# FINANCIAL ANALYSIS

1. Financial analysis was prepared for the five subprojects in accordance with the *Financial Management and Analysis of Projects* of the Asian Development Bank (ADB).[1] The analysis covers the proposed investment for each subproject in the cities of Cimahi, Jambi, Makassar, Palembang, and Pekanbaru.

2. The objectives of the financial analysis are to assess (i) the viability of the proposed investment and amount of cost recovery, (ii) the affordability of the proposed wastewater tariff to target beneficiaries, and (iii) the sustainability of future operations of the wastewater treatment and collection system.

## A. Methodology and Assumptions

3. The key financial and technical assumptions used in the financial projections are as follows:

(i) price level: constant cost at October 2012 prices;
(ii) domestic cost escalations are 5.1% in 2013, 4.8% in 2014, 4.1% in 2015-2018, onward; and foreign cost escalations are 1.9% in 2013, 2.2% in 2014, 1.9% in 2015, and 1.8% in 2016 and onward;[2]
(iii) exchange rate: Rp12,240 = $1.00;
(iv) physical contingencies vary from 10% to 15% of direct costs;
(v) constant cost is used to compute the financial internal rate of return, and current costs are used in the financial statements;
(vi) operation and maintenance (O&M) costs are based on technical projections and escalated at 4.4% annually;
(vii) number of connections based on treatment plant capacity as presented in the technical evaluation;
(viii) collection efficiency of 90%; and
(ix) capacity development technical assistance funds from ADB to be passed on to the service delivery organization (SDO) as a grant.

4. The district services delivery body (BLUD) is the preferred wastewater system operator for Cimahi, Jambi, Makassar, and Pekanbaru. The UPTD (Unit Pelaksanaan Teknis Daerah [sanitation technical unit]) for wastewater management was established to handle the preparatory, implementation, and operating activities pending the creation of the BLUD. The SDO for Palembang will be PDAM Tirta Musi Palembang (Perusahaan Daerah Air Minum [water supply utility]), a city-owned enterprise operating the city water supply system.

5. The total development costs for the subprojects are based on the costs presented for the technical study with additional price contingencies to allow for the timing of implementation. The wastewater systems aim to provide an effective wastewater treatment and collection service up to 2025. The plans involve development of a wastewater treatment plant; construction of a wastewater collection system comprising trunk and main sewers, laterals, and interceptors; rehabilitation of selected stormwater drainage; installation of service connections; acquisition of land; and involuntary resettlement activities.

[1] ADB. 2005. *Financial Management and Analysis of Projects.* Manila.
[2] ADB. Southeast Asia Department. Domestic Cost Escalation Factors Update, October 2012 and World Bank projections as of September 2012 for international cost escalation factors.

6. The program is scheduled to start implementation by the second half of year 2014 and targeted to be completed by June 2020, with full operation by end 2020. Acquisition of land required for the project and conduct of detailed engineering design must be completed in 2014 prior to construction of the plant.

7. Details of the costs for each city are presented in Table 1.

**Table 1: Detailed Costs by City** ($ million)

| Item | Cimahi | Jambi | Makassar | Palembang | Pekanbaru |
|---|---|---|---|---|---|
| **Investment Costs** | | | | | |
| Involuntary resettlement | 0.04 | 0.12 | 0.38 | 0.54 | 0.39 |
| Civil plant | 18.74 | 29.65 | 44.59 | 36.19 | 32.47 |
| Consulting services | 1.01 | 1.75 | 2.48 | 2.88 | 1.91 |
| Land acquisition | 0.07 | 0.58 | 1.91 | 2.33 | 1.62 |
| **Subtotal Base Costs** | **19.86** | **32.10** | **49.36** | **41.93** | **36.38** |
| Physical contingencies | 2.14 | 3.38 | 5.09 | 4.84 | 3.75 |
| Price contingencies | 2.18 | 4.19 | 6.18 | 5.13 | 4.29 |
| **Total** | **24.18** | **39.69** | **60.66** | **51.90** | **44.43** |

Source: Asian Development Bank.

8. The total investment cost will be financed from various sources: ADB ordinary capital resources (OCR), ADB ASEAN Infrastructure Fund (AIF), Government of Australia through the Indonesia Infrastructure Initiative (INDII), and central and city governments (Table 2).

