

**APPENDIX 3. A MODEL OF MUNICIPAL FINANCIAL
CAPABILITY FOR SOCIAL CAPITAL
FORMATION: CASE OF SEWERAGE
SYSTEM DEVELOPMENT**

APPENDIX 3. A Model of Municipal Financial Capability for Social Capital Formation: Case of Sewerage System Development

Given an appropriate external financial institution available for municipalities, the municipalities can launch urban development project either by themselves or by sharing the costs with the central government. In this appendix, Taking an example of sewerage system project with a cost-sharing scheme, a simple financial model is examined based on the following assumptions:

1) Cost Sharing

A sewerage system development project costing 3,000 baht/head is to be constructed with a share rate of:

- 1/3 : the municipality, and
- 2/3 : the central government.

2) Municipal Financial Scheme

A municipality with an average financial capability in the UCR is supposed. A certain percentage (less than 5%) of the total annual municipal revenue, which is at present 1,200 baht per head and expected to increase in response to the urban economic growth of about 7% p.a., is reserved exclusively for this project on annual basis. The shortfalls are covered by a long-term loan with a certain interest rate (less than 15% p.a.). The loan repayment is rendered by the annually reserved funds.

3) Examination

Under the above scheme, three cases are examined in view of whether the municipality will be able to recover the liability within the period of the project life, 30 years.

	Interest Rate	Ratio of Reserved fund to the total Revenue
Case 1:	8% p.a.	5%
Case 2:	10%	5%
Case 3:	8%	3%

4) Results

The results are as shown in Tables A3-1 to A3-3. In all the cases, the municipality will afford to recover this project. Fig. A3-1 shows a relationship between the interest rates (% p.a.) and the recovery terms (year after the construction) with an assumption of 5% of the reserved ratio to the total municipal revenue. This shows that given a less than 13% interest rate loan, the municipality will be able to recover the liability within 30 years, thus, may carry out this project..

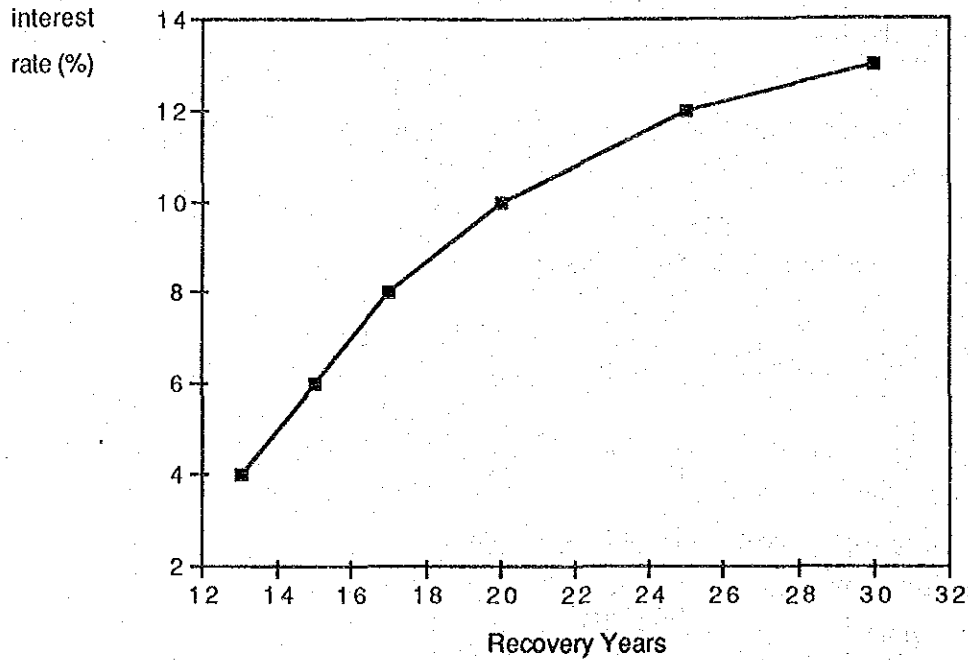


Fig.A3-1 A Relationship between Interest Rates and Recovery Terms

Table A3-1 A Financial Model for Municipal Finance : Case 1

Assumptions			
Prerequisite		Assumed Conditions	
Construction Cost	3000	Ratio of Repayment	5%
Municipal Share (Bhat)	30%	(% of Revenue)	
Revenue Growth	900	Loan Interest rate	8%
	7%		

