TERMS OF REFERENCE FOR CONSULTING SERVICES

Feasibility study (FS) for solid waste collection system improvements, including tariff and billing system in Dushanbe

DUSHANBE SUSTAINABLE URBAN DEVELOPMENT PROJECT

State Unitary Enterprise "Smart City" under executive state authority of Dushanbe city

Project Implementation Group (PIG)

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1 Project background and context

The Government of Tajikistan and the State Unitary Enterprise "Smart City" are preparing the Dushanbe Sustainable Urban Development Project (DSUDP, P179630), expected to be financed by the World Bank, with a focus on integrated solid waste management (SWM) for the city of Dushanbe (the 'Project'). In 2022 and 2023, Smart City and the World Bank team gathered information on SWM in the city of Dushanbe. The main findings are as follows:

i. The city of Dushanbe boasts a high solid waste collection rate and reportedly clean urban environment whereby almost all generated waste is collected and transferred to Dushanbe Municipal landfill site located to the east of the city in Rudaki district, just outside the city boundary.

ii. Waste generation has reportedly been increasing, posing a long-term challenge with rising population and income levels.

iii. Informal waste pickers are actively engaged in retrieving recyclable materials both in Dushanbe and at the landfill site.

iv. Existing waste collection practices are not in line with the best industry standards, especially on the operational efficiency and cost management side.

v. Dushanbe's waste disposal and treatment facilities need major capital improvements to increase capacity, environmental sustainability, efficiency of operations, and resilience to potential hazards (given that Dushanbe is in the high seismic, landslide risk zone).

vi. The constrained financial situation of the city's utility enterprises, including in the solid waste management sector, inhibit capital investment and operational sustainability of the sector and its facilities.

As such, the proposed DSUDP is aimed at addressing funding and operational challenges in Dushanbe's solid waste sector through a series of capital and institutional measures. Through such measures, DSUDP will facilitate integrated SWM and promote financial sustainability of operations to ensure lasting results of facility and operational improvement. The Project would consist of the following four components

<u>Component 1: Solid Waste Collection Efficiency (tentatively US$ 17 million)</u>

This component will improve the adequacy and efficiency of solid waste collection services operated by the four collection State Unitary Enterprises (SUEs) in Dushanbe. Under this component, the project will i) upgrade waste collection points, collection vehicles, and equipment to minimum standards, ii) optimize the waste collection system for maximum efficiency through the use of innovative technology solutions for equipment utilization and operations, and iii) pilot separation of waste at source for households, businesses and public institutions, with the provision of separated waste containers, the introduction of composting initiatives, and the roll-out of public information campaigns to foster behavior change among residents.

Component 2: Solid Waste Treatment and Disposal (tentatively US$17 million)
This component will upgrade and remediate the physical and operational aspects of Dushanbe's landfill, while also improving environmental performance, contributing to climate change mitigation, increasing resource recovery, and meeting the needs of waste pickers. This component will finance i) structural engineering improvements to the existing landfill, the construction of new sanitary landfill cells, and the purchase of appropriate equipment to operate the landfill, and ii) a small-scale MRF, based on a simple sorting line, to extract recyclable materials delivered from the source separated waste.

Component 3: Institutional Strengthening (tentatively US$5 million)
This component will strengthen the broad institutional aspects of integrated solid waste management in Dushanbe, enhancing the necessary institutional capacity, while also improving performance management within an adequate policy framework. This includes the development and introduction of i) a comprehensive long-term framework and plan for integrated solid waste management in Dushanbe, ii) performance improvement plans for SUEs, iii) public information/behavior change campaigns, iv) appropriate tariffs/gate fees for waste collection and disposal, improved billing systems, and v) a roadmap for green, climate-smart and technology-informed urban development in Dushanbe.

Component 4: Project Management Support (tentatively US$1 million)
This component will support the incremental operating costs for the Project Implementation Group (PIG), and project management consultants.

More information about the Project can be found here. The Project is currently at preparation stage, during which a number of activities will be carried out, including feasibility studies and detailed designs for the solid waste collection system improvements and for the landfill investments.

1.1 Dushanbe's waste collection services

Solid waste management in Dushanbe is the legal responsibility of the Municipality, which has established State Unitary Enterprises (SUEs) for the operation of municipal solid waste services. Law No. 44 of May 10, 2022 on Industrial and Consumer Waste assigns the functions of municipal solid waste management to the respective local government authorities. In addition, Government Decree No. 209 of June 6, 2005, establishes rules for the provision of services for the removal of solid and liquid waste, while Government Resolution No. 279 of June 2, 2011 sets out procedures and conditions for the handling of solid waste from collection to final disposal. Under the authority of the Municipality, four SUEs for solid waste collection and removal have been established, one in each of the city's four districts (rayons). The landfill itself is operated by a separate (i.e., fifth) SUE. As 'enterprises', in principle the SUEs are expected to deliver services that generate revenues to cover their costs.

Dushanbe's waste generation rate has reportedly been increasing, driven by rising population and income levels. The total volume of solid waste generated in Tajikistan's cities is forecasted to almost triple by 2050, increasing from 2 million tons per year in 2016 to 5.6 million tons per

year by mid-century14. In Dushanbe, based on the limited available data, the waste generation rate from households is likely to be around 0.65 kg per person per day, which is within the range expected for Dushanbe's current income level. However, widespread building construction activities across the city have been cited as a possible factor for the actual quantity of waste collected and disposed to be closer to 0.9 kg per person per day or more.

