0.00000	0.00074	0.00492	0.00647
24	0.00000	0.00000	0.00059	0.00443	0.00615
25	0.00000	0.00000	0.00047	0.00399	0.00584
26	0.00000	0.00000	0.00038	0.00359	0.00555
27	0.00000	0.00000	0.00030	0.00323	0.00527
28	0.00000	0.00000	0.00024	0.00291	0.00501
29	0.00000	0.00000	0.00019	0.00262	0.00476
30	0.00000	0.00000	0.00015	0.00236	0.00452
31	0.25000	0.50000	0.80000	0.90000	0.95000
32	0.06250	0.25000	0.64000	0.81000	0.90250
33	0.01563	0.12500	0.51200	0.72900	0.85738
34	0.00391	0.06250	0.40960	0.65610	0.81451
35	0.00098	0.03125	0.32768	0.59049	0.77378
36	0.00024	0.01563	0.26214	0.53144	0.73509
37	0.00006	0.00781	0.20972	0.47830	0.69834
38	0.00002	0.00391	0.16777	0.43047	0.66342
39	0.00000	0.00195	0.13422	0.38742	0.63025
40	0.00000	0.00098	0.10737	0.34868	0.59874
41	0.00000	0.00049	0.08590	0.31381	0.56880
42	0.00000	0.00024	0.06872	0.28243	0.54036
43	0.00000	0.00012	0.05498	0.25419	0.51334
44	0.00000	0.00006	0.04398	0.22877	0.48767
45	0.00000	0.00003	0.03518	0.20589	0.46329
46	0.00000	0.00002	0.02815	0.18530	0.44013
47	0.00000	0.00001	0.02252	0.16677	0.41812
48	0.00000	0.00000	0.01801	0.15009	0.39721
49	0.00000	0.00000	0.01441	0.13509	0.37735
50	0.00000	0.00000	0.01153	0.12158	0.35849

DT V 3 Calculation of Average Annual Flood Damages for River Improvement Project of Yawa River

Return Period (Year)	Probability of Occurrence	Flood Damage (Mil.Peso)	Average Damage (Mil.Peso)	Probable Damage (Mil.Peso)	Average Annual Damage (Mil.Peso)
1	----- 1-(1/20)	0			
20	-----	38.5	19.2	18.3	18.3

DT V 4 Calculation of Average Annual Flood Damages for River Improvement Project of Nasisi River

Return Period (Year)	Probability of Occurrence	Flood Damage (Mil.Peso)	Average Damage (Mil.Peso)	Probable Damage (Mil.Peso)	Average Annual Damage (Mil.Peso)
1	-----	0			
5	1-(1/5)	6.6	3.3	2.7	2.7
10	(1/5)-(1/10)	11.8	9.2	0.9	3.6
20	(1/10)-(1/20)	11.8	11.8	0.6	4.2

DT V 5 Calculation of Average Annual Flood Damages for River Improvement Project of Ogsong River

Return Period (Year)	Probability of Occurrence	Flood Damage (Mil.Peso)	Average Damage (Mil.Peso)	Probable Damage (Mil.Peso)	Average Annual Damage (Mil.Peso)
1	-----	0			
2	1-(1/2)	2.5	1.3	0.6	0.6
5	(1/2)-(1/5)	15.9	9.2	2.8	3.4
10	(1/5)-(1/10)	17.2	16.5	1.7	5.0
20	(1/10)-(1/20)	27.6	22.4	1.1	6.2

DT V 6 Calculation of Average Annual Flood Damages for River Improvement Project of Quinali(B) River

Return Period (Year)	Probability of Occurrence	Flood Damage (Mil.Peso)	Average Damage (Mil.Peso)	Probable Damage (Mil.Peso)	Average Annual Damage (Mil.Peso)
1	----- 1-(1/5)	0	5.6	4.5	4.5
5	----- (1/5)-(1/10)	11.2	16.0	1.6	6.1
10	----- (1/10)-(1/20)	20.8	21.2	1.1	7.1
20	-----	21.6			

DT V 7 Calculation of Average Annual Flood Damages for River Improvement Project of San Vicente River

Return Period (Year)	Probability of Occurrence	Flood Damage (Mil.Peso)	Average Damage (Mil.Peso)	Probable Damage (Mil.Peso)	Average Annual Damage (Mil.Peso)
1	----- 1-(1/2)	0	0.7	0.3	0.3
2	----- (1/2)-(1/5)	1.4	2.7	0.8	1.1
5	----- (1/5)-(1/10)	3.9	11.3	1.1	2.3
10	----- (1/10)-(1/20)	18.7	18.0	0.9	3.2
20	-----	17.3			

DT V 8 Calculation of Average Annual Flood Damages for Urban Drainage Project of Legazpi City

Return Period (Year)	Probability of Occurrence	Flood Damage (Mil.Peso)	Average Damage (Mil.Peso)	Probable Damage (Mil.Peso)	Average Annual Damage (Mil.Peso)
1	----- 1-(1/2)	0.0	35.8	17.9	17.9
2	----- (1/2)-(1/5)	71.6	243.5	73.0	90.9
5	----- (1/5)-(1/10)	415.3	503.1	50.3	141.2
10	-----	590.8			

**DT V 9 Cash Flow of Economic Cost and Benefit for Yawa River in Sabo Plan
(Return Period: 20Year;Land Use Plan:Option-1)**

(Unit : Milli. Peso)

No.	Year	Cost			Benefit			Net Benefit	
		Resettlement	Capital	Production Cost	Abolishment of Present Asset	Development	Total		
-3	2003	60	68		0	0	0	-128	
-2	2004	60	68		0	0	0	-128	
-1	2005		68		0	0	0	-68	
1	2006			154	-364	364	0	-153	
2	2007			154	-197	364	167	13	
3	2008			154	-149	364	215	62	
4	2009			154	-122	364	242	88	
5	2010			154	-104	364	261	107	
6	2011			154	-89	364	275	121	
7	2012			154	-78	364	287	133	
8	2013			154	-68	364	296	143	
9	2014			154	-60	364	305	151	
10	2015			154	-52	364	312	158	
11	2016			154	-46	364	318	164	
12	2017			154	-41	364	323	170	
13	2018			154	-36	364	328	174	
14	2019			154	-32	364	332	178	
15	2020			154	-29	364	336	182	
16	2021			154	-25	364	339	185	
17	2022			154	-23	364	342	188	
18	2023			154	-20	364	344	190	
19	2024			154	-18	364	346	193	
20	2025			154	-16	364	348	194	
21	2026			154	-14	364	350	196	
22	2027			154	-13	364	352	198	
23	2028			154	-11	364	353	199	
24	2029			154	-10	364	354	200	
25	2030			154	-9	364	355	201	
26	2031			154	-8	364	356	202	
27	2032			154	-7	364	357	203	
28	2033			154	-7	364	358	204	
29	2034			154	-6	364	358	205	
30	2035			154	-5	364	359	205	
31	2036			154	-5	364	360	206	
32	2037			154	-4	364	360	206	
33	2038			154	-4	364	360	207	
34	2039			154	-3	364	361	207	
35	2040			154	-3	364	361	207	
36	2041			154	-3	364	362	208	
37	2042			154	-3	364	362	208	
38	2043			154	-2	364	362	208	
39	2044			154	-2	364	362	208	
40	2045			154	-2	364	363	209	
41	2046			154	-2	364	363	209	
42	2047			154	-1	364	363	209	
43	2048			154	-1	364	363	209	
44	2049			154	-1	364	363	209	
45	2050			154	-1	364	363	209	
46	2051			154	-1	364	363	210	
47	2052			154	-1	364	363	210	
48	2053			154	-1	364	364	210	
49	2054			154	-1	364	364	210	
50	2055			154	-1	364	364	210	
Total		120	204	7,694	8,019	-1,703	18,218	16,516	8,497

