

SUPPORTING REPORT
FOR

CHAPTER 3
National Water Control
System

Supporting Report for Chapter 3

“National Water Control System”

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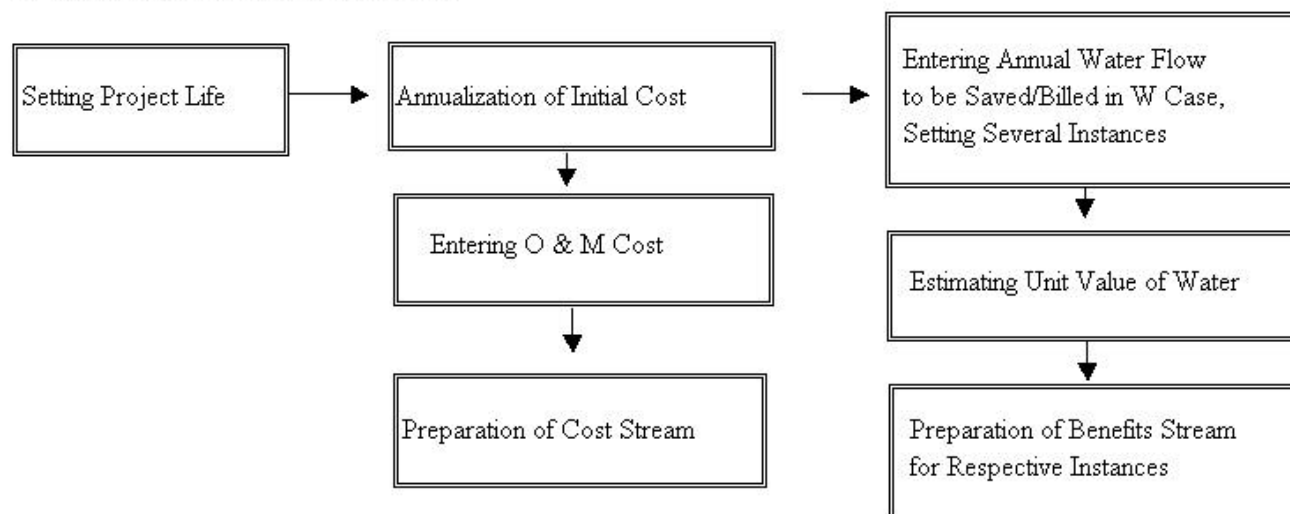
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Economic and Financial Analysis