Despite the rapid growth, Dushanbe city has achieved a high solid waste collection rate, with an overall clean urban environment. Dushanbe's solid waste collection system generally operates effectively with clear roles. Almost all waste generated is collected, transferred and disposed into the city's landfill. Around the city, there is no significant problem with uncollected waste or uncontrolled dumping nor any significant illegal dumpsites. Many households bring their waste to neighborhood collection points, while some residents of older multistory buildings dispose their waste directly into chutes in their buildings. The four-waste collection SUEs remove waste from the collection points and chutes, as well as from public institutions and commercial entities, and transport the collected waste to the city's landfill. Waste collection times are limited by Dushanbe city administrative order to be performed between 11:00 p.m. till 6:00 a.m. The waste from container sites is collected withing this period. The waste from chutes in multistory buildings is collected during the day due to limited access overnight. DEUs (road maintenance departments under the municipal government) perform street cleaning, predominantly along the main roads and streets, and send the resulting waste directly to the landfill. JEUs (housing committees) take care of cleaning in and around shared residential compounds, depositing the waste at collection points.

Existing waste collection practices in Dushanbe are in need of improved equipment and infrastructure, as well as operational systems to achieve better practice standards and efficiency. This concerns both collection points and containers as well as the waste collection fleets of the four SUEs.

Collection points and containers. A significant proportion (estimated to be at least one-third) of collection points do not have containers – loose and bagged waste is brought to collection points where it accumulates on the ground until it is shoveled by hand into a collection truck or loaded by large-sized front loaders to tipper trucks and then transported to the landfill. Hand shoveling practices at sites with waste chutes or at collection points without containers lead to operational inefficiencies, are outdated and obsolete, present health hazards and an environmental nuisance. Other collection points do have containers, but these containers are obsolete, relatively small in capacity (0.75 m^3 metal box containers), and do not meet modern standards, resulting in unsanitary conditions and high servicing cost. In some areas, a significant number of residents are being served by a single container site resulting in a distance to some buildings that exceeds 100 meters and large numbers of containers (>10 pieces) situated at a single container site. In some areas with single-family houses, large-volume roll-on containers are used. Given the dimensions of these containers, it has been observed that some waste is left by residents next to container.

Waste collection fleet. The city's waste collection fleet consists of a large number of old KAMAZ and MAZ vehicles, which are equipped with side-loaders that are used for servicing the above-mentioned metal box containers. These vehicles are in a bad technical condition and the capacity of the collection waste trucks is relatively small, with low waste compaction ratios of truck loads (i.e., low density when full), resulting in higher transport-related emissions from waste collection. Recently, a significant number of new Chinese compaction trucks have been donated to all SUEs but these are not appropriate for servicing the city's container sites. As a result, side loading mechanisms have been installed by the SUEs without prior consultation or agreement with the vehicle producer. The SUEs need significant technical capacity improvements, so as to move away from informal technical approaches (such as retrofitting trucks with side-loading mechanisms) and uptake more technically appropriate waste collection standards. The SUEs also require improved infrastructure and practices for maintaining their fleets; currently, there is limited garage space available and maintenance shops are not properly equipped. Lastly, SUEs need to transition away from paper-based systems, adopting digital, modern, GIS-based monitoring and performance systems.

There is no organized separate collection of recyclable waste in Dushanbe but informal waste pickers are actively engaged in retrieving recyclable materials as part of the city's solid waste sector. Currently, it is common for informal waste pickers to retrieve recyclables (e.g. plastic PET bottles, paper and cardboard, cans) at collection points in various parts of the city. The waste pickers derive their income from selling these recyclable items to middlemen/consolidators in the city, who in turn aggregate larger quantities for further processing by recyclers. Waste pickers are also observed to be active at the landfill (and at least two private recycling facilities were observed to be operating nearby the landfill, processing recyclables such as plastic PET bottles that the waste pickers collect). In practical terms, a large proportion of recyclables are being diverted from the waste stream in this way.

The financial situation of Dushanbe's solid waste SUEs is a significant constraint on the operation of Dushanbe's solid waste system. In general, the SUEs face a financial challenge in maintaining their operations, lacking funds to do proper maintenance of their equipment. They are unable to incur capital expenditures adequate for their needs nor to account for depreciation of equipment. The four-waste collection SUEs obtain revenue largely from fees collected from households, public institutions and commercial enterprises. The SUEs have contracts with these customers, and SUE staff collect fees by going door to door. However, the tariffs set by the Antimonopoly Service, especially for households, are low and revised infrequently. The current tariff rates in Dushanbe – in the range of TJS 3 to TJS 4.5 per person per month (US$0.30 to US$0.45) – are somewhat below the common benchmark of 1 percent of disposable income, so some future increases in tariffs could be introduced while remaining affordable for citizens. As many as one-third of households are delinquent on their payments. The norms set by the national "Housing and Communal Services" SUE (KMK) – e.g. to calculate the fee payable by an enterprise, based on estimated waste volume derived from floor area – are also low and were last revised in 2014. On the expenditure side, SUEs face high operating costs which are mainly driven by the

costs of fuel (related to the global price of oil) and equipment maintenance. SUEs sometimes have to obtain fuel from suppliers on credit, due to these financial constraints. SUEs receive occasional, needs-based, ad-hoc transfers from the rayon budgets, from the budget line item for 'neglected/unattributable' waste.