EIRR = 17.85%
(Discount Rate 15%)
B/C = 1.12
NPV = 111

**DT V 10 Cash Flow of Economic Cost and Benefit for Yawa River in Sabo Plan
(Return Period: 20Year;Land Use Plan:Option-2)**

(Unit : Milli. Peso)

No. Year	Cost						Benefit				Net Benefit		
	Sabo Works					O&M Cost	Development			Total			
	Construction Cost	Administration	Engineering Service	Land Acquisition	Physical Contingenc		Sabo	Agricultural Development	Total				
-3 2003	164	8	16	61	24				274	0	0	-274	
-2 2004	409	20	41	154	61				686	0	0	-686	
-1 2005	246	12	25	92	37				411	0	0	-411	
1 2006						4	1.7	64	70	473	110	582	513
2 2007						4	1.7	64	70	260	110	370	300
3 2008						4	1.7	64	70	239	110	349	279
4 2009						4	1.7	64	70	243	110	353	283
5 2010						4	1.7	64	70	252	110	362	292
6 2011						4	1.7	64	70	262	110	372	302
7 2012						4	1.7	64	70	271	110	381	311
8 2013						4	1.7	64	70	279	110	389	319
9 2014						4	1.7	64	70	286	110	396	326
10 2015						4	1.7	64	70	293	110	403	333
11 2016						4	1.7	64	70	299	110	409	339
12 2017						4	1.7	64	70	305	110	414	345
13 2018						4	1.7	64	70	310	110	419	350
14 2019						4	1.7	64	70	314	110	424	354
15 2020						4	1.7	64	70	318	110	428	358
16 2021						4	1.7	64	70	322	110	432	362
17 2022						4	1.7	64	70	326	110	435	366
18 2023						4	1.7	64	70	329	110	439	369
19 2024						4	1.7	64	70	332	110	442	372
20 2025						4	1.7	64	70	334	110	444	374
21 2026						4	1.7	64	70	337	110	447	377
22 2027						4	1.7	64	70	339	110	449	379
23 2028						4	1.7	64	70	341	110	451	381
24 2029						4	1.7	64	70	343	110	453	383
25 2030						4	1.7	64	70	345	110	455	385
26 2031						4	1.7	64	70	347	110	457	387
27 2032						4	1.7	64	70	349	110	458	388
28 2033						4	1.7	64	70	350	110	460	390
29 2034						4	1.7	64	70	351	110	461	391
30 2035						4	1.7	64	70	353	110	462	393
31 2036						4	1.7	64	70	993	110	1,103	1,033
32 2037						4	1.7	64	70	726	110	836	766
33 2038						4	1.7	64	70	573	110	683	613
34 2039						4	1.7	64	70	470	110	580	510
35 2040						4	1.7	64	70	393	110	503	433
36 2041						4	1.7	64	70	333	110	443	373
37 2042						4	1.7	64	70	285	110	394	324
38 2043						4	1.7	64	70	244	110	354	284
39 2044						4	1.7	64	70	211	110	321	251
40 2045						4	1.7	64	70	183	110	293	223
41 2046						4	1.7	64	70	159	110	269	199
42 2047						4	1.7	64	70	139	110	249	179
43 2048						4	1.7	64	70	122	110	231	161
44 2049						4	1.7	64	70	107	110	216	147
45 2050						4	1.7	64	70	94	110	204	134
46 2051						4	1.7	64	70	83	110	192	123
47 2052						4	1.7	64	70	73	110	183	113
48 2053						4	1.7	64	70	65	110	174	104
49 2054						4	1.7	64	70	57	110	167	97
50 2055						4	1.7	64	70	51	110	160	91
Total	819	41	82	307	122	205	86.1	3,201	3,492	14,864	5,487	20,351	15,488

EIRR = **20.99%**
 (Discount Rate 15%)
 B/C = **1.00**
 NPV = **480**

**DT V 11 Cash Flow of Economic Cost and Benefit for Yawa River in Sabo Plan
(Return Period: 20Year; Land Use Plan: Option-3)**

(Unit : Milli. Peso)

No. Year	Cost							Development				Benefit			Net Benefit	
	Construc- tion Cost	Administ- ration	Engineeri- ng Service	Land Acquisition	Physical Contingen- cy	O&M Cost	Dredging	Sub-Total	Investme- nt	Production Cost	Sub-Total	Total	Sabo	Develop- ment		Total
-3 2003	164	8	16	61	24			274	1,295		1,295	1,570			0	-1,570
-2 2004	409	20	41	154	61			686	1,295		1,295	1,981			0	-1,981
-1 2005	246	12	25	92	37			411	1,295		1,295	1,707			0	-1,707
1 2006						4	1.7	6		357	357	362	1,269	981	2,250	1,887
2 2007						4	1.7	6		357	357	362	880	981	1,861	1,499
3 2008						4	1.7	6		357	357	362	832	981	1,813	1,451
4 2009						4	1.7	6		357	357	362	857	981	1,838	1,476
5 2010						4	1.7	6		357	357	362	904	981	1,885	1,523
6 2011						4	1.7	6		357	357	362	954	981	1,935	1,573
7 2012						4	1.7	6		357	357	362	1,001	981	1,982	1,619
8 2013						4	1.7	6		357	357	362	1,041	981	2,022	1,660
9 2014						4	1.7	6		357	357	362	1,076	981	2,057	1,694
10 2015						4	1.7	6		357	357	362	1,105	981	2,086	1,724
11 2016						4	1.7	6		357	357	362	1,129	981	2,110	1,748
12 2017						4	1.7	6		357	357	362	1,150	981	2,131	1,768
13 2018						4	1.7	6		357	357	362	1,167	981	2,148	1,786
14 2019						4	1.7	6		357	357	362	1,181	981	2,162	1,800
15 2020						4	1.7	6		357	357	362	1,193	981	2,174	1,812
16 2021						4	1.7	6		357	357	362	1,203	981	2,185	1,822
17 2022						4	1.7	6		357	357	362	1,212	981	2,193	1,831
18 2023						4	1.7	6		357	357	362	1,220	981	2,201	1,838
19 2024						4	1.7	6		357	357	362	1,226	981	2,207	1,845
20 2025						4	1.7	6		357	357	362	1,231	981	2,212	1,850
21 2026						4	1.7	6		357	357	362	1,236	981	2,217	1,855
22 2027						4	1.7	6		357	357	362	1,240	981	2,221	1,859
23 2028						4	1.7	6		357	357	362	1,244	981	2,225	1,863
24 2029						4	1.7	6		357	357	362	1,247	981	2,228	1,866
25 2030						4	1.7	6		357	357	362	1,250	981	2,231	1,869
26 2031						4	1.7	6		357	357	362	1,253	981	2,234	1,871
27 2032						4	1.7	6		357	357	362	1,255	981	2,236	1,874
28 2033						4	1.7	6		357	357	362	1,257	981	2,238	1,876
29 2034						4	1.7	6		357	357	362	1,259	981	2,240	1,878
30 2035						4	1.7	6		357	357	362	1,261	981	2,242	1,880
31 2036						4	1.7	6		357	357	362	2,456	981	3,437	3,074
32 2037						4	1.7	6		357	357	362	1,401	981	2,382	2,020
33 2038						4	1.7	6		357	357	362	867	981	1,848	1,486
34 2039						4	1.7	6		357	357	362	581	981	1,562	1,200
35 2040						4	1.7	6		357	357	362	419	981	1,400	1,037
36 2041						4	1.7	6		357	357	362	321	981	1,302	939
37 2042						4	1.7	6		357	357	362	257	981	1,238	876
38 2043						4	1.7	6		357	357	362	213	981	1,194	831
39 2044						4	1.7	6		357	357	362	180	981	1,161	799
40 2045						4	1.7	6		357	357	362	154	981	1,135	773
41 2046						4	1.7	6		357	357	362	134	981	1,115	752
42 2047						4	1.7	6		357	357	362	117	981	1,098	735
43 2048						4	1.7	6		357	357	362	102	981	1,083	721
44 2049						4	1.7	6		357	357	362	90	981	1,071	708
45 2050						4	1.7	6		357	357	362	79	981	1,060	698
46 2051						4	1.7	6		357	357	362	70	981	1,051	689
47 2052						4	1.7	6		357	357	362	62	981	1,043	680
48 2053						4	1.7	6		357	357	362	55	981	1,036	673
49 2054						4	1.7	6		357	357	362	49	981	1,030	667
50 2055						4	1.7	6		357	357	362	43	981	1,024	662
Total	819	41	82	307	122	205	86.1	1,662	3,886	17,826	21,712	23,375	41,983	49,051	91,034	67,660

