

FINANCIAL ANALYSIS

A. Introduction and Methodology

1. Financial analysis was undertaken in accordance with Asian Development Bank (ADB) guidelines, including Guidelines for the Financial Analysis of Projects. It was conducted from the perspective of Maxsustrans, the autonomous corporate entity owned by the Municipality of Tashkent, which is responsible for managing the city's municipal waste. The future scenario without the project assumes that existing solid waste management systems will deteriorate to such an extent that Maxsustrans will not be able to continue to provide efficient solid waste management (SWM) services.

2. The analysis compares the financial internal rate of return (FIRR) with the weighted average cost of capital (WACC) for the project. Sensitivity and risk analyses assess the robustness of the project's financial performance under changes in the main parameters for costs and benefits. The analysis uses a standard cost-benefit methodology based on investment costs and operation and maintenance (O&M) costs for Maxsustrans using its historical performance. The analysis uses constant mid-2013 prices over a project life of 15 years from 2014 to 2028.

B. Project Rationale

3. The Tashkent SWM system needs immediate improvement, as most of its assets are at the end of their economic life and the Akhangaran dumpsite is almost full. Many of the community collection points require rehabilitation, the fleet of aged collection vehicles needs to be replaced, and the transfer stations need to be refurbished and upgraded. Moreover, a new sanitary landfill facility, designed and operated to international standards, is needed to replace the Akhangaran dumpsite.

C. Financial Analysis Methodology

4. The methodology applied for the financial analysis assumes that the project investment is needed to ensure that Maxsustrans can continue to function as a viable business. Without it Maxsustrans could not survive. Cash flows showing the capital investment costs, including allowance for the renewal of capital assets and landfill expansion, and Maxsustrans's operating costs over the 15 years from 2014 to 2028 were prepared based on the historical performance of the company. Project accounts for the company were prepared in current prices showing projected income and expenditure, cash flows, balance sheets, unit cost structure, and performance indicators. For the financial analysis, the net cash flow after taxes in real terms over the 15-year project period is discounted to produce the FIRR, which is compared with the WACC to assess the financial viability of the investments. The sensitivity of the FIRR is also tested for changes in important parameters.

D. Costs

1. Investment costs

5. Capital investment costs were prepared based on the prices in mid-2013 with taxes and duties included where applicable. Costs as expressed in US dollars and Uzbekistan sum and, where necessary, an exchange rate of \$1 = SUM1,960 is used, as it was the official exchange rate at project preparation. The total investment cost of the initial project for the 5 years from

2014 to 2018 is estimated to be \$74.5 million including contingencies, and excluding interest during construction of \$1.5 million.

6. The main components of the project (i) replace waste collection trucks; (ii) rehabilitate two transfer stations and close the third; (iii) establish manned and guarded collection points and replace waste bins; (iv) develop the first 14 hectares of a new sanitary landfill at Akhangaran, close the existing landfill, and procure machinery for the next 10 years; and (v) provide associated technical assistance and capacity building.

2. Operational costs

7. The historical operational costs for Maxsustrans have been used as the basis for estimating and projecting its future O&M costs. The latest accounting information for Maxsustrans for the six months from January to June 2012 was used as the benchmark. It shows similar expenditure in the preceding 2 years. This information was used to project the full 12 months of expenditure for trucks and machinery, other production costs, and period expenditures.

8. The accounts show that, after covering costs, Maxsustrans only produces a small profit. Truck and machinery operating costs make up almost half of production costs, with salary and social insurance expenditure making up most of the remainder.

9. **Future situation.** In the future scenario Maxsustrans's revenue will increase, as tariffs were increased in August 2012, This factor is assumed to increase revenue by 30% to an average tariff of SUM60,000 per ton (SUM32,086 per cubic meter), allowing for uncollected fees and leakage. Actual revenue is projected to first decrease after the implementation of the project because of the increase in the percentage of waste that is taken out for recycling increasing from the assumed 5% at present to a maximum of 15% in the future. However, as the population of Tashkent grows and the volume of waste per capita increases in line with rising standards of living, the volume of waste and revenue is expected to increase.