Smart City SUE has developed a concept for Dushanbe's future "smart" waste management system. This system would implement the waste management hierarchy, encourage citizen and business participation, mobilize collective intelligence, and establish a waste information system across different functions of the waste value chain through the use of innovative technology. The implementation of innovative smart and digital solutions can lead to significant benefits if properly planned and implemented.

2 Objectives of the assignment

The objective of this consulting assignment is to develop and assess options to enhance the efficiency and sustainability of SWM services in Dushanbe city with a particular focus on municipal waste collection, recycling, and strengthening the institutional capacity of Dushanbe City and state-unitary waste collection enterprises (SUEs) for integrated planning, financial sustainability and provision of quality services.

The objective of this consultancy is to develop a feasibility study for improving the municipal waste management system in Dushanbe City, including:

i. developing a city-wide long-term view for the development of municipal waste collection services based on comprehensive surveys, investigations, operational planning and technical options analysis to chart out the detailed interventions required for managing solid waste in the coming years in a sustainable manner.
ii. selecting technology and operational models for the collection of municipal solid waste that are resource efficient, low-carbon and sustainable in the long-term. Where financially and technically feasible, the use of innovative technology solutions for equipment utilization and operations, as identified by Smart City SUE, shall be considered.
iii. developing plans to i) operationalize Dushanbe's SUEs for waste collection and recycling as well-performing municipal utility companies with robust technical expertise, ii) build institutional capacity and professional capability to plan, deliver and manage waste services in the city. This includes the development of TORs for a subsequent consultancy that will develop an action plan with prioritized measures towards business planning, corporate governance and institutional framework development, the development of standard operating procedures, workforce planning and recruitment, and operating systems development, and the provision of long-term technical assistance under the Project.
iv. developing a concept for piloting source separation and composting and assessing the feasibility of scaling up source separation and composting throughout the city. This includes the selection of suitable neighborhoods for such pilot and the assessment of technical and financial requirements to purchase necessary equipment, introduce appropriate operating procedures, and develop initiatives and public information campaigns to foster behavior change.
v. developing a concept and assessing the feasibility for a small-scale materials recovery facility (MRF), based on a simple sorting line at the existing landfill site to extract recyclable materials delivered from the source separated waste. Such concept should allow for modular expansion to accommodate increased source separation over time. It should also take into consideration the possibility of formally employing current waste pickers at the landfill.
vi. developing municipal financial management systems, tariff policies and models for cost recovery to ensure overall financial sustainability.
vii. providing concepts for the establishment of appropriate information management systems to support improved waste management planning and operations.

viii. developing detailed technical specifications and tender documents for the future supply of equipment and other assets necessary for the new municipal waste collection and sorting system.
ix. drawing upon the study on opportunities for private sector participation in solid waste management (see below), recommend required systems for procurement, contract management and performance monitoring in Dushanbe City.

When developing the feasibility study, a staged implementation shall be considered and oriented towards the following elements:

i. Establishment of efficient waste collection models for the central part of Dushanbe city and areas with new multistore buildings,
ii. Closure of waste chutes, phasing-out of using open roll-on containers and discarding waste to sites not equipped with waste containers,
iii. Appropriate models for the collection of municipal waste in areas with family houses shall be developed, also taking into account limited access and narrow streets in some of these areas,
iv. Replacement of existing 0.75 m^3 box containers with more advanced waste collection systems and optimization of container sites,
v. The service of legal entities (commercial, institutional and industrial) shall be organized and reported separately from waste from households.

In addition to improved collection of residual (mixed) waste, measures to improve waste recycling shall be considered. These can include:

i. Separate collection and sorting of recyclable waste; initially the focus could be on commercial waste and central areas of the city and oriented towards recyclable waste commodities with reliable markets (e.g. PET and cardboard).
ii. Collection and composting of green waste and waste from public green areas and road maintenance.

Providing new collection equipment will require significant changes in the way municipal waste services are organized and financed. The measures shall include:

i. New tariff policy and revenue collection system required to guarantee the financial sustainability of services by taking into consideration current and expected future revenues and costs of the solid waste management system. This may include the gradual increase of user charges and the gradual decrease of budget contributions.
ii. Technical assistance to improve administrative capacities of authorities and service providers. Appropriate training programs will be required for all personnel in charge of operation and maintenance of newly provided equipment.
iii. Improved asset management policy implemented by SUEs/service providers, including properly equipped garages and maintenance shop(s).
iv. Information Management System covering all service provision, invoicing and revenue collection aspects shall be considered.

A strong focus on the implementation of appropriate innovative smart and digital solutions shall be given when assessing the feasibility of investments and the introduction of new procedures.

