

L.4 Financial System

L.4.1 Current Financial Problems to be Taken into Account

It is a basic principle of SWM that all expenditure (i.e., direct and indirect costs) of cleansing services should be covered by the cleansing fee income. However, as also expressed in the Progress Report (1), in year 1999 9 municipalities out of 14 municipalities could not even cover the direct costs of cleansing services by the cleansing fees collected.

As for 4 municipalities out of 9 municipalities that use CAESS/DELSUR for MIDES landfill fee collection, the final disposal expenditure (i.e., MIDES tipping fee payment and CAESS/DELSUR commission payment) in 8 months in 1999 exceeded the income (landfill fee income collected at the same period from users by CAESS/DELSUR).

This implies the following 3 problems:

- Problems of SWM fee collection system;
- Problems of high tipping fee of MIDES landfill; and
- Problems of administration and control.

L.4.1.1 Problems of SWM Fee Collection System

Said problems can be categorized into “tariff structure problems” and “fee collection efficiency problems”.

a. Tariff Structure Problems

As for **cleansing fee (tasa de aseo)**, the majority of 14 municipalities collect it in proportion to property/floor area size that users occupy. The principal problem of this tariff structure is that people who discharge wastes but do not occupy property/floor are not obliged to pay for cleansing services. Meanwhile, the fee payment in proportion to property/floor area size is sometimes criticized, as allegedly claimed being unfair due to irrelevancy to waste amount discharged. Under such circumstances, most municipalities apply differentiated tariff structure for domestic users and commercial/institutional users. However only Ilopango and Nejapa municipalities apply distinct tariff differentiation of more than 4 times. San Salvador municipality has a different service so-called “special collection (recolección especial)” for commercial/institutional users. Mejicanos municipality applies a specific duty (proportion to waste volume: 200.00col/ton) for large dischargers. In April, 2000 Ilopango municipality introduced a specific duty of 225collon/ton. The specific duty (proportion to waste volume) with reasonable tariff rate is recommendable, since it could cover the costs of the same service and also it could motivate such waste generators to practice waste minimization efforts.

As for the **landfill fee (tasa de relleno)**, it is collected in proportion to electricity consumption. It is true that the electricity consumption and waste discharge amount is not a lineal proportional, however, it is general for domestic users that higher income households consume more electricity and produce more waste and lower income households consume less electricity and produce less waste. Therefore, it could be viewed that such a tariff structure should be socially acceptable.

It is important to distinguish problems of “tariff collection system (sistema de recaudacion)” and “whether tariff rate be reasonable or expensive”. This report has an opinion that the tariff collection system for household in proportion to electric consumption is acceptable.

As for the problem of “whether tariff rate be reasonable or expensive”, following problems are envisaged.

- The minimum landfill tariff rate for household (even as small as from 5colon/month in San Salvador and Ilopango to 3colon/month in some municipalities) could be a heavy financial burden for poor marginal households.
- The maximum landfill tariff rate for commercial/institutions (e.g., 300 colon/month) is not reasonable. Because waste discharge by commercial and/or institutions accounts for considerable amount, on the other hand MIDES charges the tipping fee to municipalities in proportion to amount (i.e., US\$18/ton). In this respect, Ciudad Delgado (450colon/month) Nueva San Salvador (500colon/month) and Apopa (1,000colon/month) have higher maximum rate, however, it can not cover the corresponding cost (MIDES tipping fee) charged on the amount that large commercial/institutions discharge.
- The landfill tariff for commercial/institutions (i.e., in proportion to electricity consumption) is not appropriate. Waste discharge amount is diversely different among commercial/institutions even the electricity consumption is similar, therefore it lacks fairness in burden allocation among such users.

b. Fee Collection Efficiency Problems

Fee collection efficiency is now under further investigation for both cleansing fee (tasa de aseo) and landfill fee (tase de relleno) with respective categories of domestic and commercial/institutions.

As the Progress Report (1) describes, such efficiency in 1999 was estimated to be 20 to 70% for cleansing fee and 40 to 90% for landfill fee. On the other hand, the collection efficiency through CAESS/DELSUR electricity bills ranges 70 to 83%.