EIRR = 24.67%
(Discount Rate 15%)
B/C = 1.58
NPV = 3,248

**DT V 12 Cash Flow of Economic Cost and Benefit for Alternative-1 of Quinali(A) River in Sabo Plan
(Return Period: 20Year;Land Use Plan:Option-3)**

(Unit : Milli. Peso)

No. Year	Cost						Benefit						Net Benefit			
	Sabo Works					Development					Total	Total				
	Construction Cost	Administration	Engineering Service	Land Acquisition	Physical Contingency	O&M Cost	Dredging	Sub-Total	Investment	Production				Sub-Total		
-3 2007	124	6	12	2	14			158	115		115	273		0	-273	
-2 2008	309	15	31	5	36			396	115		115	511		0	-511	
-1 2009	185	9	19	3	22			237	115		115	353		0	-353	
1 2010						3	3.3	6		84	84	90	92	231	323	233
2 2011						3	3.3	6		84	84	90	58	231	288	198
3 2012						3	3.3	6		84	84	90	59	231	290	200
4 2013						3	3.3	6		84	84	90	63	231	294	203
5 2014						3	3.3	6		84	84	90	67	231	297	207
6 2015						3	3.3	6		84	84	90	70	231	301	210
7 2016						3	3.3	6		84	84	90	73	231	303	213
8 2017						3	3.3	6		84	84	90	75	231	306	215
9 2018						3	3.3	6		84	84	90	77	231	308	217
10 2019						3	3.3	6		84	84	90	79	231	310	219
11 2020						3	3.3	6		84	84	90	81	231	311	221
12 2021						3	3.3	6		84	84	90	82	231	313	223
13 2022						3	3.3	6		84	84	90	84	231	315	224
14 2023						3	3.3	6		84	84	90	85	231	316	226
15 2024						3	3.3	6		84	84	90	87	231	317	227
16 2025						3	3.3	6		84	84	90	88	231	318	228
17 2026						3	3.3	6		84	84	90	89	231	320	229
18 2027						3	3.3	6		84	84	90	90	231	321	230
19 2028						3	3.3	6		84	84	90	91	231	322	231
20 2029						3	3.3	6		84	84	90	92	231	322	232
21 2030						3	3.3	6		84	84	90	93	231	323	233
22 2031						3	3.3	6		84	84	90	93	231	324	234
23 2032						3	3.3	6		84	84	90	94	231	325	234
24 2033						3	3.3	6		84	84	90	95	231	325	235
25 2034						3	3.3	6		84	84	90	95	231	326	236
26 2035						3	3.3	6		84	84	90	96	231	327	236
27 2036						3	3.3	6		84	84	90	97	231	327	237
28 2037						3	3.3	6		84	84	90	97	231	328	237
29 2038						3	3.3	6		84	84	90	98	231	328	238
30 2039						3	3.3	6		84	84	90	98	231	329	238
31 2040						3	3.3	6		84	84	90	208	231	438	348
32 2041						3	3.3	6		84	84	90	169	231	399	309
33 2042						3	3.3	6		84	84	90	143	231	374	283
34 2043						3	3.3	6		84	84	90	123	231	353	263
35 2044						3	3.3	6		84	84	90	106	231	336	246
36 2045						3	3.3	6		84	84	90	91	231	322	232
37 2046						3	3.3	6		84	84	90	79	231	310	220
38 2047						3	3.3	6		84	84	90	69	231	300	209
39 2048						3	3.3	6		84	84	90	60	231	291	200
40 2049						3	3.3	6		84	84	90	52	231	283	193
41 2050						3	3.3	6		84	84	90	46	231	276	186
42 2051						3	3.3	6		84	84	90	40	231	271	181
43 2052						3	3.3	6		84	84	90	35	231	266	176
44 2053						3	3.3	6		84	84	90	31	231	262	172
45 2054						3	3.3	6		84	84	90	28	231	258	168
46 2055						3	3.3	6		84	84	90	24	231	255	165
47 2056						3	3.3	6		84	84	90	22	231	252	162
48 2057						3	3.3	6		84	84	90	19	231	250	159
49 2058						3	3.3	6		84	84	90	17	231	248	157
50 2059						3	3.3	6		84	84	90	15	231	246	155
Total	618	31	62	9	72	154	167.2	1,113	345	4,192	4,537	5,650	3,914	11,531	15,445	9,794

EIRR = 16.32%
(Discount Rate 15%)
B/C = 1.07
NPV = 88

**DT V 13 Cash Flow of Economic Cost and Benefit for Buang River in Sabo Plan
(Return Period: 20Year;Land Use Plan:Option-3)**

(Unit : Milli. Peso)