3 Scope of work

As described above, while a particular focus is on municipal waste collection in Dushanbe, this assignment will take a 'system' view towards integrated planning, financial sustainability and provision of quality waste management services along the whole waste value chain in Dushanbe. Hence, the feasibility study will not only assess technical options for improving the waste collection system but also evaluate the sorting of source-separated waste and analyze the institutional, economic, and other framework conditions necessary to improve waste management services in Dushanbe. A separate consultancy will be mobilized to carry out a feasibility study for Dushanbe's landfill (see below).

As part of the DSUDP project preparation and in parallel to this assignment, several studies are being conducted outside of the present TORs, namely a

- **Feasibility study for the rehabilitation and expansion of Dushanbe Landfill**. The landfill feasibility study will have a technical focus by i) characterizing the existing conditions at the landfill (landfill footprint, topographical features, geotechnical, hydrological and hydrogeological investigations, climate data, waste analysis), ii) assessing the feasibility of different rehabilitation and expansion options (incl. CAPEX and OPEX estimates), iii) providing preliminary designs, and iv) preparing bidding documents for the detailed design and construction, and/or operation (exact scope tbd) of the landfill. The landfill feasibility study will also provide TORs for the development of the organizational set-up of the landfill operator and associated capacity building needs and for the development of a landfill-specific Information Management System (IMS). Given the interlinkages between the feasibility study for the landfill and this feasibility study, the Consultant is expected to regularly liaise and coordinate with the consultant undertaking the landfill feasibility study.
- **Environmental and social impact assessment (ESIA)**. Based on the scope of the feasibility studies, an ESIA will also be undertaken to address all applicable environmental and social standards and required instruments under a World Bank funded project. Findings from the ESIA will inform the option analysis, the Consultant is therefore expected to regularly liaise and coordinate with the consultant undertaking the ESIA.
- **Analysis of Opportunities for Private Sector Participation in Solid Waste Management**. This study will assess framework conditions and opportunities for leveraging access to private sector finance and expertise for the solid waste management sector in Dushanbe. While this study will not provide the same level of granularity concerning the city's solid waste system as is expected under this feasibility study, the Consultant will be able to utilize its findings and recommendations.

The scope for this assignment has been defined to be complimentary to the above studies. Where relevant, the description of tasks below identifies opportunities/needs to share information between the different studies.

The assignment comprises of three major components:

1. Development of Feasibility Study for Optimizing the Municipal Waste Management System in Dushanbe City, carried out through the following stages:
   a) Analysis of the Existing Situation
   b) Waste Generation and Composition Forecast
   c) Technical Options Analysis
   d) Cost Estimates, Financial Analysis, Economic Analysis, Tariff study
   e) Study of Institutional Set-up
   f) Plan of Operations
   g) Information Management System Concept
   h) Risk Analysis
   i) Implementation Plan
   j) Procurement Strategy
   k) Draft Feasibility Study Report
2. Development of Technical Specifications and Tender Documents for envisaged supplies, works and services
3. Development of TORs for strengthening the capacities of Dushanbe City and SUEs in the provision of municipal waste management services

The components will be structured around the tasks described below.

3.1 Development of Feasibility Study for Optimizing Municipal Waste Management in Dushanbe City

The Consultant is required to develop a comprehensive Feasibility Study for Optimizing Municipal Waste Management in Dushanbe City (FSWM).

The development of the FSWM shall be carried out through the following stages:

3.1.1 Analysis of the Existing Situation

The assessment of the present waste management situation and the problem analysis shall cover technical, institutional, financial and socio-economic aspects of service delivery. The data and the evaluation of the current situation shall provide a reliable basis for planning.

The analysis shall cover all aspects of the existing waste management system, including main technical characteristics, existing costs and revenues for the different activities, financial arrangements, applied tariff policies, revenue collection and institutional responsibilities.

According to the above, the task would at least include, but not be limited to:

A. Legal and Policy Aspects:

i. Review of the requirements of the national waste management legislation and local regulations issued by Dushanbe;
ii. Description of national and local waste policies and prevailing principles, with a particular focus on the waste hierarchy;
iii. Assessment of national and local policies and plans on climate change mitigation and/or adaptation measures for the solid waste sector;

B. Technical and Service Delivery Aspects:

i. The actual and future projected amount and type of waste generated within the project area from households, commercial, administrative and industrial sources (see below for further details);
ii. The composition of waste and their recycling potential differentiated from origin (households, markets, hotels, commercial zones, and industries), settlement structures (city center, areas with multistore buildings, areas with family houses, etc.). If necessary, waste composition spot checks shall be organized (see below for further details);
iii. Inventory and assessment of existing municipal waste collection and transportation and comprehensible survey and appraisal of the present operational performance and cost analysis;
iv. Assessment of existing practices for collection and processing of recyclable waste such as paper and cardboard, plastics, glass, metals, and where relevant other waste streams, including role of informal sector;
v. Assessment of existing practices for maintenance of public green areas and for the management of green waste;

vi. Inventory of municipal waste collection containers, vehicles and other assets used for provision of services;
vii. Collection, review and evaluation of available studies, reports and other relevant documents;
viii. Assessment of the prevailing socio-economic framework conditions in Dushanbe City: income-levels and poverty-situation, gender-related situation, inclusion of ethnic minorities working in the informal solid waste sector, preliminary assessment of willingness to pay and affordability;
ix. In connection with the general assessment of the SWM management framework attention shall be given to the identification of potential end-users of waste fractions like organic waste, refuse-derived fuel (RDF) and recyclables which would have a considerable input for greenhouse gas mitigation efforts.