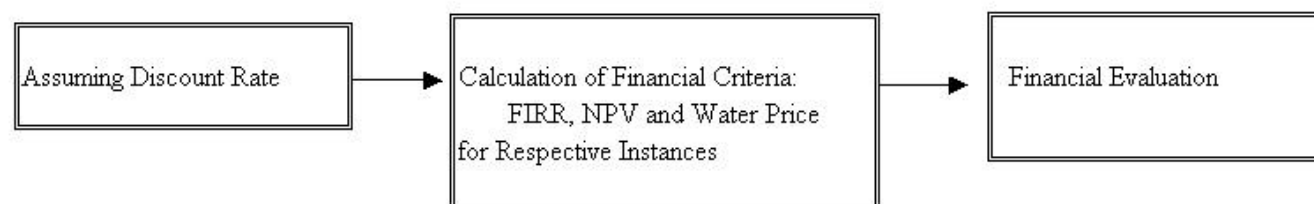
Economic and Financial Analysis

1. Financial Analysis

1) Preparation of Cost Benefits Streams



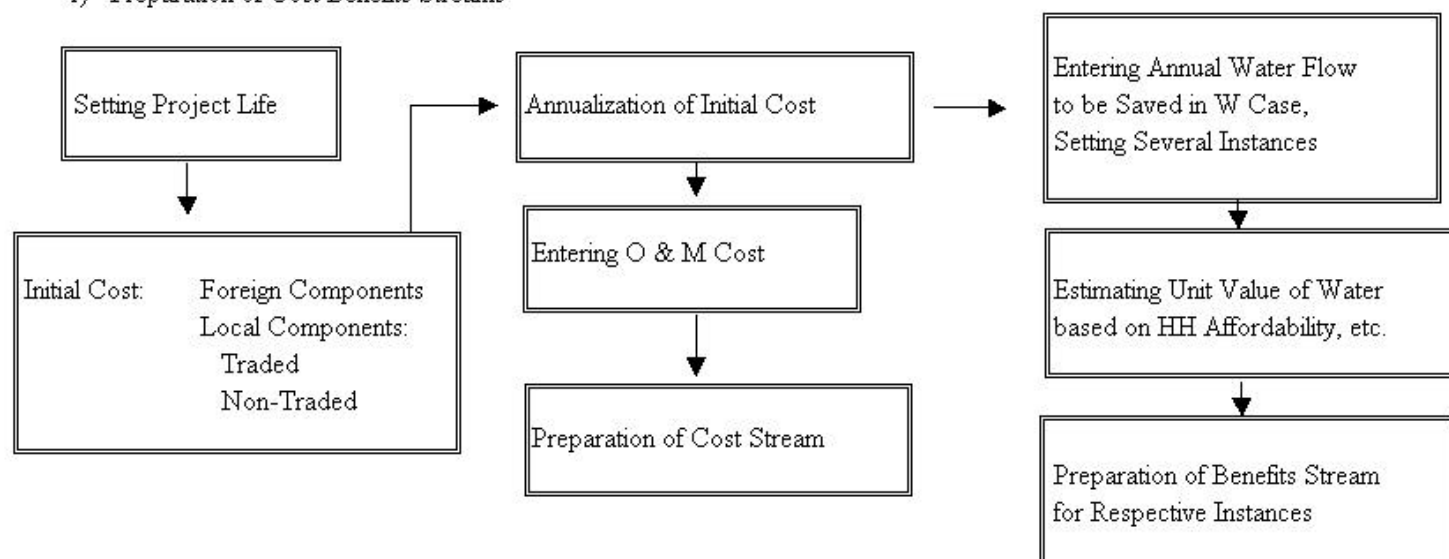
2) Calculation of Financial Criteria and Financial Evaluation



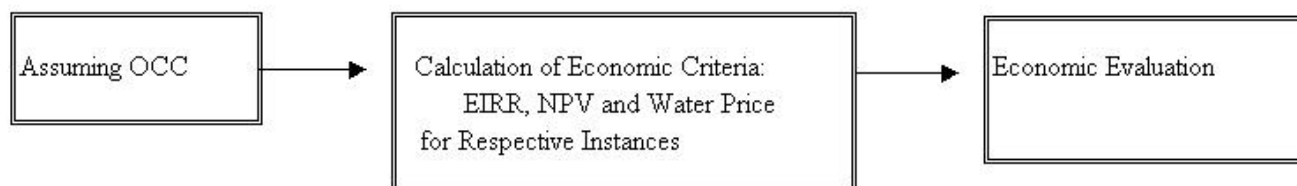
Methodology for Economic and Financial Analysis of National Water Control System Project

2. Economic Analysis

1) Preparation of Cost Benefits Streams



2) Calculation of Economic Criteria and Economic Evaluation



Methodology for Economic and Financial Analysis of National Water Control System Project

Table 3.6.2-1 Financial/Economic Analysis of National Water Control System Project