**Table 2: Detailed Costs by City and Funding Source** ($ million)

| Item | ADB OCR | ADB AIF | Gov't of Australia | Central Gov't | Local Gov't | Total |
|---|---|---|---|---|---|---|
| **A. Cimahi** | | | | | | |
| Wastewater treatment plant | | 11.41 | | 1.27 | | 12.68 |
| Sewer system | 4.79 | | | 0.54 | 0.10 | 5.44 |
| Property connections | | | | 0.25 | 2.29 | 2.54 |
| Land acquisition | | | | | 0.07 | 0.07 |
| Involuntary resettlement | | | | | 0.04 | 0.04 |
| **Subtotal (A)** | **4.79** | **11.41** | | **2.06** | **2.50** | **20.7** |
| **B. Jambi** | | | | | | |
| Wastewater treatment plant | 9.71 | | | 1.08 | | 11.87 |
| Sewer system | 10.63 | | | 1.26 | | 11.89 |
| Property connections | | | | 0.98 | 8.86 | 9.84 |
| Land acquisition | | | | | 0.58 | 0.58 |
| Involuntary resettlement | | | | | 0.12 | 0.13 |
| **Subtotal (B)** | **20.34** | | | **3.32** | **9.56** | **34.31** |
| **C. Makassar** | | | | | | |
| Wastewater treatment plant | | 10.94 | | 1.22 | | 12.15 |
| Sewer system | 23.34 | | | 2.84 | 1.19 | 28.36 |
| Property connections | | | | 0.95 | 8.54 | 9.49 |
| Land acquisition | | | | | 1.91 | 1.91 |
| Involuntary resettlement | | | | | 0.38 | 0.38 |
| **Subtotal (C)** | **23.34** | **10.94** | | **5.01** | **12.02** | **52.29** |

| Item | ADB OCR | ADB AIF | Gov't of Australia | Central Gov't | Local Gov't | Total |
|---|---|---|---|---|---|---|
| **D. Palembang** | | | | | | |
| Wastewater treatment plant | | | 10.78 | 1.20 | | 11.98 |
| Sewer system | | | 16.68 | 1.85 | | 18.53 |
| Property connections | | | 8.99 | 1.00 | | 9.99 |
| Land acquisition | | | | | 2.33 | 2.33 |
| Involuntary resettlement | | | | | 0.54 | 0.54 |
| **Subtotal (D)** | | | **36.45** | **4.05** | **2.87** | **43.37** |
| **E. Pekanbaru** | | | | | | |
| Wastewater treatment plant | | 12.12 | | 1.35 | | 13.47 |
| Sewer system | 12.01 | | | 1.43 | 0.86 | 14.5 |
| Property connections | | | | 0.84 | 7.58 | 8.42 |
| Land acquisition | | | | | 1.62 | 1.62 |
| Involuntary resettlement | | | | | 0.39 | 0.39 |
| **Subtotal (E)** | **12.01** | **12.12** | | **3.62** | **10.45** | **38.2** |

Source: Asian Development Bank.

### 2. Operation and Maintenance

9. The subprojects are new systems. The SDOs are likewise new entities. For Palembang, a new department will be created under the PDAM to take charge of wastewater system operation. The technical engineers estimated the O&M expenses based on the capacity of the whole system. Included in the O&M costs are personnel costs, chemicals for disinfection and dewatering of sludge, septage receival, sludge disposal, power cost, and provision for repairs and maintenance of the entire system. Costs are estimated at 2012 constant prices and escalated to current prices for inclusion in the financial statements. Constant annual O&M costs range from $0.287 million for Jambi to $0.491 million for Palembang.

### 3. Cost Recovery

10. The proposed wastewater fee structure is based on classifying consumers as domestic of nondomestic. The fee classification is to improve revenues because nondomestic consumers comprising commercial and industrial connections will be charged a higher rate than domestic or residential connections.

11. For Palembang, the PDAM will collect the fee as a surcharge on the water bill. For the other four subprojects, monthly wastewater fees will be collected from households and commercial establishments connected to the system by the SDO through community leaders.

12. Implementation of the fee structure is expected in 2016 when operation commences. A regular increase of 15% is proposed every 2 years to cover increases in expenditures due to inflation. Comparative data on the proposed wastewater fee for the five subprojects are presented in Table 3.