C. Institutional Aspects:

Assessment and analysis of the "status quo" situation of the current solid waste management functions within the Dushanbe City, specifying responsibilities of relevant departments, district administrations as well as the public and private service providers. The analysis shall cover the existing institutional and organizational set-up:

i. Institutional analysis: institutional set-up, organizational structures, responsibilities, legal status and powers, legal framework, staffing profile, salary levels, etc.;
ii. Assessment of the present administrative and managerial capacities of relevant Dushanbe City departments and SUEs in view of sustainable planning, organizing and operation of waste collection, sorting, and disposal services;
iii. Brief assessment of national procurement procedures and guidelines;
iv. Analysis of the role, performance and capabilities of the private sector in Dushanbe for provision of waste management services, as well as the potential engagement of international companies in the country;
v. Analysis of the role, performance and capabilities of the informal sector (activities, special interests, qualities and quantities handled, etc.);

D. Financial Aspects

i. Financing of SWM activities (cost breakdown of key activities, fee system, taxes, subsidies, budget planning, financial indicators, legal framework, etc.);
ii. Presentation of the actual overall financial situation (including overall indebtedness) and the specific income/expenditure as well as cost recovery situation related to waste for each of the SUEs involved in municipal waste collection and landfilling and Dushanbe City in general.

As conclusions from the inventory and problem analysis the Consultant shall clearly elaborate the following:

i. detailed gap assessment, clearly indicating the technical, institutional/organizational and financial/economic deficiencies in the waste sector;

ii. identification of key impediments and bottlenecks to improvements in solid waste management and provision of waste management services;
iii. definition of main objectives for the future municipal waste management system, including waste collection and disposal.

3.1.2 Waste Generation and Composition Forecast

The Consultant shall prepare waste generation and composition forecasts for a period of 20 years. The forecasts shall be prepared separately for the waste streams in the scope of responsibilities of Dushanbe City.

To the extent possible, the forecasts for municipal waste shall be prepared separately for household and similar waste from commercial, administrative and industrial origin and taking into account the differences in waste generation and composition between different types of residential areas (e.g. urban and rural areas; areas with multistore buildings and areas with family houses, etc.). The quantities of bulky waste, street cleaning residues and green waste resulting from the maintenance of public parks, green areas, roads and similar shall be provided separately in the forecast. Under the feasibility study for the rehabilitation and expansion of Dushanbe landfill, forecasting of waste generation and composition will be carried out as well. The consultants for both feasibility studies will be required to coordinate waste data collection and analysis in order to avoid duplication of work and establish a common view for Dushanbe's waste generation and composition forecasts.

The results from the analysis of the existing situation and the waste generation and composition forecasts shall be presented in the form of Situation Analysis Report not later than 2 months following the start of assignment.

Based on the findings presented in the Situation Analysis Report the Consultant shall organize approximately 2 weeks after the submission of the report a Situation Analysis workshop with main stakeholders in Dushanbe City. The main objective of this workshop is to present and discuss the current situation and main bottlenecks in the waste management sector in Dushanbe City as well as the possible objectives and targets for the future municipal waste management system. Furthermore, the Consultant shall present at the workshop the envisaged working program for the preparation of FSWM.

The workshop shall principally be held in English, Russian and Tajik.

3.1.3 Technical Options Analysis

The Consultant shall prepare a detailed option analysis report formulating, quantifying and comparing different alternatives with regard to collection and treatment of municipal waste in Dushanbe City. The Option Analysis shall formulate and consider different alternatives with regard to:

i. Waste prevention
ii. Separate collection and sorting of recyclable waste

iii. Separate collection and composting of green waste from public green areas, parks and gardens
iv. Home composting and/or separate collection of green waste from households in areas with family houses
v. Collection and transfer of residual municipal waste
vi. Collection and treatment of bulky waste
vii. Collection and treatment of C&D waste resulting from small construction and repair activities in households
viii. If relevant, collection of other specific waste streams.

The planning horizon shall cover the next 20 years, starting from August 2024.

The option analysis shall contain a technical description of considered alternatives, capacities of the required collection, treatment and disposal infrastructure, detailed mass balances, estimates of the required investment and operating costs, estimated unit costs per ton of generated/collected waste and per resident served.

The option analysis shall include but not limited to the following alternatives:

MW service area	**Alternatives to be considered:**
Collection of residual municipal waste in the central part of the city	• underground containers of various modifications • large volume stationary containers 1.5 – 2.5 m^3 with automated loading • 1.1 m^3 containers with wheels • Waste collection vehicles with compaction and with appropriate volumes and loading systems shall be used
Collection of residual municipal waste in the areas with multistore buildings	Same as above.
Collection of residual waste from public institutions and administrative buildings	Same as above.
Collection of residual waste from legal entities	Same as above.
Collection of residual waste in areas with family houses	• individual plastic bins of 120/240 liters • collection with plastic bags upon schedule • large volume stationary containers 1.5 – 2.5 m^3 with automated loading • 1.1 m^3 containers with wheels installed at container sites • More than one alternative could be recommended for implementation
Collection of waste from street bins	• At least three different types of street bins shall be considered