Hydraulic Analysis (M m³/yr)		Allocation	Water Qty	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total Water Produced (M m ³ /year)				328 113	330 080	341 678	360 582	381 497	404 091	427 843	453 948	483 040	515 848	553 040	595 040	641 040	691 040	745 040	803 040	865 040	931 040
Water Saved (M m ³ /year)				3 201	3 301	3 407	3 606	3 817	4 041	4 278	4 538	4 830	5 155	5 515	5 910	6 340	6 805	7 305	7 840	8 410	9 015
Municipal Water				261 982	267 273	273 678	285 443	302 249	326 149	346 213	367 518	397 518	437 518	487 518	547 518	617 518	697 518	797 518	917 518	1 057 518	1 217 518
Physical Losses (%)				8.21	8.21	8.28	8.19	8.18	8.17	8.16	8.15	8.15	8.15	8.15	8.15	8.15	8.15	8.15	8.15	8.15	8.15
Physical Losses				55 016	56 127	54 534	54 994	55 365	55 445	55 384	55 127	55 127	55 127	55 127	55 127	55 127	55 127	55 127	55 127	55 127	55 127
Administrative/Managerial Losses (%)				8.14	8.12	8.13	8.09	8.08	8.07	8.06	8.05	8.05	8.05	8.05	8.05	8.05	8.05	8.05	8.05	8.05	8.05
Administrative/Managerial Losses				16 678	16 678	16 678	16 678	16 678	16 678	16 678	16 678	16 678	16 678	16 678	16 678	16 678	16 678	16 678	16 678	16 678	16 678
Additional Quantity Delivered				1 310	1 336	1 363	1 447	1 534	1 631	1 731	1 838	1 938	2 038	2 138	2 238	2 338	2 438	2 538	2 638	2 738	2 838
Additional Quantity Whose Bids are Collected				2 630	2 673	2 727	2 894	3 072	3 261	3 462	3 675	3 900	4 135	4 380	4 635	4 900	5 175	5 460	5 755	6 060	6 375
Industrial Water				53 712	57 278	61 083	65 492	69 599	74 314	78 138	82 138	86 138	90 138	94 138	98 138	102 138	106 138	110 138	114 138	118 138	122 138
Physical Losses (%)				8.21	8.21	8.28	8.19	8.18	8.17	8.16	8.15	8.15	8.15	8.15	8.15	8.15	8.15	8.15	8.15	8.15	8.15
Physical Losses				11 280	12 028	13 316	12 063	11 888	11 663	11 410	11 128	11 128	11 128	11 128	11 128	11 128	11 128	11 128	11 128	11 128	11 128
Administrative/Managerial Losses (%)				8.14	8.12	8.13	8.09	8.08	8.07	8.06	8.05	8.05	8.05	8.05	8.05	8.05	8.05	8.05	8.05	8.05	8.05
Administrative/Managerial Losses				7 530	6 673	6 108	5 714	5 288	4 802	4 279	3 787	3 787	3 787	3 787	3 787	3 787	3 787	3 787	3 787	3 787	3 787
Additional Quantity Delivered				8 269	8 286	8 305	8 317	8 318	8 340	8 357	8 371	8 371	8 371	8 371	8 371	8 371	8 371	8 371	8 371	8 371	8 371
Additional Quantity Whose Bids are Collected				8 537	8 573	8 611	8 635	8 668	8 686	8 713	8 741	8 741	8 741	8 741	8 741	8 741	8 741	8 741	8 741	8 741	8 741
Touristic Water				4 419	5 530	6 641	7 647	8 649	9 337	10 317	11 400	11 400	11 400	11 400	11 400	11 400	11 400	11 400	11 400	11 400	11 400
Physical Losses (%)				8.21	8.21	8.28	8.19	8.18	8.17	8.16	8.15	8.15	8.15	8.15	8.15	8.15	8.15	8.15	8.15	8.15	8.15
Physical Losses				9 928	1 161	1 394	1 453	1 521	1 587	1 651	1 710	1 710	1 710	1 710	1 710	1 710	1 710	1 710	1 710	1 710	1 710
Administrative/Managerial Losses (%)				8.14	8.12	8.13	8.09	8.08	8.07	8.06	8.05	8.05	8.05	8.05	8.05	8.05	8.05	8.05	8.05	8.05	8.05
Administrative/Managerial Losses				8 619	6 664	6 892	6 683	6 476	6 654	6 619	6 578	6 578	6 578	6 578	6 578	6 578	6 578	6 578	6 578	6 578	6 578
Additional Quantity Delivered				8 022	8 028	8 035	8 036	8 042	8 047	8 052	8 057	8 057	8 057	8 057	8 057	8 057	8 057	8 057	8 057	8 057	8 057