10. The efficiency of Maxsustrans' operations is expected to improve as a result of replacing the waste collection and transfer fleet with trucks that have larger capacity and are more fuel efficient and reliable, as well as from the rationalization and revitalization of SWM that is an outcome of the technical assistance and capacity building programs supported by the project. The main assumptions applied to the projections are a

- (i) 25% reduction in truck and machinery operating and maintenance costs,
- (ii) 25% reduction in personnel costs, and
- (iii) 10% reduction in administration and other period expenditures.

11. Operating efficiency improvement is expected to build up over 2–3 years as reforms and rationalization measures are implemented.

12. In the absence of the project, the average cost of waste collection and disposal would increase as Maxsustrans's aged and obsolete waste collection trucks break down, have higher O&M costs, and are out of service more often, causing the collapse of effective operations.

13. **Increased recycling.** The project is assumed to result in an increase in the percentage of waste that is separated and recycled from the current 5% to 15% within 5 years, resulting from greater support and publicity for recycling. In the absence of the project, the future recycling percentage is assumed to increase only to 10% of the volume of waste. It is

recognised that an increase in recycling is likely to occur without the project as a result of the general increase in public awareness and the development of private enterprise in the sector.

14. Revenue from the sale of an increased volume of recycled materials will not necessarily accrue to Maxsustrans, and other recycling operators may be responsible for the collection and sale of the material. Therefore it is assumed that Maxsustrans does not gain any additional revenue from this source.

3. Projected Revenue and Expenditure

15. The projected revenue and expenditure and key performance indicators for Maxsustrans were generated for the period from 2013 to 2028. Income and expenditure were in nominal prices, allowing for inflation over the project period based on the price escalation factors projected by ADB, as far as projections go, and an annual inflation rate of 5% per year thereafter. The cash flows include all operating revenue and expenses, capital expenditure, and tax on the profit and allow for depreciation and debt servicing and financing costs. Capital costs include all project expenditure, including the cost of waste collection trucks obtained by Maxsustrans under lease-to-own arrangements in 2013 and 2014. The costs allow for the annual costs of gas collection and landfill sealing, the periodic expansion of the landfill every 5 years, and the replacement of waste collection and transfer trucks after 8 years. This capital expenditure is assumed to be funded from Maxsustrans's own internal resources and cash reserves.

16. The foreign exchange risk to Maxsustrans associated with servicing ADB's loan from ordinary capital resources is allowed for by adjusting the annual interest and principal payments to accommodate the difference in inflation between the local currency and the US dollar and for the depreciation of the local currency.

4. Performance Indicators

17. Net income after meeting operating expenses, depreciation, interest payments, and tax is shown to remain positive throughout the period. In terms of financial ratios, the financial projections indicate the following.

18. **Cost recovery ratio.** This is the ratio of revenue to total operating costs, a key indicator of financial performance. If it equals 1.0 the operation as a whole is breaking even. If it exceeds 1.0 it is earning a surplus, and if it is below 1.0 it is losing money. Typical cost recovery ratios for a profitable business operation lie between 1.10 and 1.15. The Maxsustrans cost recovery ratio is in the range 1.1 to 1.4 throughout the 15-year period analyzed.

19. **Debt service ratio.** This is the ratio of cash available for servicing interest, principal, and lease payments. It is used to measure an entity's ability to produce enough cash to cover its debt payments. The higher this ratio is, the better the situation. The debt service ratio is very healthy throughout the period, indicating that Maxsustrans can cover its debt serving obligations and maintain a value over 2.1 after 2018, when full debt servicing and principle repayment begins.