Municipal Loan Repayment Schedule

Consq. Year	Mpl Revenue	Liability	Repayment	Year-End Liability
1	1,200		60	840
2	1,284	907	64	843
3	1,374	910	69	842
4	1,470	909	74	836
5	1,573	902	79	824
6	1,683	890	84	806
7	1,801	870	90	780
8	1,927	842	96	746
9	2,062	806	103	703
10	2,206	759	110	648
11	2,361	700	118	582
12	2,526	629	126	503
13	2,703	543	135	408
14	2,892	440	145	296
15	3,094	319	155	165
16	3,311	178	166	12
17	3,543	13	13	0
18	3,791	0	0	0
19	4,056	0	0	0
20	4,340	0	0	0
21	4,644	0	0	0
22	4,969	0	0	0
23	5,316	0	0	0
24	5,689	0	0	0
25	6,087	0	0	0
26	6,513	0	0	0
27	6,969	0	0	0
28	7,457	0	0	0
29	7,979	0	0	0
30	8,537	0	0	0

Table A3-2 A Financial Model for Municipal Finance : Case 2

Assumptions			
Prerequisite		Assumed Conditions	
Construction Cost	3000	Ratio of Repayment	5%
Municipal Share (Bhat)	30%	(% of Revenue)	
Revenue Growth	900	Loan Interest rate	10%
	7%		

Municipal Loan Repayment Schedule

Consq. Year	Mpl Revenue	Liability	Repayment	Year-End Liability
1	1,200		60	840
2	1,284	924	64	860
3	1,374	946	69	877
4	1,470	965	74	891
5	1,573	980	79	902
6	1,683	992	84	908
7	1,801	999	90	909
8	1,927	999	96	903
9	2,062	993	103	890
10	2,206	979	110	869
11	2,361	956	118	838
12	2,526	922	126	795
13	2,703	875	135	740
14	2,892	814	145	669
15	3,094	736	155	581
16	3,311	639	166	474
17	3,543	521	177	344
18	3,791	379	190	189
19	4,056	208	203	5
20	4,340	6	6	0
21	4,644	0	0	0
22	4,969	0	0	0
23	5,316	0	0	0
24	5,689	0	0	0
25	6,087	0	0	0
26	6,513	0	0	0
27	6,969	0	0	0
28	7,457	0	0	0
29	7,979	0	0	0
30	8,537	0	0	0

Table A3-3 A Financial Model for Municipal Finance : Case 3

Assumptions			
Prerequisite		Assumed Conditions	
Construction Cost	3000	Ratio of Repayment	3%
Municipal Share (Bhat)	30%	(% of Revenue)	
Revenue Growth	900	Loan Interest rate	8%
	7%		

Municipal Loan Repayment Schedule

Consq. Year	Mpl Revenue	Liability	Repayment	Year-End Liability
1	1,200		36	864
2	1,284	933	39	895
3	1,374	966	41	925
4	1,470	999	44	955
5	1,573	1,031	47	984
6	1,683	1,063	50	1,012
7	1,801	1,093	54	1,039
8	1,927	1,122	58	1,065
9	2,062	1,150	62	1,088
10	2,206	1,175	66	1,109
11	2,361	1,197	71	1,127
12	2,526	1,217	76	1,141
13	2,703	1,232	81	1,151
14	2,892	1,243	87	1,156
15	3,094	1,249	93	1,156
16	3,311	1,249	99	1,149
17	3,543	1,241	106	1,135
18	3,791	1,226	114	1,112
19	4,056	1,201	122	1,079
20	4,340	1,166	130	1,036
21	4,644	1,118	139	979
22	4,969	1,057	149	908
23	5,316	981	159	822
24	5,689	887	171	717
25	6,087	774	183	591
26	6,513	639	195	443
27	6,969	479	209	270
28	7,457	291	224	67
29	7,979	73	73	0
30	8,537	0	0	0

**APPENDIX 4. PROJECTION OF FUTURE FINANCIAL
SUPPLY IN THE UCR**

APPENDIX 4. Projection of Future Financial Supply in the UCR

Future financial supplies for the municipalities are projected for the period of the 7th national plan (1992 to 1996).

According to the urbanization projection discussed in Sector Report Vol.1, a number of sanitary districts will qualify the municipal criteria in the year 2010. Hence, some of them will be upgraded to be municipalities.

Nevertheless, this analysis was made based on the present 14 municipalities (excluding Phraphutatabat due to limited availability of the data), because of uncertainty of the change in their status.