Additional Quantity Whose Bids are Collected				8 044	8 055	8 069	8 076	8 084	8 093	8 103	8 114	8 114	8 114	8 114	8 114	8 114	8 114	8 114	8 114	8 114	8 114
Financial Analysis (M JD at 2001 Prices)		Percent	Amount	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Costs																					
Local Components		0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Foreign Components		100%	13.388	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657
Duty & Taxes		0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Capital Costs			13.388	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657	3.657
Operative Costs				3.657	7.314	7.314	9.336	11.358	13.380	13.380	13.380	13.380	13.380	13.380	13.380	13.380	13.380	13.380	13.380	13.380	13.380
O & M Costs				8.000	0.000	8.687	0.687	0.687	0.687	0.687	0.687	0.687	0.687	0.687	0.687	0.687	0.687	0.687	0.687	0.687	0.687
Total Costs				3.657	3.657	6.687	2.709	2.709	2.709	0.687	1.719	1.719	1.719	1.719	1.719	1.719	1.719	1.719	1.719	1.719	1.719
Revenues																					
Municipal Usage Qty (M m ³)				2 630	2 673	2 727	2 894	3 072	3 261	3 462	3 675	3 900	4 135	4 380	4 635	4 900	5 175	5 460	5 755	6 060	6 375
Municipal Tariff (JD/m ³)				0.341	0.341	0.351	0.362	0.373	0.384	0.395	0.407	0.407	0.407	0.407	0.407	0.407	0.407	0.407	0.407	0.407	0.407
Municipal Revenues (M JD)				8 893	9 111	9 593	1 047	1 145	1 252	1 369	1 496	1 496	1 496	1 496	1 496	1 496	1 496	1 496	1 496	1 496	1 496
Industrial Usage Qty (M m ³)				8 537	8 573	8 611	8 635	8 668	8 686	8 713	8 741	8 741	8 741	8 741	8 741	8 741	8 741	8 741	8 741	8 741	8 741
Industrial Tariff (JD/m ³)				1.000	1.000	1.038	1.061	1.093	1.126	1.159	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194
Industrial Revenues (M JD)				8 537	8 573	8 629	8 674	8 721	8 772	8 827	8 885	8 885	8 885	8 885	8 885	8 885	8 885	8 885	8 885	8 885	8 885
Touristic Usage Qty (M m ³)				8 044	8 055	8 069	8 076	8 084	8 093	8 103	8 114	8 114	8 114	8 114	8 114	8 114	8 114	8 114	8 114	8 114	8 114
Touristic Tariff (JD/m ³)				1.000	1.000	1.038	1.061	1.093	1.126	1.159	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194
Touristic Revenues (M JD)				8 044	8 055	8 071	8 081	8 092	8 105	8 120	8 136	8 136	8 136	8 136	8 136	8 136	8 136	8 136	8 136	8 136	8 136
Total Revenues (M JD)				1 475	1 539	1 658	1 802	1 958	2 129	2 315	2 518	2 518	2 518	2 518	2 518	2 518	2 518	2 518	2 518	2 518	2 518
Net Cash Flow (M JD)				-2 182	-2 117	-8 971	-8 907	-6 758	-1 500	1 628	8 799	8 799	8 799	8 799	8 799	8 799	8 799	8 799	8 799	8 799	8 799
Discounting (DB=9%)				0.92238	0.90703	0.89334	0.88270	0.87353	0.86482	0.85668	0.84904	0.84191	0.83528	0.82914	0.82340	0.81806	0.81312	0.80858	0.80434	0.80040	0.79676
Total Qty Whose Bids are Collected (M m ³)				3 201	3 301	3 407	3 606	3 817	4 041	4 278	4 538	4 830	5 155	5 515	5 910	6 340	6 805	7 305	7 840	8 410	9 015
FIRR		10.0%																			
NPV (M JD)				-2 078	-1 521	8 339	-0 746	-0 588	-0 433	1 157	8 541	8 515	8 498	8 467	8 445	8 423	8 403	8 384	8 366	8 348	8 332
PV of Total Costs (M JD)				30 335	3 483	3 317	6 593	2 229	2 122	2 021	0 488	1 164	1 108	1 055	1 005	0 957	0 912	0 868	0 827	0 788	0 750
PV of Total Bids Collected Qty (M m ³)				63 379	3 049	2 994	2 943	2 967	2 951	3 015	3 041	3 066	2 920	2 781	2 649	2 523	2 403	2 288	2 179	2 075	1 977
Unit Water Price (JD/m ³)				479																	