A lower efficiency in cleansing fee collection (other than San Salvador and Cuscatancingo municipalities) is mainly attributable to that:

- there are no compelling measures in demanding such payment; and
- users' data base is insufficient and/or not managed well.

On the other hand, the landfill fees and cleansing fees of San Salvador and Cuscatancingo municipalities are efficiently collected by these electric companies, due to the compelling measure (i.e., suspension of electricity supply in case of more than 2 months delayed payment). However in 1999, when an electricity bill was not paid in a month, the unpaid amount of landfill fees was not accumulated on the subsequent month bill. Consequently, it contributed for lowering the fee collection efficiency. It is expected that the fee collection system will be improved that unpaid amount will be accumulated on subsequent invoice.

L.4.1.2 Problems of High Tipping Fee of MIDES Landfill

Municipalities that dispose of their waste at MIDES Nejapa landfill have too heavy burdens of the expensive unit rate US\$18/ton and minimum guarantee quantity.

Table L-7: Billing amount by MIDES and Burden to Municipal Finance in 1999

	MIDES billing in 1999 (1000colones) (A)	Discharge amount (ton)	Unit price (US\$/ton)	Gross municipal expenditure (actual) (1000colones) (B)	Share of landfill expenditure (A/Bx100)(%)
San Salvador	25,700	70,179.4	41.9	383,030	6.7
Mejicanos	3,563	17,401.7	23.4	18,240	19.5
Delgado	1,837	7,992.0	26.3	20,841	8.8
Ayutuxtepeque	689	2,727.8	28.9	6,754	10.2
San Marcos	1,457	7,226.5	23.0	9,436	15.4
Nueva San Salvador	5,175	12,251.0	48.3	34,600	15.0
Soyapango	8,266	20,637.6	45.8	41,728	19.8
Ilopango	2,374	11,638.2	23.3	13,337	17.8
Apopa	3,190	13,795.8	26.4	11,297	28.2
Nejapa	383	1,916	22.8	4,963	7.7

Note: 1US\$=8.75 colones

The unit rate US\$18/ton should be considered to include not only tipping service but also the services of transfer station(s) and transport, etc. However, such other services are not provided or prepared yet.

It is not known either the initial investment amount for the MIDES Nejapa landfill, or the actual O&M costs. However, it is estimated that the tipping fee alone should be less than US\$12/ton, considering that the US\$18/ton is a gross price for all services proposed and estimating its breakdown reviewing the investment amount details for respective services that CINTEC proposed in 1997.

Whereas, it should be expected that the minimum guarantee quantity be reviewed and revised in the near future, member municipalities need to pay the invoice amount under such present circumstances that weighbridge data is solely controlled by the service provider CINTEC. It should be necessary that member municipalities (client of the service) should establish their own weighbridge measures control.

L.4.1.3 Problems of Administration and Control

a. Problems of Income Administration

Administration on fee collection should be such that which invoice is paid on time and which is not should be identified for example within one month in order to hasten to urge the due payment.

However under the circumstances, municipalities such as Tonacatepeque leave the fee collection as an unforced process for citizens.

Meanwhile, even municipalities that use the compelling measure (electricity bill by CAESS/DELSUR) delay the reminder that urges due payment, in many cases.

b. Problems of Expenditure Administration

All municipalities except for San Salvador municipality do not have an accountant inside the cleansing section who controls the expenditure of the same section. In a nutshell, overall control on cleansing budget is mostly absent. Furthermore, such budget is not separately controlled in categories of various cleansing service activities. Therefore, even the expenditure itself is not monitored in a category-wise manner.

Although expenditure on fuels, lubricant and spare parts are monitored, they do not have database to monitor and control the working hours, collection/transport activities, weighbridge measurement that should be correlated with each other for the overall administration. Accordingly, cleansing services become costly.