Table A4-1 shows a summary of the results of the financial supply projection of 14 municipalities in the UCR during the period of the 7th National Plan.

In this analysis, major concern is with changes in municipalities' investment capability for development. Hence, the financial supply, defined in this analysis, is assumed to consist of the financial capacity (equal to regular revenue minus regular expenditure) and general subsidy. Specific subsidies and loans are not considered, because these are uncertain and negotiable in the future.

The following are the other significant assumptions employed for this projection:

- 1) Regular revenues including taxes, fees, and other incomes are estimated based on the past five years trend.
- 2) Percentages of regular expenditures (administrative expenditure) to regular revenues are assumed to be constant at the 1987 level.
- 3) General subsidies is calculated by using the same per capita rate as that in 1987, and the projected population.

Table A4-1 Financial Supply Projection (in Thai Baht)

Municipality	Item	1992	1993	1994	1995	1996	1997
1 Chai Nat	1) Financial Capacity	1,504,598	1,590,539	1,676,480	1,762,421	1,848,362	8,382,400
	2) General Subsidy	918,348	916,991	915,633	914,276	912,918	4,578,166
	3) (Total) Investable Amount	2,422,946	2,507,530	2,592,113	2,676,697	2,761,280	12,960,566
2 Wat Sing	1) Financial Capacity	1,728,940	1,783,020	1,837,100	1,891,180	1,945,260	9,185,500
	2) General Subsidy	291,686	291,765	291,844	291,924	292,003	1,459,222
	3) (Total) Investable Amount	2,020,626	2,074,785	2,128,944	2,183,104	2,237,263	10,644,722
3 Sing Buri	1) Financial Capacity	4,351,506	4,415,534	4,479,562	4,543,590	4,607,618	22,397,810
	2) General Subsidy	1,392,829	1,422,867	1,452,905	1,482,944	1,512,982	7,264,527
	3) (Total) Investable Amount	5,744,335	5,838,401	5,932,467	6,026,534	6,120,600	29,662,337
4 Ang Thong	1) Financial Capacity	1,627,407	1,747,945	1,868,482	1,989,020	2,109,558	9,342,412
	2) General Subsidy	607,998	606,875	605,751	604,628	603,504	3,028,756
	3) (Total) Investable Amount	2,235,405	2,354,820	2,474,233	2,593,648	2,713,062	12,371,168
5 Pamok	1) Financial Capacity	2,098,866	2,189,502	2,280,138	2,370,775	2,461,411	11,400,692
	2) General Subsidy	769,182	774,046	778,910	783,774	788,638	3,894,550
	3) (Total) Investable Amount	2,868,048	2,963,548	3,059,048	3,154,549	3,250,049	15,295,242
6 Ayutthaya	1) Financial Capacity	13,738,695	14,783,805	15,828,916	16,874,027	17,919,138	79,144,581
	2) General Subsidy	5,241,586	5,413,992	5,586,398	5,758,804	5,931,210	27,931,990
	3) (Total) Investable Amount	18,980,281	20,197,797	21,415,314	22,632,831	23,850,348	107,076,571
7 Sena	1) Financial Capacity	11,477,073	12,825,168	14,173,263	15,521,358	16,869,453	70,866,315
	2) General Subsidy	277,189	277,259	277,329	277,399	277,469	1,386,645
	3) (Total) Investable Amount	11,754,262	13,102,427	14,450,592	15,798,757	17,146,922	72,252,960
8 Tha Rua	1) Financial Capacity	6,701,318	7,426,309	8,151,299	8,876,289	9,601,279	40,756,494
	2) General Subsidy	1,113,740	1,136,569	1,159,398	1,182,228	1,205,057	5,796,992
	3) (Total) Investable Amount	7,815,058	8,562,878	9,310,697	10,058,517	10,806,336	46,553,486
9 Lop Buri	1) Financial Capacity	5,111,021	5,315,732	5,520,442	5,725,152	5,929,863	27,602,210
	2) General Subsidy	2,357,141	2,364,329	2,371,517	2,378,705	2,385,893	11,867,585
	3) (Total) Investable Amount	7,468,162	7,680,061	7,891,959	8,103,857	8,315,756	39,459,795