No. Year	Cost						Benefit					Net Benefit				
	Sabo Works						Development									
	Construction Cost	Administration	Engineering Service	Land Acquisition	Physical Contingenc	O&M Cost	Dredging	Sub-Total Investment	Production	Sub-Total	Total		Sabo	Developm-ent	Total	
-3 2013	12	1	1	0.2	1		15.7	9.00		9	25			0	-25	
-2 2014	31	2	3	0.4	4		39.3	9.00		9	48			0	-48	
-1 2015	18	1	2	0.2	2		23.6	9.00		9	33			0	-33	
1 2016						0.3	0	0.3	3	3	4	31	6	37	34	
2 2017						0.3	0	0.3	3	3	4	22	6	28	24	
3 2018						0.3	0	0.3	3	3	4	23	6	29	25	
4 2019						0.3	0	0.3	3	3	4	24	6	30	26	
5 2020						0.3	0	0.3	3	3	4	25	6	31	27	
6 2021						0.3	0	0.3	3	3	4	25	6	31	27	
7 2022						0.3	0	0.3	3	3	4	26	6	31	28	
8 2023						0.3	0	0.3	3	3	4	26	6	32	28	
9 2024						0.3	0	0.3	3	3	4	26	6	32	28	
10 2025						0.3	0	0.3	3	3	4	26	6	32	28	
11 2026						0.3	0	0.3	3	3	4	26	6	32	28	
12 2027						0.3	0	0.3	3	3	4	26	6	32	28	
13 2028						0.3	0	0.3	3	3	4	26	6	32	28	
14 2029						0.3	0	0.3	3	3	4	26	6	32	28	
15 2030						0.3	0	0.3	3	3	4	26	6	32	28	
16 2031						0.3	0	0.3	3	3	4	26	6	32	29	
17 2032						0.3	0	0.3	3	3	4	26	6	32	29	
18 2033						0.3	0	0.3	3	3	4	26	6	32	29	
19 2034						0.3	0	0.3	3	3	4	26	6	32	29	
20 2035						0.3	0	0.3	3	3	4	26	6	32	29	
21 2036						0.3	0	0.3	3	3	4	26	6	32	29	
22 2037						0.3	0	0.3	3	3	4	26	6	32	29	
23 2038						0.3	0	0.3	3	3	4	26	6	32	29	
24 2039						0.3	0	0.3	3	3	4	26	6	32	29	
25 2040						0.3	0	0.3	3	3	4	26	6	32	29	
26 2041						0.3	0	0.3	3	3	4	26	6	32	29	
27 2042						0.3	0	0.3	3	3	4	26	6	32	29	
28 2043						0.3	0	0.3	3	3	4	26	6	32	29	
29 2044						0.3	0	0.3	3	3	4	26	6	32	29	
30 2045						0.3	0	0.3	3	3	4	26	6	32	29	
31 2046						0.3	0	0.3	3	3	4	7	6	13	10	
32 2047						0.3	0	0.3	3	3	4	2	6	8	4	
33 2048						0.3	0	0.3	3	3	4	1	6	6	3	
34 2049						0.3	0	0.3	3	3	4	0	6	6	2	
35 2050						0.3	0	0.3	3	3	4	0	6	6	2	
36 2051						0.3	0	0.3	3	3	4	0	6	6	2	
37 2052						0.3	0	0.3	3	3	4	0	6	6	2	
38 2053						0.3	0	0.3	3	3	4	0	6	6	2	
39 2054						0.3	0	0.3	3	3	4	0	6	6	2	
40 2055						0.3	0	0.3	3	3	4	0	6	6	2	
41 2056						0.3	0	0.3	3	3	4	0	6	6	2	
42 2057						0.3	0	0.3	3	3	4	0	6	6	2	
43 2058						0.3	0	0.3	3	3	4	0	6	6	2	
44 2059						0.3	0	0.3	3	3	4	0	6	6	2	
45 2060						0.3	0	0.3	3	3	4	0	6	6	2	
46 2061						0.3	0	0.3	3	3	4	0	6	6	2	
47 2062						0.3	0	0.3	3	3	4	0	6	6	2	
48 2063						0.3	0	0.3	3	3	4	0	6	6	2	
49 2064						0.3	0	0.3	3	3	4	0	6	6	2	
50 2065						0.3	0	0.3	3	3	4	0	6	6	2	
Total	61	3	6	0.8	7.15	15.4	0.00	94	27	168	195	289	793	289	1,082	792

EIRR = 21.67%
(Discount Rate 15%)
B/C = 1.43
NPV = 41

**DT V 14 Cash Flow of Economic Cost and Benefit for San Vicente River in Sabo Plan
(Return Period: 20Year;Land Use Plan:Option-3)**

(Unit : Milli. Peso)

No. Year	Cost										Benefit				Net Benefit	
	Sabo Works					Development					Total	Sabo	Development	Total		
	Constructi -on Cost	Administra -tion	Engineering Service	Land Acquisition	Physical Contingenc	O&M Cost	Dredging	Sub-Total	Investment	O&M						Sub-Total
-3 2011	71	4	7	5	9			95	0	0	95			0	-95	
-2 2012	178	9	18	13	22			239	0	0	239			0	-239	
-1 2013	107	5	11	8	13			143	0	0	143			0	-143	
1 2014						2	1	3		29	29	32	85	59	145	113
2 2015						2	1	3		29	29	32	57	59	116	84
3 2016						2	1	3		29	29	32	60	59	119	88
4 2017						2	1	3		29	29	32	65	59	125	93
5 2018						2	1	3		29	29	32	70	59	129	98
6 2019						2	1	3		29	29	32	74	59	134	102
7 2020						2	1	3		29	29	32	78	59	137	105
8 2021						2	1	3		29	29	32	81	59	140	109
9 2022						2	1	3		29	29	32	84	59	143	111
10 2023						2	1	3		29	29	32	87	59	146	114
11 2024						2	1	3		29	29	32	89	59	148	116
12 2025						2	1	3		29	29	32	91	59	150	118
13 2026						2	1	3		29	29	32	93	59	152	120
14 2027						2	1	3		29	29	32	95	59	154	122
15 2028						2	1	3		29	29	32	96	59	155	124
16 2029						2	1	3		29	29	32	98	59	157	125
17 2030						2	1	3		29	29	32	99	59	158	126
18 2031						2	1	3		29	29	32	100	59	160	128
19 2032						2	1	3		29	29	32	101	59	161	129
20 2033						2	1	3		29	29	32	102	59	162	130
21 2034						2	1	3		29	29	32	103	59	163	131
22 2035						2	1	3		29	29	32	104	59	164	132
23 2036						2	1	3		29	29	32	105	59	165	133
24 2037						2	1	3		29	29	32	106	59	165	134
25 2038						2	1	3		29	29	32	107	59	166	134
26 2039						2	1	3		29	29	32	107	59	167	135
27 2040						2	1	3		29	29	32	108	59	167	136
28 2041						2	1	3		29	29	32	109	59	168	136
29 2042						2	1	3		29	29	32	109	59	169	137
30 2043						2	1	3		29	29	32	110	59	169	137
31 2044						2	1	3		29	29	32	124	59	183	151
32 2045						2	1	3		29	29	32	92	59	151	120
33 2046						2	1	3		29	29	32	75	59	134	102
34 2047						2	1	3		29	29	32	63	59	123	91
35 2048						2	1	3		29	29	32	54	59	114	82
36 2049						2	1	3		29	29	32	47	59	106	74
37 2050						2	1	3		29	29	32	41	59	100	68
38 2051						2	1	3		29	29	32	36	59	95	63
39 2052						2	1	3		29	29	32	31	59	90	59
40 2053						2	1	3		29	29	32	27	59	87	55
41 2054						2	1	3		29	29	32	24	59	83	52
42 2055						2	1	3		29	29	32	21	59	81	49
43 2056						2	1	3		29	29	32	19	59	78	46
44 2057						2	1	3		29	29	32	17	59	76	44
45 2058						2	1	3		29	29	32	15	59	74	42
46 2059						2	1	3		29	29	32	13	59	72	41
47 2060						2	1	3		29	29	32	12	59	71	39
48 2061						2	1	3		29	29	32	10	59	70	38
49 2062						2	1	3		29	29	32	9	59	69	37
50 2063						2	1	3		29	29	32	8	59	68	36
Total	355	18	36	26	43	89	60	626	0	1,442	1,442	2,068	3,511	2,967	6,477	4,409