Table L-8: Comparison of Waste Collection Costs

	Collection cost in 1999 (1000 colons)	Cost efficiency per vehicle (1000 colon/vehicle)	Cost efficiency per worker (1000 colon/worker)	Unit cost per ton collected (colon/ton)
San Salvador	14,294	264.7	28.6	87.7
Mejicanos	2,352	235.2	48.0	97.1
Delgado	1,059	151.3	42.4	100.1
Cuscatancingo	1,296	185.1	58.9	144.1
Ayutuxtepeque	503	251.5	62.9	142.4
San Marcos	2,265	283.2	80.9	209.5
Nueva San Salvador	7,068	471.2	95.5	265.0
Antiguo Cuscatlan	4,884	444.0	88.8	337.5
Soyapango	4,159	260.0	46.2	96.2
Ilopango	1,968	218.6	35.1	132.5
San Martin	1,019	203.7	50.9	121.3
Apopa	1,210	172.8	43.2	76.4
Nejapa	224	112.0	37.3	135.5
Tonacatepeque	392	195.9	49.0	53.7
Total	42,693	275.4	44.1	120.8

Note: Calculated by JICA Study Team

L.4.1.4 Financial Problems in the Near Future

The above problems imply large difficulties in pursuing sustainable municipal SWM. Among other, collection vehicles donated by the Japanese government in 1989 and 1996 become old and their remaining service life is short. It accordingly is necessary to replace those collection vehicles in the near future which could impose notable financial burden on respective municipalities' finance.

In this context, impacts of municipal finance till the year 2010 (M/P target year) are preliminarily examined on the assumption stated below:

a. Assumptions

- **Vehicle renewal period:** Vehicles donated in 1989 should be replaced in 2001 and those in 1996 be replaced in 2003. Vehicles to be increased due to waste collection amount increase in the future should also be replaced

after 7 years service life. Unit investment cost (i.e., purchase price of vehicles) is estimated as 80,000US\$/unit herewith.

- **Income projection:** SWM fees consist of cleansing fee and landfill fee. Such fee rates and fee collection efficiencies for respective categories of domestic and commercial/institutions are currently under investigation. Therefore, the relevant data forwarded before 16th June 2000 by counterpart of Cuscatancingo and Nueva San Salvador municipalities are referred in this examination. Proportions of fee income from domestic users and from commercial/institutions are assumed to be the same proportions of waste discharge amount by respective categories obtained by WACS. The domestic fee income is projected to grow in proportion to the population increase. The commercial/institutions fee income is projected to expand in proportion to the GRDP growth. population increase.
- **Expenditure projection (disposal cost):** The MIDES landfill tipping fee is assumed to be US\$18/ton. Tipping fees of other sites are assumed to be US\$3/ton. Expenditure is projected as “future increasing disposal amount” times “such unit rate per ton”. However, MIDES’s minimum guarantee quantity is not considered for this estimation.
- **Expenditure projection (collection/transport cost):** The collection and transport cost is projected as “future increasing collection amount” times “current 1999 collection/transport unit costs per ton”.
- Other expenditures such as street sweeping costs and workshop cost are assumed to be same as that in 1999.

b. Calculation

b.1 Replacement in Year 2001

In order to replace the vehicles in 2001, following 5 municipalities need to transfer some amount from municipal budget to the cleansing budget. It will be a real heavy burden especially for Tonacatepeque municipality, since it needs to transfer about 50% of municipal budget for the collection vehicle replacement (see the table below).

Table L-9: Municipal Burden to Replace Vehicles in 2001

	Number of replace vehicles	Share of SWM burden (Total SWM expenditure – SWM fees) to Total Budget (%)
Mejicanos	3	0.3
Ayutuxtepeque	1	5.1
San Marcos	2	14.6
Soyapango	6	3.0
Tonacatepeque*	3	49.4

Note: * There were no vehicles granted by Japanese, but the purchase of vehicles is needed.

b.2 Replacement in Year 2003

Replacing the vehicles in 2003 requires 12 municipalities to transfer some amount from municipal budget to the cleansing budget.

Antiguo Cuscatlan, and Tonacatepeque municipalities may face a heavy financial burden, because the transfer from municipal budget to cleansing budget may account for more than 20 % for them (see the table below).