	• Use of smart street bins shall be considered and quantified
Municipal waste transfer and transportation	• The need for establishment of one or more transfer stations shall be assessed and compared to direct transportation of collected waste. • Transfer stations with and without compaction shall be considered. • The use of satellite collection vehicles shall be assessed as an option in areas with difficult access.
Collection of recyclable waste from central part of city	• Underground containers of various modifications • Large volume stationary containers 1.5 – 2.5 m^3 with bottom emptying • 1.1 m^3 colored containers with wheels • Different alternatives about the number of separately collected fractions shall be considered • Glass packaging shall be collected separately from other waste fractions in all formulated alternatives • The separate collection alternatives shall be formulated in combination with respective alternatives for collection of residual waste
Construction of MRF	• The separate collection alternatives shall also be formulated in combination with respective alternatives for further sorting, aggregation, baling and marketing of materials. This could include the development of a simple sorting line for dry waste at Dushanbe's landfill site. • The alternatives with regard waste fractions, capacity, and site infrastructure and equipment shall be considered
Collection of bulky waste	• Scheduled door-to-door collection • Collection upon request
Construction of civic amenity sites	• The alternatives with regard to number, location/service area, collected waste fractions and site equipment shall be considered
Collection of green waste from public parks and maintenance of green areas	• Alternatives with regard to shredding and transportation/collection equipment shall be considered
Home composting and/or separate collection of green waste from areas with family houses	• The implementation of home composting program shall be assessed and quantified • The possible extension of green waste separate collection and composting to areas with households shall be analyzed

The Consultant is free to propose other alternatives in addition to the above if considered relevant.

For each alternative and *waste collection* system considered, the following shall be provided:

i. short description of proposed technical solution, the technical characteristics of the used waste collection bins or containers and the waste collection vehicles, collection frequencies, operational time and shifts;
ii. definition of service area;
iii. assumptions, technical data and unit costs used for the calculations;
iv. detailed projections of the number of residents and households served;
v. detailed projections of quantities of municipal waste generated and collected fractions by service zone;
vi. estimated number of waste bins/containers required, including reserve;
vii. estimated number of needed waste collection vehicles, including reserve;
viii. detailed estimates of the investment and operating costs to implement the collection system;
ix. unit costs per ton of waste collected, per resident served and for serving one container/bin;
x. how the maintenance of waste containers and vehicles will be organized;
xi. advantages and disadvantages of the considered alternative.

For each alternative considered concerning the construction of an MRF, the following shall be provided:

i. short description of proposed technical solution;
ii. proposed input capacity;
iii. proposed input waste fractions;
iv. detailed projections of input and output quantities;
v. space, infrastructure, vehicle and equipment requirements;
vi. waste delivery and operational hours, proposed shift system;
vii. staff requirements;
viii. assumptions, technical data and unit costs used for the calculations;
ix. detailed estimates of the investment and operating and maintenance costs to implement the alternative;
x. unit cost by waste fraction per ton treated;
xi. revenue assumptions from the sale of recyclables;
xii. estimated gate fee;
xiii. advantages and disadvantages of the considered alternative.

The discussion and assessment of technical options shall carefully consider:

i. project demand projection, demand justification (current status, urban planning, demographic data, national policy objectives, etc.);
ii. technical and functional feasibility of the proposed options to ensure the provision of required services;

iii. analysis of the proposed phasing and its compliance against projected demand.

The considered alternatives shall be compared based on different financial, economic, environmental and social criteria.

Potential greenhouse gas mitigation effects and mitigation costs shall be presented as a result for the various scenarios.

The result of the option analysis shall be a recommended future municipal waste management system for Dushanbe City.

The results and findings of the option analysis shall be presented in a Draft Option Analysis Report not later than 4 months after the commencement of activities. The Draft Option Analysis Report – to be provided in English, Russian and Tajik – shall be subject to comments and approval by the PIG under Smart City SUE and WBG.

Based on the Draft Option Analysis Report the Consultant shall organize and conduct an Option Analysis workshop approximately 2 weeks after submission with the participation of the PIG under Smart City SUE and other relevant stakeholders. The objective of this workshop shall be to present and discuss the study results produced, to develop a common view on the future waste management system in the Dushanbe City and to agree on the next activities for the development of FSWM. The workshop shall be held in English, Russian and Tajik.

The Final Option Analysis Report shall be submitted not later than 2 weeks after the reception of the corresponding comments on the draft reports and shall also include the findings and conclusions drawn from the Option Analysis Workshop.

3.1.4 Cost Estimates, Financial Analysis, Economic Analysis, Tariff study

Cost estimates

The cost estimates will be developed at the Option analysis stage and if necessary, further extended for the purposes of financial analysis and tariff study.

The Consultant will be provided with an estimation of costs for the construction/extension and operation (together with a recommended gate fee) of Dushanbe city waste landfill to be used for the purpose of the financial analysis.

The Consultant will develop detailed cost estimates for the provision of municipal waste collection and sorting services (present and future) and, by integrating the costs for the construction/extension and operation of the landfill, for the overall waste management system in Dushanbe City. Where applicable, the Consultant shall estimate the revenues from the sales of separately collected and processed recyclable waste commodities.