20. **Debt-asset ratio.** This shows the proportion of a company's assets financed through debt. If the ratio is less than 0.5, most of the company's assets are financed through equity. If the ratio is greater than 0.5, most of the assets are financed through debt, indicating that the company is highly leveraged. In Maxsustrans's case, the ratio shows the company is highly

leveraged, with most of its assets funded through debt. This is largely brought about by the company having limited assets in the current situation and recapitalizing mostly through debt.

21. The financial analysis of Maxsustrans shows that the company can maintain profitability and produce acceptable financial returns according to the projections in the model. Sufficient cash reserves are generated to fund the landfill expansion and replacement of landfill equipment and waste collection and transport trucks when required. However an overriding aspect of this performance is the assumed increase in efficiency of solid waste management and the ability of the company to increase future tariffs at least in line with inflation.

E. Financial Analysis

1. Weighted Average Cost of Capital

22. To compute the WACC, it is assumed that the financing sources consist of a capital contribution from the Government of Uzbekistan, Maxsustrans's equity contribution financed through retained earnings, and ADB's loan. Based on Uzbekistan's expected return on equity and 10-year borrowing rate, the cost of domestic capital and equity is calculated at 12% in nominal costs. The other assumptions are a domestic inflation rate of 10%, international inflation at 1%, and a tax rate of 17%, consisting of 9% corporate income tax and an 8% infrastructure development tax. It is assumed that the ADB loan is provided from ordinary capital resources at an interest rate of 2.6%. The resulting WACC for Maxsustrans, as shown in Table 1, is estimated at 1.2%.

Table 1: Weighted Average Cost of Capital (%)

Source of Funds	% of Project Costs	Cost of Funds					WACC
		Current Prices	Tax Rate	After Tax	Constant Prices	Inflation Rate	
Equity	0.0	12.00	0.00	12.00	1.82	10.00	0.00
ADB OCR loan	90.8	2.60	17.00	2.16	1.15	1.00	1.04
Government	9.2	12.00	0.00	12.00	1.82	10.00	0.17
Total	100.0					WACC	1.21

ADB = Asian Development Bank, OCR = ordinary capital resources, WACC = weighted average cost of capital.

Source: Asian Development Bank estimates.

2. Results of Financial Analysis

23. For the calculation of the financial net present value and the FIRR, the after-tax nominal cash flow (without debt-servicing or depreciation) is converted to real terms by removing the impact of inflation, that is adjusting the cash flow using the inverse of the annual escalation factors. The benefits from the project are assumed to start in 2016, coinciding with the start of the consultants working in the project implementation office and of capacity building programs, and with the procurement of the new waste collection and transfer trucks. A residual value representing the remaining values of un-depreciated assets is included at the end of the analysis period.

24. The FIRR is calculated at 6.8% for the project. This rate compares favorably with the estimated WACC of 1.2%, substantiating the financial viability of the project.

3. Sensitivity Analysis

25. A sensitivity analysis examined the sensitivity of the FIRR and of the financial net present value to adverse changes in key variables. Three variables were considered for the sensitivity analysis were a:

- (i) 20% increase in operating expenditure,
- (ii) 20% increase in capital costs, and
- (iii) 20% reduction in project revenues.

26. In all cases, apart from the reduction in revenue, the rates compare favorably with the estimated WACC value of 1.2%, substantiating the financial viability of the project. The sensitivity analysis shows that project viability is most susceptible to changes to the revenue that can be earned by Maxsustrans, as a 20% reduction in revenue reduces the FIRR to –3.0%. There is provision, however, for future tariffs to be increased by the Ministry of Finance to maintain Maxsustrans's profitability, so this should not be an issue.

Table 2: Financial Results and Sensitivity Analysis

Item	FIRR
Base case	6.8
Increase in capital costs by 20%	3.6
Increase in O&M by 20%	1.1
Decrease in revenues by 20%	(3.0)

FIRR = financial internal rate of return, O&M = operation and maintenance.
Source: Asian Development Bank estimates.