EIRR = 18.49%
(Discount Rate 15%)
B/C = 1.21
NPV = 103

**DT V 15 Cash Flow of Economic Cost and Benefit for Padang River in Sabo Plan
(Return Period: 20Year;Land Use Plan:Option-3)**

(Unit : Milli. Peso)

No. Year	Cost								Benefit				Total	Net Benefit		
	Sabo Works					Development			Sabo	Develop-ment	Total					
	Construction Cost	Administra-tion	Engineering Service	Land Acquisition	Physical Contingency	O&M Cost	Dredging	Sub-Total				Investment			Production	Sub-Total
-3 2006	61	3	6	16	9			94	35		35	129		0	-129	
-2 2007	152	8	15	39	21			235	35		35	271		0	-271	
-1 2008	91	5	9	23	13			141	35		35	176		0	-176	
1 2009						2	0.3	2		38	38	40	51	75	125	86
2 2010						2	0.3	2		38	38	40	63	75	138	98
3 2011						2	0.3	2		38	38	40	76	75	151	111
4 2012						2	0.3	2		38	38	40	87	75	162	122
5 2013						2	0.3	2		38	38	40	96	75	171	132
6 2014						2	0.3	2		38	38	40	105	75	180	140
7 2015						2	0.3	2		38	38	40	113	75	188	148
8 2016						2	0.3	2		38	38	40	119	75	194	155
9 2017						2	0.3	2		38	38	40	126	75	200	161
10 2018						2	0.3	2		38	38	40	131	75	206	166
11 2019						2	0.3	2		38	38	40	136	75	211	171
12 2020						2	0.3	2		38	38	40	140	75	215	176
13 2021						2	0.3	2		38	38	40	145	75	219	180
14 2022						2	0.3	2		38	38	40	148	75	223	183
15 2023						2	0.3	2		38	38	40	152	75	226	187
16 2024						2	0.3	2		38	38	40	155	75	229	190
17 2025						2	0.3	2		38	38	40	157	75	232	192
18 2026						2	0.3	2		38	38	40	160	75	235	195
19 2027						2	0.3	2		38	38	40	162	75	237	197
20 2028						2	0.3	2		38	38	40	164	75	239	199
21 2029						2	0.3	2		38	38	40	166	75	241	201
22 2030						2	0.3	2		38	38	40	168	75	243	203
23 2031						2	0.3	2		38	38	40	170	75	245	205
24 2032						2	0.3	2		38	38	40	171	75	246	206
25 2033						2	0.3	2		38	38	40	173	75	247	208
26 2034						2	0.3	2		38	38	40	174	75	249	209
27 2035						2	0.3	2		38	38	40	175	75	250	210
28 2036						2	0.3	2		38	38	40	176	75	251	211
29 2037						2	0.3	2		38	38	40	177	75	252	212
30 2038						2	0.3	2		38	38	40	178	75	253	213
31 2039						2	0.3	2		38	38	40	229	75	304	264
32 2040						2	0.3	2		38	38	40	184	75	259	219
33 2041						2	0.3	2		38	38	40	150	75	225	185
34 2042						2	0.3	2		38	38	40	125	75	200	160
35 2043						2	0.3	2		38	38	40	104	75	179	139
36 2044						2	0.3	2		38	38	40	88	75	163	123
37 2045						2	0.3	2		38	38	40	75	75	149	110
38 2046						2	0.3	2		38	38	40	63	75	138	99
39 2047						2	0.3	2		38	38	40	54	75	129	89
40 2048						2	0.3	2		38	38	40	47	75	121	82
41 2049						2	0.3	2		38	38	40	40	75	115	75
42 2050						2	0.3	2		38	38	40	35	75	110	70
43 2051						2	0.3	2		38	38	40	30	75	105	65
44 2052						2	0.3	2		38	38	40	26	75	101	61
45 2053						2	0.3	2		38	38	40	23	75	98	58
46 2054						2	0.3	2		38	38	40	20	75	95	55
47 2055						2	0.3	2		38	38	40	17	75	92	53
48 2056						2	0.3	2		38	38	40	15	75	90	50
49 2057						2	0.3	2		38	38	40	13	75	88	49
50 2058						2	0.3	2		38	38	40	12	75	87	47
Total	305	15	30	78	43	76	15.9	563	105	1,897	2,002	2,565	5,563	3,744	9,307	6,743

EIRR = 19.14%

(Discount Rate 15%

B/C = 1.28

NPV = 169

**DT V 16 Cash Flow of Economic Cost and Benefit for Basud River in Sabo Plan
(Return Period: 20Year;Land Use Plan:Option-3)**

		Cost										Benefit				(Unit : Milli Pes0)	
No.	Year	Sabo Works						Development				Total	Sabo	Develop-ment	Total	Net Benefit	
		Construction Cost	Administra-tion	Engineering Service	Land Acquisitio-n	Physical Contingency	O&M Cost	Dredging	Sub-Total Investment	Productio-n	Sub-Total						
-3	2006	43	2	4	3	5		58	30		30	88			0	-88	
-2	2007	108	5	11	9	13		146	30		30	176			0	-176	
-1	2008	65	3	6	5	8		88	30		30	117			0	-117	
1	2009						1	1.2	2		30	30	33	40	59	98	66
2	2010						1	1.2	2		30	30	33	27	59	86	54
3	2011						1	1.2	2		30	30	33	28	59	87	54
4	2012						1	1.2	2		30	30	33	30	59	89	56
5	2013						1	1.2	2		30	30	33	32	59	91	58
6	2014						1	1.2	2		30	30	33	33	59	92	59
7	2015						1	1.2	2		30	30	33	35	59	93	61
8	2016						1	1.2	2		30	30	33	36	59	94	62
9	2017						1	1.2	2		30	30	33	37	59	95	63
10	2018						1	1.2	2		30	30	33	37	59	96	63
11	2019						1	1.2	2		30	30	33	38	59	96	64
12	2020						1	1.2	2		30	30	33	38	59	97	64
13	2021						1	1.2	2		30	30	33	39	59	97	65
14	2022						1	1.2	2		30	30	33	39	59	98	65
15	2023						1	1.2	2		30	30	33	40	59	98	66
16	2024						1	1.2	2		30	30	33	40	59	99	66
17	2025						1	1.2	2		30	30	33	40	59	99	66
18	2026						1	1.2	2		30	30	33	40	59	99	67
19	2027						1	1.2	2		30	30	33	41	59	99	67
20	2028						1	1.2	2		30	30	33	41	59	99	67
21	2029						1	1.2	2		30	30	33	41	59	100	67
22	2030						1	1.2	2		30	30	33	41	59	100	67
23	2031						1	1.2	2		30	30	33	41	59	100	67
24	2032						1	1.2	2		30	30	33	42	59	100	68
25	2033						1	1.2	2		30	30	33	42	59	100	68
26	2034						1	1.2	2		30	30	33	42	59	100	68
27	2035						1	1.2	2		30	30	33	42	59	100	68
28	2036						1	1.2	2		30	30	33	42	59	101	68
29	2037						1	1.2	2		30	30	33	42	59	101	68
30	2038						1	1.2	2		30	30	33	42	59	101	68
31	2039						1	1.2	2		30	30	33	54	59	113	80
32	2040						1	1.2	2		30	30	33	37	59	95	63
33	2041						1	1.2	2		30	30	33	28	59	86	54
34	2042						1	1.2	2		30	30	33	23	59	81	49
35	2043						1	1.2	2		30	30	33	19	59	77	45
36	2044						1	1.2	2		30	30	33	16	59	75	42
37	2045						1	1.2	2		30	30	33	14	59	72	40
38	2046						1	1.2	2		30	30	33	12	59	71	38
39	2047						1	1.2	2		30	30	33	11	59	69	37
40	2048						1	1.2	2		30	30	33	9	59	68	35
41	2049						1	1.2	2		30	30	33	8	59	67	34
42	2050						1	1.2	2		30	30	33	7	59	66	33
43	2051						1	1.2	2		30	30	33	7	59	65	33
44	2052						1	1.2	2		30	30	33	6	59	64	32
45	2053						1	1.2	2		30	30	33	5	59	64	31
46	2054						1	1.2	2		30	30	33	5	59	63	31
47	2055						1	1.2	2		30	30	33	4	59	63	30
48	2056						1	1.2	2		30	30	33	4	59	62	30
49	2057						1	1.2	2		30	30	33	3	59	62	29
50	2058						1	1.2	2		30	30	33	3	59	61	29
Total		216	11	22	17	26	54	59.8	406	89	1,512	1,601	2,007	1,423	2,927	4,350	2,343