Table L-10: Municipal Burden to Replace Vehicles in 2003

	Number of replace vehicles	Share of SWM burden (Total SWM expenditure – SWM fees) to Total Budget (%)
Mejicanos	7	16.1
Delgado	7	9.6
Cuscatancingo	4	16.3
Ayutuxtepeque	1	3.9
San Marcos	2	19.9
Antiguo Cuscatlan	3	24.3
Soyapango	14	15.6
Ilopango	5	7.7
San Martin	2	12.4
Apopa	5	11.6
Nejapa	1	9.6
Tonacatepeque	2	36.2

b.3 Total Income/Expenditure Balance till Year 2010

In comparing the projected income and expenditure till 2010, it is forecast that 6 municipalities are in positive and 8 municipalities in negative.

San Salvador and Nueva San Salvador municipalities are constantly in positive balance from 1999 to 2010. On the contrary, Antiguo Cuscatlan, Nejapa, and Tonacatepeque municipalities are constantly in negative through the years till 2010.

Table L-11: Total Balance of SWM until 2010.

Unit: 1000 colones

Total Balance +		Total Balance –	
Possible to replace vehicles by waste taxes income		Impossible to replace vehicles without budget transfer from general budget of Municipality	
San Salvador	379,036	Cuscatancingo	-3,871
Nueva San Salvador	57,500	Ayutuxtepeque	-279
Mejicanos	485	San Marcos	-9,094
Delgado	7,254	Soyapango	-17,366
Ilopango	15,361	Antiguo Cuscatlan	-57,336
Apopa	4,578	Nejapa	-5,938
		San Martin	-18,370
		Tonacatepeque	-24,183

L.4.1.5 Effects of Fee Collection Improvement and Introduction of Transfer Stations

In order to examine alternatives for an optimum financial plan for the M/P, the cash flow of respective 14 municipalities is forecast for the following cases:

- Fee Collection Improvement
- Application of specific duty system (fee rate proportion to waste volume) for commercial/institutions waste
- MIDES landfill tipping fee reduction
- Introduction of Transfer Stations (T/Ss).

a. Assumptions

- Fee collection efficiency will be gradually raised up to 90% in 2010 from the present one.
- A specific duty system (fee rate proportion to waste volume) will be applied for commercial/institutions waste. Assumptions are that 50% of such waste is from large dischargers, the fee rate for such dischargers is to cover the direct cost of collection/transport services (including vehicle depreciation costs) and the landfill tipping fee.
- MIDES landfill tipping fee is US\$9/ton for 10 municipalities, and other 4 municipalities will perform their final disposal at a cost of US\$3/ton.

b. Calculation

b.1 Case A

Two (2) numbers of 300ton/day T/Ss and one (1) number of 600ton/day T/S are introduced. The assumption is that such T/Ss and transfer transport services are provided by a private sector charging such services fee as a unit rate of US\$/ton on delivered waste amount for user municipalities.

Financial conditions for a private sector, in constructing T/Ss and purchasing transfer vehicles, are assumed as follows.

- Costs for guarantee and insurance is 15.5% to the total investment cost. An interest rate of 7% is assumed for the long term loan.

As for operation and maintenance (O&M), the following are assumed:

- general administrative expenses are 10% of the net O&M costs; and
- profit rate is 5%.

It is estimated that T/Ss will be operated from Year 2004 and user municipalities for respective T/Ss are as shown in the table below.

Table L-12: Scale of T/S and Municipalities Using T/S (Case A)

	Transfer capacity	Municipalities using T/S
T/S 2-1	300ton/day	SS (1,2,5 districts),ST,AC
T/S 2-2	600ton/day	SS (3,4 districts) , MJ,CD,CT,AY,SM
T/S 2-3	300ton/day	SY, IL,SMT

In the consequence, unit rates charged to user municipalities are calculated as shown in the table below.

Table L-13: Unit Cost and Breakdown (Case A)

	Unit cost (US\$/ton)				
	Total	Breakdown of cost			
		T/S	Haulage	Financial cost & Taxes	Administration & Profit
T/S 2-1	5.08	1.42	2.06	1.27	0.33
T/S 2-2	3.94	0.90	1.86	0.85	0.33
T/S 2-3	5.22	1.48	2.03	1.37	0.34

b.2 Case B

One (1) number of 300ton/day T/S and one (1) number of 900ton/day T/S are introduced. The assumption is that such T/Ss and transfer transport services are provided by a private sector charging such services fee as a unit rate of US\$/ton on delivered waste amount for user municipalities.