Municipality	Item	1992	1993	1994	1995	1996	1997
10 Ban Mee	1) Financial Capacity	3,353,635	3,448,035	3,542,436	3,636,837	3,731,237	17,712,180
	2) General Subsidy	398,853	407,416	415,979	424,542	433,105	2,079,895
	3) (Total) Investable Amount	3,752,488	3,855,451	3,958,415	4,061,379	4,164,342	19,792,075
11 Khok Samrong	1) Financial Capacity	3,507,144	3,598,203	3,689,261	3,780,320	3,871,378	18,446,306
	2) General Subsidy	357,427	357,427	357,427	357,427	357,427	1,787,135
	3) (Total) Investable Amount	3,864,571	3,955,630	4,046,688	4,137,747	4,228,805	20,233,441
12 Sara Buri	1) Financial Capacity	3,038,042	3,098,671	3,159,299	3,219,928	3,280,556	15,796,496
	2) General Subsidy	3,993,021	4,124,358	4,255,694	4,387,031	4,518,368	21,278,472
	3) (Total) Investable Amount	7,031,063	7,223,029	7,414,993	7,606,959	7,798,924	37,074,968
13 Kaeng Koy	1) Financial Capacity	2,643,250	2,732,593	2,821,936	2,911,278	3,000,621	14,109,678
	2) General Subsidy	789,001	798,656	808,310	817,965	827,619	4,041,551
	3) (Total) Investable Amount	3,432,251	3,531,249	3,630,246	3,729,243	3,828,240	18,151,229
14 Nong Khae	1) Financial Capacity	3,812,358	4,007,331	4,202,304	4,397,278	4,592,251	21,011,522
	2) General Subsidy	896,391	908,393	920,396	932,398	944,400	4,601,978
	3) (Total) Investable Amount	4,708,749	4,915,724	5,122,700	5,329,676	5,536,651	25,613,500
Total	1) Financial Capacity	64,693,853	68,962,387	73,230,918	77,499,453	81,767,985	366,154,596
	2) General Subsidy	19,404,392	19,800,943	20,197,491	2,054,045	20,990,593	100,987,464
	3) (Total) Investable Amount	84,098,245	88,763,330	93,428,409	79,553,498	102,758,578	467,142,060

APPENDIX 5. LIST OF STUDY REPORTS AND PAPERS

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1. REPORTS

Design for the Study

Inception Report

Inception Report: Amendment

Progress Report

Interim Report

Executive Summary

Master Plan Report

Technical Reports

- Vol. 1 Spatial Framework for Development
- Vol. 2 Environmental Management
- Vol. 3 Land Use and Agricultural Development
- Vol. 4 Industrial Development
- Vol. 5 Distribution
- Vol. 6 Water Resources Management
- Vol. 7 Transportation
- Vol. 8 Economic Environment
- Vol. 9 Local Government Finance
- Vol. 10 Energy
- Vol. 11 Landsat Analysis

Draft Final Report

Executive Summary

Master Plan Report

Sector Reports

- Vol. 1 Spatial Framework and Network for Development
- Vol. 2 Urban Management
- Vol. 3 Environmental Management
- Vol. 4 Water Resource Management, Agricultural Development and Land Use Management
- Vol. 5 Industrial Development
- Vol. 6 Distribution and Marketing
- Vol. 7 Energy
- Vol. 8 Social Development in Rural Economies
- Vol. 9 International and National Economic Environment
- Vol. 10 Human Resource Development
- Vol. 11 Landsat Analysis

Final Report

Executive Summary

Master Plan Report

Sector Reports

- Vol. 1 Spatial Framework and Network for Development
- Vol. 2 Urban Management
- Vol. 3 Environmental Management

- Vol. 4 Water Resource Management, Agricultural Development and Land Use Management
- Vol. 5 Industrial Development
- Vol. 6 Distribution and Marketing
- Vol. 7 Energy
- Vol. 8 Social Development in Rural Economies
- Vol. 9 International and National Economic Environment
- Vol. 10 Human Resource Development
- Vol. 11 Landsat Analysis

2. PAPERS

Papers for Seminar, Sara Buri, November 2-3, 1989

1. Development Framework, Strategies, and Production
2. Urban, Land Use and Infrastructure Development
3. Critical Issues for Development Management

Papers for Seminar, Pattaya, July 28-29, 1990

1. Agriculture and Water Resources: Policies and Programs
2. Industry and Energy: Policies and Programs
3. Urbanization and Infrastructure Facilities: Policies and Programs
4. Development Administration and Environmental Management: Policies and Programs

APPENDIX 6. STAFF INPUT

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ECFA:	Engineering Consulting Firm Association
IDCJ:	International Development Center of Japan
PCI:	Pacific Consultants International
SOMC:	Shinko Overseas Management Consultant

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