EIRR = 14.00%
(Discount Rate 15%)
B/C = 0.95
NPV = -22

DT V 17 Cash Flow of Economic Cost and Benefit for Bulawan River in Sabo Plan
(Return Period: 20Year; Land Use Plan: Option-3)

(Unit : Milli. Peso)

No.	Year	Cost						Benefit				Total	Net Benefit				
		Construction Cost	Administration	Engineering Service	Land Acquisition	Physical Contingency	O&M Cost	Dredging	Sub-Total	Investment	O&M			Sub-Total	Sabo	Development	
-3	2010	40	2	4	4	5			55	1,766		1,766	1,820		0	-1,820	
-2	2011	100	5	10	9	12			137	1,766		1,766	1,903		0	-1,903	
-1	2012	60	3	6	6	7			82	1,766		1,766	1,848		0	-1,848	
1	2013						1	0	1		30	30	31	276	1,029	1,305	1,274
2	2014						1	0	1		30	30	31	118	1,029	1,147	1,115
3	2015						1	0	1		30	30	31	97	1,029	1,126	1,095
4	2016						1	0	1		30	30	31	94	1,029	1,123	1,092
5	2017						1	0	1		30	30	31	95	1,029	1,123	1,092
6	2018						1	0	1		30	30	31	96	1,029	1,125	1,094
7	2019						1	0	1		30	30	31	98	1,029	1,127	1,095
8	2020						1	0	1		30	30	31	100	1,029	1,128	1,097
9	2021						1	0	1		30	30	31	101	1,029	1,130	1,099
10	2022						1	0	1		30	30	31	103	1,029	1,132	1,101
11	2023						1	0	1		30	30	31	105	1,029	1,134	1,102
12	2024						1	0	1		30	30	31	106	1,029	1,135	1,104
13	2025						1	0	1		30	30	31	108	1,029	1,137	1,106
14	2026						1	0	1		30	30	31	110	1,029	1,138	1,107
15	2027						1	0	1		30	30	31	111	1,029	1,140	1,109
16	2028						1	0	1		30	30	31	112	1,029	1,141	1,110
17	2029						1	0	1		30	30	31	114	1,029	1,143	1,111
18	2030						1	0	1		30	30	31	115	1,029	1,144	1,113
19	2031						1	0	1		30	30	31	116	1,029	1,145	1,114
20	2032						1	0	1		30	30	31	117	1,029	1,146	1,115
21	2033						1	0	1		30	30	31	119	1,029	1,147	1,116
22	2034						1	0	1		30	30	31	120	1,029	1,148	1,117
23	2035						1	0	1		30	30	31	121	1,029	1,149	1,118
24	2036						1	0	1		30	30	31	122	1,029	1,150	1,119
25	2037						1	0	1		30	30	31	122	1,029	1,151	1,120
26	2038						1	0	1		30	30	31	123	1,029	1,152	1,121
27	2039						1	0	1		30	30	31	124	1,029	1,153	1,122
28	2040						1	0	1		30	30	31	125	1,029	1,154	1,122
29	2041						1	0	1		30	30	31	126	1,029	1,154	1,123
30	2042						1	0	1		30	30	31	126	1,029	1,155	1,124
31	2043						1	0	1		30	30	31	642	1,029	1,670	1,639
32	2044						1	0	1		30	30	31	506	1,029	1,535	1,504
33	2045						1	0	1		30	30	31	425	1,029	1,453	1,422
34	2046						1	0	1		30	30	31	364	1,029	1,393	1,362
35	2047						1	0	1		30	30	31	315	1,029	1,344	1,313
36	2048						1	0	1		30	30	31	274	1,029	1,303	1,272
37	2049						1	0	1		30	30	31	240	1,029	1,268	1,237
38	2050						1	0	1		30	30	31	210	1,029	1,239	1,207
39	2051						1	0	1		30	30	31	184	1,029	1,213	1,182
40	2052						1	0	1		30	30	31	162	1,029	1,191	1,160
41	2053						1	0	1		30	30	31	143	1,029	1,172	1,141
42	2054						1	0	1		30	30	31	126	1,029	1,155	1,124
43	2055						1	0	1		30	30	31	112	1,029	1,141	1,109
44	2056						1	0	1		30	30	31	99	1,029	1,128	1,097
45	2057						1	0	1		30	30	31	88	1,029	1,117	1,086
46	2058						1	0	1		30	30	31	78	1,029	1,107	1,076
47	2059						1	0	1		30	30	31	70	1,029	1,098	1,067
48	2060						1	0	1		30	30	31	62	1,029	1,091	1,060
49	2061						1	0	1		30	30	31	55	1,029	1,084	1,053
50	2062						1	0	1		30	30	31	50	1,029	1,078	1,047
Total		200	10	20	19	25	50	0	324	5,297	1,512	6,809	7,133	7,727	51,437	59,164	52,031

EIRR = 17.16%
(Discount Rate 15%)
B/C = 1.16
NPV = 700

**DT V 18 Cash Flow of Economic Cost and Benefit for River Improvement Project of
(Return Period : 20Year)**

(Unit : Milli. Peso)