Assumptions on financial conditions are the same that applied for the Case A.

It is estimated that T/Ss will be operated from Year 2004 and user municipalities for respective T/Ss are as shown in the table below.

Table L-14: Scale of T/S and Municipalities Using T/S (Case B)

	Transfer capacity	Municipalities using T/S
T/S 3-1	300ton/day	SS (2,3,4 districts),ST,AC
T/S 3-2	900ton/day	SS (1,5 districts) , MJ,CD,CT,AY,SM, SY, IL,SMT

In the consequence, unit rates charged to user municipalities are calculated as shown in the table below.

Table L-15: Unit cost and its Breakdown (Case B)

	Unit cost (US\$/ton)				
	Total	Breakdown of cost			
		T/S	Haulage	Financial cost & Tax	Administration & Profit
T/S 3-1	4.58	1.26	1.94	1.08	0.30
T/S 3-2	3.96	0.81	1.86	0.97	0.32

b.3 Improvement of Total Balance until Year 2010 by Adopting Respective Measures

The table below shows financial improvement of total balance until year 2010, when series of improvement scenarios are carried out such as, "fee collection rate increase (up to 90%)" and "specific duty (US\$/ton) application on large dischargers", "MIDES landfill tipping fee reduction" and "use of T/Ss and transport".

Table L-16: Improvement of Total Balance until Year 2010 by Adopting Respective Measures

Unit: 1000 colons

	→ →	→ →	→ →	→ →	→	→
	Original balance estimated on vehicle replacement	Balance improvement after "Fee collection rate increase"	Further balance improvement after "specific duty on large dischargers"	Further balance improvement after "MIDES tipping fee reduction to US\$9/ton"	Further balance improvement in case of "Case A T/Ss use"	Further balance improvement in case of "Case B T/Ss use"
San Salvador	392,459	454,008	same as before*	645,594	671,543	668,267
Mejicanos	485	27,310	- ditto -*	53,419	57,484	55,589
Delgado	8,652	19,132	23,174	33,411	34,603	35,443
Cuscatancingo	-4,571	-2,061	1,007	1,007	3,496	1,890
Ayutuxtepeque	-279	2,196	3,767	7,213	8,652	7,869
San Marcos	-9,094	2,938	5,076	15,798	11,274	6,024
Nueva San Salvador	57,500	73,543	84,053	113,557	140,995	139,631
Antiguo Cuscatlan	-62,936	-54,864	-49,195	-49,195	-17,199	-22,347
Soyapango	-17,366	15,277	31,826	85,208	97,143	99,071
Ilopango	15,361	24,702	28,889	44,169	50,607	51,848
San Martin	1,995	9,071	10,798	10,798	12,360	12,315
Apopa	4,578	42,108	46,275	61,853	-	-
Nejapa	-5,938	-4,443	-3,677	-2,081	-	-
Tonacatepeque	-24,183	-22,788	-20,120	-20,120	-	-

Note: * The tariff of non-domestic waste has already changed to reflect the waste weight.

Attention should be paid to that even series of the income improvement assumed above take place, Nejapa and Tonacatepeque municipalities will have a negative balance in total till 2010. Drastic measures to improve the income and/or reduce the SWM costs should be carefully considered.

The above financial improvement scenarios assumed should be taken into consideration for formulating the Master Plan (M/P).

Meanwhile, although the total financial balance until 2010 would be improved to follow the scenarios above, in 2003 when several collection vehicles should be replaced to new ones 6 municipalities may need to transfer some municipal budget to SWM budget as shown in the table below.

Table L-17: Municipal Burden Transfer to Replace Vehicles in 2001 and in 2003

	2001	2003
Cuscatancingo	0%	8.8%
Ayutuxtepeque	0.8%	0%
San Marcos	3.5%	0%
Antiguo Cuscatlan	0%	14.8%
Nejapa	0%	7.0%
Tonacatepeque	48.8%	31.9%