**Table 3: Comparative Wastewater Fees**

($/connection/month)

| Item | Cimahi[a] | Jambi[a] | Makassar[a] | Pekanbaru[a] | Palembang[b] |
|---|---|---|---|---|---|
| Willingness to pay | 1.50 | 1.20 | 1.50 | 1.25 | 1.25 |
| Partial cost recovery | 2.12 | 1.20 | 1.50 | 1.90 | |
| Full cost recovery | 5.64 | 2.98 | 5.63 | 5.51 | 4.5% of water bill |
| **Proposed fee** | **2.12** | **1.20** | **1.50** | **1.90** | **4.5% of water bill** |

[a] Households connected to the sewerage system only.
[b] All households with water connections, not just those connected to the sewerage system.
Source:

## B. Affordability of Fees

13. Setting fees is a key factor, which affects the subproject's viability as well as the sustainability of future operations. While fees need to recover costs, they also must be affordable and within the willingness to pay of target beneficiaries. In general, fees should not be more than 2% of household income to ensure they are affordable by households. The computation of the affordability of the proposed fee is summarized in Table 4.

**Table 4: Comparative Data on Affordability of Proposed Fees**

| Item | Cimahi | Jambi | Makassar | Pekanbaru | Palembang |
|---|---|---|---|---|---|
| Average monthly household income ($/household/month) | 203.00 | 203.00 | 203.00 | 203.00 | 203.00 |
| Proposed monthly wastewater fee ($/connection/month) | 2.12 | 1.20 | 1.50 | 1.90 | 0.30 |
| Fee as a % of monthly income [a] | | | | | |
| Minimum (%) | 0.82 | 0.46 | 0.60 | 0.73 | 0.15 |
| Maximum (%) | 1.02 | 0.58 | 0.70 | 0.91 | |

[a] Minimum and maximum percentages over the 10-year analysis period.
Source: Asian Development Bank.

## C. Project Financial Sustainability and Implementation Risks

### 1. Municipal Finance Projection

14. City revenues and expenditures were projected using historical trends and best estimates of local officials. The surplus projected in the short term is assumed to be available for some of the investments required for improved urban sanitation services. Surplus income can be used by the Palembang government to finance the public service organization, which the city government will be required to provide to the SDO responsible for sanitation (including O&M and periodic major capital expenditures).

15. The SDOs in Cimahi, Jambi, Makassar, and Pekanbaru are revenue-generating agencies, but the amount of revenue they receive and their expenditures are not linked. The agencies' annual proposed budgets are not dependent on the revenue they will generate, but are based on the city governments' allocation and/or priority to the various city agencies.

16. Funding of capital investment and annual O&M for environmental sanitation comes from the city government annual budget. Based on the annual budget ceiling, environmental agencies prepare their annual program and the budget required, which is then consolidated into the city budget.

## 2. Financial Projection for Service Delivery Organizations

17. The financial sustainability of the subprojects depends on the financial performance of the SDOs as operating entities. The SDOs' financial performance is projected to determine their overall financial condition for the 10 years immediately following full system operation in 2019.

18. Selected financial ratios and performance indicators are used to analyze the results of operations and project viability. In addition, risks are associated with the financial aspects of the project, which should be carefully considered and addressed to ensure sustainability of the project and the SDO as an entity:

(i) uncertainty in the implementation of service fee increases,
(ii) uncertainty on the provision of an SDO, as required for O&M,
(iii) insufficient subsidies, and
(iv) inefficiency of the collection system.

19. The projected income statement shows that the proposed monthly wastewater fees can adequately cover the O&M costs. However, net operating losses will be incurred for the first 2 years prior to complete house connection implementation within the subprojects targeted for 2019 for the cities of Cimahi, Jambi, and Pekanbaru. The losses starting in 2016 to 2018 are due to the wastewater tariffs not being sufficient to cover the full depreciation cost of the sewerage system, a noncash cost.

20. The attainment of financial adequacy for the SDOs will require that service fees are periodically raised to keep pace with inflation. The financial sustainability of the SDOs largely depends therefore on government's positive action on SDO service fee increase applications. If service fees are not periodically increased to keep pace with inflation, the government must ensure the provision of a public service organization type of funding support to the SDOs. Hence, these factors should be properly addressed to mitigate the enumerated risks.