No. Year	Cost						Total	Benefit	Net Benefit
	Construction Cost	Administration	Engineering Service	Land Acquisition	Physical Contingency	O&M Cost			
-3 2006	54	3	5	4	7	0	73	0	-73
-2 2007	72	4	7	6	9	0	98	0	-98
-1 2008	54	3	5	4	7	0	73	0	-73
1 2009						0.9	0.9	28	27
2 2010						0.9	0.9	28	27
3 2011						0.9	0.9	28	27
4 2012						0.9	0.9	28	27
5 2013						0.9	0.9	28	27
6 2014						0.9	0.9	28	27
7 2015						0.9	0.9	28	27
8 2016						0.9	0.9	28	27
9 2017						0.9	0.9	28	27
10 2018						0.9	0.9	28	27
11 2019						0.9	0.9	28	27
12 2020						0.9	0.9	28	27
13 2021						0.9	0.9	28	27
14 2022						0.9	0.9	28	27
15 2023						0.9	0.9	28	27
16 2024						0.9	0.9	28	27
17 2025						0.9	0.9	28	27
18 2026						0.9	0.9	28	27
19 2027						0.9	0.9	28	27
20 2028						0.9	0.9	28	27
21 2029						0.9	0.9	28	27
22 2030						0.9	0.9	28	27
23 2031						0.9	0.9	28	27
24 2032						0.9	0.9	28	27
25 2033						0.9	0.9	28	27
26 2034						0.9	0.9	28	27
27 2035						0.9	0.9	28	27
28 2036						0.9	0.9	28	27
29 2037						0.9	0.9	28	27
30 2038						0.9	0.9	28	27
31 2039						0.9	0.9	28	27
32 2040						0.9	0.9	28	27
33 2041						0.9	0.9	28	27
34 2042						0.9	0.9	28	27
35 2043						0.9	0.9	28	27
36 2044						0.9	0.9	28	27
37 2045						0.9	0.9	28	27
38 2046						0.9	0.9	28	27
39 2047						0.9	0.9	28	27
40 2048						0.9	0.9	28	27
41 2049						0.9	0.9	28	27
42 2050						0.9	0.9	28	27
43 2051						0.9	0.9	28	27
44 2052						0.9	0.9	28	27
45 2053						0.9	0.9	28	27
46 2054						0.9	0.9	28	27
47 2055						0.9	0.9	28	27
48 2056						0.9	0.9	28	27
49 2057						0.9	0.9	28	27
50 2058						0.9	0.9	28	27
Total	181	9	18	14	22	45	290	1,416	1,126

EIRR = 10.08%
(Discount Rate 15%)
B/C = 0.65
NPV = -65.9

**DT V 19 Cash Flow of Economic Cost and Benefit for Urban Drainage
Project of Legazpi City Return Period 10 Year (1/2)**

[Return Period: 10Year]

(Unit : Milli. Peso)

No.	Year	Cost						Benefit		
		Construc- tion Cost	Administ- ration	Engineering Service	Land Acquisition	Physical Contingency	O&M Cost	Total	Net Benefit	
-5	2001		1.4	20.1		2.1		23.6	0.0	-23.6
-4	2002		1.8	13.2		1.5		16.5	0.0	-16.5
-3	2003	62.3	1.8	6.9	7.1	7.8		85.9	0.0	-85.9
-2	2004	124.6	1.8	14.6	7.1	14.8		162.8	0.0	-162.8
-1	2005	124.6	1.8	14.6		14.1		155.1	0.0	-155.1
1	2006						3.2	3.2	141.2	138.1
2	2007						3.2	3.2	141.2	138.1
3	2008						3.2	3.2	141.2	138.1
4	2009						3.2	3.2	141.2	138.1
5	2010						3.2	3.2	141.2	138.1
6	2011						3.2	3.2	141.2	138.1
7	2012						3.2	3.2	141.2	138.1
8	2013						3.2	3.2	141.2	138.1
9	2014						3.2	3.2	141.2	138.1
10	2015						3.2	3.2	141.2	138.1
11	2016						3.2	3.2	141.2	138.1
12	2017						3.2	3.2	141.2	138.1
13	2018						3.2	3.2	141.2	138.1
14	2019						3.2	3.2	141.2	138.1
15	2020						3.2	3.2	141.2	138.1
16	2021						3.2	3.2	141.2	138.1
17	2022						3.2	3.2	141.2	138.1
18	2023						3.2	3.2	141.2	138.1
19	2024						3.2	3.2	141.2	138.1
20	2025						3.2	3.2	141.2	138.1
21	2026						3.2	3.2	141.2	138.1
22	2027						3.2	3.2	141.2	138.1
23	2028						3.2	3.2	141.2	138.1
24	2029						3.2	3.2	141.2	138.1
25	2030						3.2	3.2	141.2	138.1
26	2031						3.2	3.2	141.2	138.1
27	2032						3.2	3.2	141.2	138.1
28	2033						3.2	3.2	141.2	138.1
29	2034						3.2	3.2	141.2	138.1
30	2035						3.2	3.2	141.2	138.1
31	2036						3.2	3.2	141.2	138.1
32	2037						3.2	3.2	141.2	138.1
33	2038						3.2	3.2	141.2	138.1
34	2039						3.2	3.2	141.2	138.1

**DT V 19 Cash Flow of Economic Cost and Benefit for Urban Drainage Project
of Legazpi City Return Period 10 Year (2/2)**

[Return Period: 10Year]

(Unit : Milli. Peso)

No.	Year	Cost						Total	Benefit	Net Benefit
		Constructi -on Cost	Administ- ration	Engineering Service	Land Acquisition	Physical Contingency	O&M Cost			
35	2040						3.2	3.2	141.2	138.1
36	2041						3.2	3.2	141.2	138.1
37	2042						3.2	3.2	141.2	138.1
38	2043						3.2	3.2	141.2	138.1
39	2044						3.2	3.2	141.2	138.1
40	2045						3.2	3.2	141.2	138.1
41	2046						3.2	3.2	141.2	138.1
42	2047						3.2	3.2	141.2	138.1
43	2048						3.2	3.2	141.2	138.1
44	2049						3.2	3.2	141.2	138.1
45	2050						3.2	3.2	141.2	138.1
46	2051						3.2	3.2	141.2	138.1
47	2052						3.2	3.2	141.2	138.1
48	2053						3.2	3.2	141.2	138.1
49	2054						3.2	3.2	141.2	138.1
50	2055						3.2	3.2	141.2	138.1
Total		311.5	8.7	69.3	14.1	40.4	159.1	603.1	7,062.0	6,458.9

EIRR = 23.96%
(Discount Rate 15%)
B/C = 1.73
NPV = 197.4

DT V 20 Cash Flow of Economic and Benefit for Integrated Evaluation of All Preliminarily Selected Alternatives in the Master Plan

(Unit : Milli. Peso)