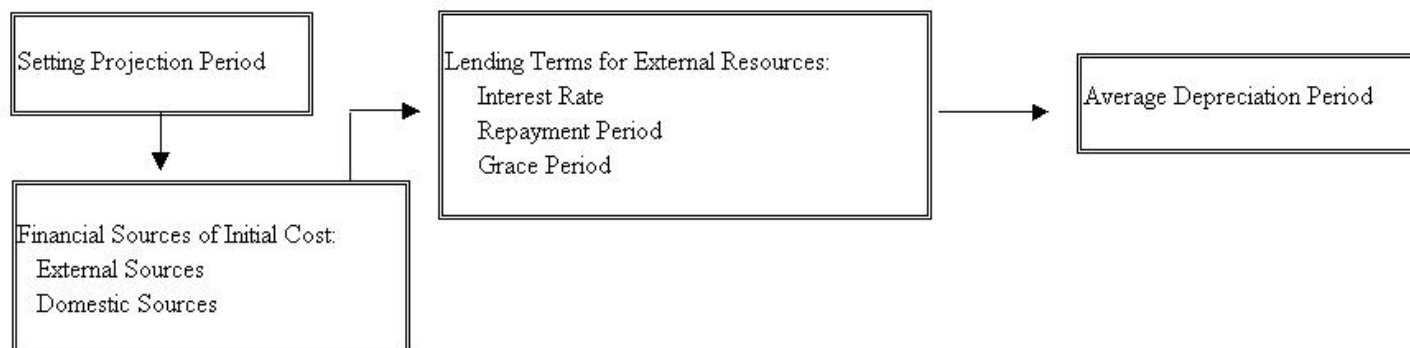
Economic Analysis (M JD at 2001 Prices)																				
Item	Percent	Amount	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Costs																				
Local Components		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Foreign Components		13.380	3.657	3.657	0.000	2.022	2.022	2.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Duty & Taxes		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Capital Costs		13.380	3.657	3.657	0.000	2.022	2.022	2.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Operative Costs			3.657	7.314	7.314	5.334	11.356	13.380	13.380	13.380	13.380	13.380	13.380	13.380	13.380	13.380	13.380	13.380	13.380	13.380
O & M Costs		0.000	0.000	0.687	0.687	0.687	0.687	0.687	0.687	1.719	1.719	1.719	1.719	1.719	1.719	1.719	1.719	1.719	1.719	1.719
Total Costs			3.657	3.657	0.687	2.709	2.709	2.709	0.687	1.719	1.719	1.719	1.719	1.719	1.719	1.719	1.719	1.719	1.719	1.719
Benefits																				
Municipal Usage Qty (M m3)			1.310	1.336	1.363	1.447	1.536	1.631	1.731	1.838	1.938	1.938	1.858	1.858	1.838	1.838	1.838	1.838	1.838	1.838
Unit Benefits of Municipal Water (JD/m3)			0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735
Municipal Benefits (M JD)			0.963	0.982	1.002	1.064	1.129	1.199	1.272	1.351	1.351	1.351	1.351	1.351	1.351	1.351	1.351	1.351	1.351	1.351
Industrial Usage Qty (M m3)			0.269	0.266	0.305	0.317	0.330	0.348	0.357	0.371	0.371	0.371	0.371	0.371	0.371	0.371	0.371	0.371	0.371	0.371
Unit Benefits of Industrial Water (JD/m3)			2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740
Industrial Benefits (M JD)			0.736	0.725	0.837	0.878	0.904	0.940	0.977	1.016	1.016	1.016	1.016	1.016	1.016	1.016	1.016	1.016	1.016	1.016
Touristic Usage Qty (M m3)			0.022	0.028	0.035	0.035	0.042	0.047	0.052	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057
Unit Benefits of Touristic Water (JD/m3)			2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740
Touristic Benefits (M JD)			0.061	0.076	0.095	0.105	0.116	0.128	0.141	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156
Total Benefits (M JD)			1.759	1.843	1.934	2.038	2.149	2.266	2.391	2.522	2.522	2.522	2.522	2.522	2.522	2.522	2.522	2.522	2.522	2.522
Net Cash Flow (M JD)			-1.898	-1.814	-1.247	-0.671	-0.540	-0.442	-1.704	-0.803	-0.803	-0.803	-0.803	-0.803	-0.803	-0.803	-0.803	-0.803	-0.803	-0.803
Discounting (DR=10%)			0.90909	0.90909	0.82645	0.75131	0.68181	0.62092	0.56447	0.51316	0.46551	0.42418	0.38594	0.35049	0.31863	0.28946	0.26333	0.23939	0.21763	0.19764
Total Qty Delivered (M m3)			1.601	1.630	1.703	1.833	1.988	2.020	2.139	2.265	2.265	2.265	2.265	2.265	2.265	2.265	2.265	2.265	2.265	2.265
IRR																				
NPV (M JD)	13.8%		-1.725	-1.649	-1.030	-0.584	-0.382	-0.275	-0.962	-0.412	-0.375	-0.341	-0.310	-0.282	-0.256	-0.233	-0.212	-0.192	-0.175	-0.159
PV of Total Costs (M JD)			21.893	2.324	0.563	2.035	1.850	1.682	0.368	0.882	0.802	0.725	0.665	0.605	0.548	0.493	0.432	0.374	0.340	0.340
PV of Total Qty Delivered (M m3)			1.455	1.500	1.408	1.355	1.384	1.255	1.208	1.162	1.057	0.961	0.873	0.794	0.722	0.656	0.594	0.542	0.493	0.448
Unit Water Price (FJD/m3)			1.848																	