The cost estimates shall be prepared separately for each collection SUE and district and Dushanbe City’s solid waste system as a whole.

The Consultant shall ensure that the costs of each of the investment components to be included in the FSWM reflect up-to-date prices and have been correctly estimated and that correct up-to-date exchange rate has been used. The cost estimates should be calculated in USD and Tajikistani Somoni (TJS). The cost estimates shall comprise costs of additional surveys required, works contracts, supplies, detailed design, tendering procurement, and physical and financial contingencies as appropriate. If relevant, cost estimates shall also include works contracts, supplies, detailed design, tendering and procurement, and physical and financial contingencies related to SUEs operating sites, garages and maintenance shops. The cost estimates shall also clearly and separately show local and foreign elements, taxes, duties and interest costs during supplies and construction. Any additional guidelines provided by the PIG under Smart City SUE and WBG must be considered.

Financial and Economic Analysis

The Consultant will prepare a Financial and Economic Analysis for the future waste management system for Dushanbe City as a whole, with all collection SUE and the landfill SUE constituting parts of a whole. While the Consultant will base the Financial and Economic Analysis for the waste collection system on the analysis and findings under this feasibility study, landfill-specific cost estimates will be provided by the consultancy carrying out the landfill feasibility study (see above). The Consultant under this feasibility study will integrate these inputs to derive a system view for Dushanbe's solid waste system as a whole.

The financial viability of the future municipal waste system and individual investment components must be demonstrated by means of financial projections for the period of 20 years. The projections shall be fully consistent with the operational projections, clearly showing how the operations will develop in the future and contain reasonable assumptions and be agreed with the PIG under Smart City SUE.

Financial projections will include annual balance sheets, income and cash flow statements. The model shall be prepared to accommodate variations in the real exchange rate. The model shall address the issue of fixed vs. variable costs.

The Consultant shall assess the financial impact of the proposed new municipal waste management system by comparing the incremental costs (capital and recurrent) with the incremental revenues or savings it will generate and estimating the financial Internal Rate of Return ("IRR"). The financial analysis shall include a calculation and discussion of sensitivity to changes in key income and expenditure variables, including any relevant macro-economic conditions related to implementing the new municipal waste management system.

The Consultant shall also conduct a comprehensive economic analysis (including externalities) of the proposed future municipal waste management system. As part of this analysis the Consultant shall calculate the economic IRR (EIRR) investment and shall provide accompanying clarification and justification. The Consultant shall present the methodology and assumption of the analysis

and a prioritization of the investments, where the investments are ranked in accordance with the economic IRR.

Tariff Study and Affordability Analysis

The Consultant shall assess:

i. Current tariff level of waste collection and disposal in relation to cost recovery, and determine to what extent all recurrent costs shall be included (depreciation of assets, debt service and etc.);
ii. Current billing and collection methodologies and provide an opinion in accordance with international best practices;
iii. Potential alternatives for the orderly phasing-out of cross-subsidies, ensuring that tariffs remain affordable;
iv. Proposals for the improvement of present tariff system and improving revenue collection;
v. Current affordability problems of the lowest income households and the future affordability problems if the appropriate investments are made and cost-recovery tariffs are introduced.
vi. The Consultant should also provide an assessment of any existing social support programs and/or identify/recommend appropriate (and targeted) social support programs for the poorest income groups which may have significant affordability problems.
vii. The Consultant shall also justify the amount of capital grant taking into account affordability constraints and economic considerations. The Consultant would also analyze a scenario of the capital investments being fully financed by a loan instead of a grant, assuming the cost will be fully covered by tariff increases.

The Financial and Cost Benefit Analyses and Tariff Study will be presented as separate report and later included as Annex to the FSWM.

3.1.5 Study of Institutional Set-up

Based on the findings and analysis during the situation analysis stage the Consultant shall provide an analysis and justified recommendations for the necessary institutional and organizational set-up to implement the recommended future waste management system. The recommendations shall focus on the institutional changes required to improve both the technical and financial situation of solid waste management in Dushanbe City and SUEs providing municipal waste management services.

The Consultant will provide recommendations as to the structure of solid waste management in the Dushanbe City and its organization. In particular, the Consultant will evaluate the options organizing and implementing municipal waste collection, sorting, and disposal services and prepare recommendations for the optimal institutional set-up, organizational structures at Dushanbe City and corporate structures at SUEs. The recommendations shall focus on the improvement of the existing institutional set-up and setting up an appropriate corporate, financial and management structure and staffing, taking into consideration the promotion of equal opportunities in the work place.

The Consultant will be able to build on the analysis and findings from the private sector study and landfill feasibility study, specifically on private sector participation and organizational structures, tasks, staffing and capacities of the SUE operating Dushanbe's landfill site.