No.	Year	Cost										Benefit					Net Benefit	
		Constructi on Cost	Administrati on	Engineerin g Service	Land Acquistion	Physical Contingency	O&M Cost	Dredging	Sub-Total	Investment	Production	Sub-Total	Total	Sabo & Developmen t	River Improvement	Urban Drainage		Total
-15	2001	0	1	20	0	2	0	0	24	0	0	0	24	0	0	0	-24	
-14	2002	0	2	13	0	1	0	0	16	0	0	0	16	0	0	0	-16	
-13	2003	226	10	23	69	32	0	0	360	1,295	0	1,295	1,656	0	0	0	-1,656	
-12	2004	534	22	56	161	76	0	0	848	1,295	0	1,295	2,144	0	0	0	-2,144	
-11	2005	370	14	39	92	51	0	0	566	1,295	0	1,295	1,862	0	0	0	-1,862	
-10	2006	158	8	16	23	20	7	2	235	65	357	421	656	2,250	0	141	2,391	1,735
-9	2007	456	23	46	55	58	7	2	647	180	357	536	1,183	1,861	0	141	2,002	819
-8	2008	519	26	52	37	63	7	2	707	180	357	536	1,243	1,813	0	141	1,954	711
-7	2009	185	9	19	3	22	11	3	251	115	425	540	791	2,062	28	141	2,232	1,440
-6	2010	0	0	0	0	0	14	7	20	0	509	509	529	2,432	28	141	2,602	2,073
-5	2011	111	6	11	9	14	14	7	171	1,766	509	2,274	2,445	2,461	28	141	2,631	186
-4	2012	278	14	28	22	34	14	7	396	1,766	509	2,274	2,670	2,522	28	141	2,691	21
-3	2013	179	9	18	14	22	14	7	262	1,775	509	2,283	2,545	2,578	28	141	2,747	203
-2	2014	31	2	3	0	4	17	8	64	9	568	577	640	4,076	28	141	4,245	3,605
-1	2015	18	1	2	0	2	17	8	48	9	568	577	625	3,930	28	141	4,100	3,475
1	2016	0	0	0	0	0	17	8	25	0	571	571	596	3,985	28	141	4,155	3,559
2	2017	0	0	0	0	0	17	8	25	0	571	571	596	4,007	28	141	4,177	3,581
3	2018	0	0	0	0	0	17	8	25	0	571	571	596	4,039	28	141	4,209	3,613
4	2019	0	0	0	0	0	17	8	25	0	571	571	596	4,068	28	141	4,237	3,642
5	2020	0	0	0	0	0	17	8	25	0	571	571	596	4,093	28	141	4,262	3,667
6	2021	0	0	0	0	0	17	8	25	0	571	571	596	4,114	28	141	4,284	3,688
7	2022	0	0	0	0	0	17	8	25	0	571	571	596	4,134	28	141	4,303	3,707
8	2023	0	0	0	0	0	17	8	25	0	571	571	596	4,151	28	141	4,320	3,724
9	2024	0	0	0	0	0	17	8	25	0	571	571	596	4,166	28	141	4,335	3,739
10	2025	0	0	0	0	0	17	8	25	0	571	571	596	4,179	28	141	4,349	3,753
11	2026	0	0	0	0	0	17	8	25	0	571	571	596	4,191	28	141	4,361	3,765
12	2027	0	0	0	0	0	17	8	25	0	571	571	596	4,203	28	141	4,372	3,776
13	2028	0	0	0	0	0	17	8	25	0	571	571	596	4,213	28	141	4,382	3,786
14	2029	0	0	0	0	0	17	8	25	0	571	571	596	4,222	28	141	4,391	3,796
15	2030	0	0	0	0	0	17	8	25	0	571	571	596	4,230	28	141	4,400	3,804
16	2031	0	0	0	0	0	17	8	25	0	571	571	596	4,238	28	141	4,407	3,812
17	2032	0	0	0	0	0	17	8	25	0	571	571	596	4,245	28	141	4,414	3,819
18	2033	0	0	0	0	0	17	8	25	0	571	571	596	4,251	28	141	4,421	3,825
19	2034	0	0	0	0	0	17	8	25	0	571	571	596	4,257	28	141	4,427	3,831
20	2035	0	0	0	0	0	17	8	25	0	571	571	596	4,263	28	141	4,433	3,837
21	2036	0	0	0	0	0	17	8	25	0	571	571	596	5,461	28	141	5,631	5,035
22	2037	0	0	0	0	0	17	8	25	0	571	571	596	4,410	28	141	4,580	3,984
23	2038	0	0	0	0	0	17	8	25	0	571	571	596	3,879	28	141	4,049	3,453
24	2039	0	0	0	0	0	17	8	25	0	571	571	596	3,659	28	141	3,828	3,232
25	2040	0	0	0	0	0	17	8	25	0	571	571	596	3,545	28	141	3,714	3,118
26	2041	0	0	0	0	0	17	8	25	0	571	571	596	3,366	28	141	3,536	2,940
27	2042	0	0	0	0	0	17	8	25	0	571	571	596	3,247	28	141	3,417	2,821
28	2043	0	0	0	0	0	17	8	25	0	571	571	596	3,160	28	141	3,330	2,734
29	2044	0	0	0	0	0	17	8	25	0	571	571	596	3,621	28	141	3,790	3,194
30	2045	0	0	0	0	0	17	8	25	0	571	571	596	3,398	28	141	3,568	2,972
31	2046	0	0	0	0	0	17	8	25	0	571	571	596	3,234	28	141	3,404	2,808
32	2047	0	0	0	0	0	17	8	25	0	571	571	596	3,119	28	141	3,288	2,692
33	2048	0	0	0	0	0	17	8	25	0	571	571	596	3,027	28	141	3,196	2,601
34	2049	0	0	0	0	0	17	8	25	0	571	571	596	2,951	28	141	3,120	2,525
35	2050	0	0	0	0	0	17	8	25	0	571	571	596	2,886	28	141	3,056	2,460
36	2051	0	0	0	0	0	17	8	25	0	571	571	596	2,831	28	141	3,000	2,405
37	2052	0	0	0	0	0	17	8	25	0	571	571	596	2,783	28	141	2,953	2,357
38	2053	0	0	0	0	0	17	8	25	0	571	571	596	2,742	28	141	2,912	2,316
39	2054	0	0	0	0	0	17	8	25	0	571	571	596	2,707	28	141	2,876	2,280
40	2055	0	0	0	0	0	17	8	25	0	571	571	596	2,676	28	141	2,845	2,249
41	2056	0	0	0	0	0	10	6	16	0	214	214	230	1,629	28	0	1,657	1,427
42	2057	0	0	0	0	0	10	6	16	0	214	214	230	1,610	28	0	1,638	1,408
43	2058	0	0	0	0	0	10	6	16	0	214	214	230	1,592	28	0	1,621	1,391
44	2059	0	0	0	0	0	6	5	11	0	146	146	157	1,431	0	0	1,431	1,274
45	2060	0	0	0	0	0	3	1	4	0	62	62	67	1,175	0	0	1,175	1,108
46	2061	0	0	0	0	0	3	1	4	0	62	62	67	1,166	0	0	1,166	1,100
47	2062	0	0	0	0	0	3	1	4	0	62	62	67	1,158	0	0	1,158	1,092
48	2063	0	0	0	0	0	3	1	4	0	62	62	67	1,152	0	0	1,152	1,085
49	2064	0	0	0	0	0	0	0	0	0	3	3	4	6	0	0	6	2
50	2065	0	0	0	0	0	0	0	0	0	3	3	4	6	0	0	6	2
Total		3,067	146	345	485	401	848	389	5,680	9,751	28,549	38,300	43,980	186,860	1,416	7,062	195,338	151,358

EIRR = **22.40%**
(Discount Rate 15%)
B/C = **1.43**
NPV = **2,938.3**