ANNEX to 3.7.3

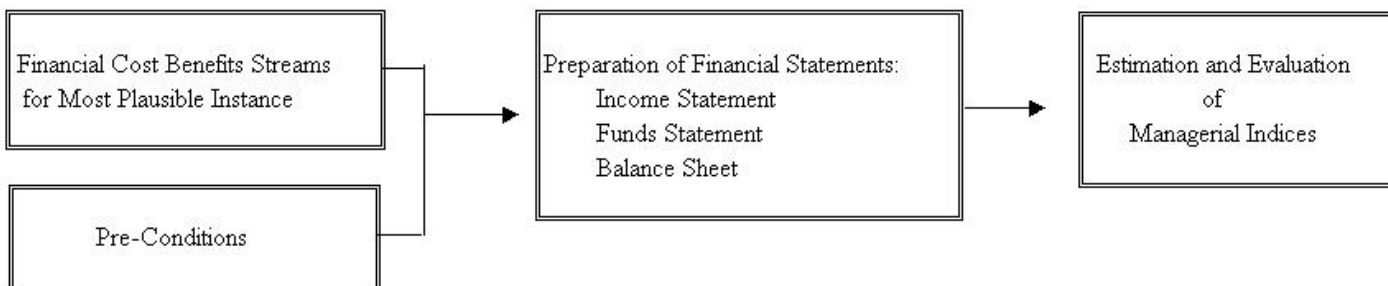
Financial Statements

Preparation of Projected Financial Statements

1. Setting Pre-Conditions



2. Preparation and Evaluation of Projected Financial Statements



Methodology for Preparation of Financial Statements for National Water Control System Project