In consultation with PIG under Smart City SUE, the Consultant shall propose an appropriate implementation concept and an improved operation model, which might include private sector participation:

i. Presentation of a general and cost-effective implementation concept describing waste management services and the administrative needs for large investment projects, roles of involved parties, engagement of consultants, local implementation capacities, tendering and contracting of supplies, civil and installation works, commissioning of the facilities, involvement of the various Dushanbe City departments and SUEs in implementation; establishing of the overall implementation schedule;
ii. Proposal for the future private sector role in the provision of municipal waste services. The consultant will be able to draw upon a separate study on private sector involvement in Dushanbe's waste sector that is under development;
iii. Proposed functions and responsibilities of the Dushanbe City administrative departments and existing/new SUEs. Elaboration of task descriptions and organization structures. Presentation of an adequate organizational and institutional concept for developing the necessary capacities at the various Dushanbe City departments and SUEs. Proposals of required qualification and training measures necessary to assure proper planning, operation and maintenance in the long run;
iv. Proposed obligations and responsibilities at SUEs related to the use, maintenance and replacement of assets, service quality and operational performance targets through the development of preliminary performance improvement plans and performance indicators for SUEs.
v. Proposals for the introduction of regulations and administrative instruments by Dushanbe City;
vi. Proposals for future contractual arrangements, especially for the operation of collection and transport, separate collection and sorting of recyclable waste, collection of green waste and eventually the operation of a transfer site(s) delegated to SUEs or outsourced to private sector;
vii. Proposal for organization of maintenance and repair of waste collection vehicles and containers;
viii. Proposal for organization of maintenance of MRF equipment and infrastructure;
ix. Proposals and recommendations for the establishment of an adequate monitoring and information management system;
x. Analysis of risks involved in future operations and proposal of corrective measures to minimize these risks.

The recommendations are subject to approval by the PIG under Smart City SUE and shall be provided in the form of a Report on Institutional and Organizational Set-up within two months following the completion of Option Analysis in English, Russian and Tajik.

3.1.6 Plans of Operations for Collection SUEs

The Consultant will prepare a preliminary draft plan of operations for each service zone and collection SUE. The plans of operations shall comprise of at least following elements:

i. Proposed container locations;
ii. Proposed collection frequencies;
iii. Preliminary collection routes for each of collection vehicles used;

The draft plan of operations should also consider preliminary performance improvement plans and indicators developed under the Study of Institutional Set-up (3.1.5, point iv.). The plans of operations and their outlines shall be presented in digital form in a format that allows future changes and adjustments.

The plans of operations shall be incorporated in the future Information Management System.

The development of a method statement for the operation of waste treatment facilities (i.e. sorting line, composting plant) will not be part of this feasibility study.

A method statement for the operation of Dushanbe's landfill will be developed under the respective feasibility study.

3.1.7 Information Management System Concept

The Consultant shall define the needs of Dushanbe City and SUEs for information management systems (IMS) and procedures, including the extent of automation and computerization. The Consultant is required to prepare a Concept for the future IMS to be used by Dushanbe City and SUEs/service providers for planning and operations of municipal waste collection in Dushanbe city. In addition, the Consultant shall define the required data inputs and requirements towards a future IMS for Dushanbe's landfill and potential treatment facilities that allow future integration of newly built facilities into the overall IMS. The Consultant will take required interlinkages with other existing and future IMS into consideration.

The computer-based IMS is needed to register, monitor and provide key management information across all areas of the SUEs' activities, considering, in particular that the system can produce such financial and other information required for reporting to third parties, public authorities and the general public. The IMS shall also provide Dushanbe City administration with possibility to better plan and control the waste management operations on its territory.

The IMS shall provide at least the following functions:

i. Accounting software with all necessary functionalities required for the specific activities, which is in compliance with international (IFRS) and local accounting practices and is integrated in the IMS

ii. Budgeting and tariff calculation
iii. Human resource (HR) Management
iv. Real time monitoring of the position of collection vehicles through transmission of GPS data
v. Integration of data from waste landfill and treatment facilities (such as sorting line), including automated transmission of weighbridge data (IMS for landfill and treatment facilities to be developed outside of this feasibility study)
vi. Clients/service users database
vii. Service invoicing and monitoring of payments
viii. Container sites location
ix. Collection routes planning
x. Collection route optimization – calculation of optimal route for waste collection vehicle according to information for container filling (if relevant)
xi. Container identification and remote waste level monitoring (if relevant)
xii. Container/bin weighting systems (if relevant)
xiii. Collection routes recording
xiv. Reporting
xv. Assets management including vehicle maintenance data
xvi. Exchange of data between SUEs and Dushanbe city
xvii. Data analyses

The Consultant shall recommend an information technology strategy to implement IMS which should include hardware and software specifications and the development of TORs and tender documents for the procurement of the IMS (see below).

3.1.8 Risk Analysis

The Consultant shall identify all major risks for the implementation of the proposed system for collection and treatment of municipal waste in Dushanbe city and propose adequate risk mitigation measures.

3.1.9 Implementation Plan

The Consultant shall propose a staged implementation plan for the establishment of recommended municipal waste management system in Dushanbe City.

3.1.10 Procurement Strategy

The Consultant shall propose a procurement strategy for the services, supplies and works required to implement municipal waste collection system and other facilities envisaged in the present TOR. A similar procurement strategy for the rehabilitation and extension of Dushanbe's landfill will be developed under the respective feasibility study.

The Procurement strategy shall identify the scope, type, conditionalities and implementation responsibilities of proposed works, supplies and services contracts necessary to implement the recommended future waste collection system in Dushanbe city.

The Procurement Strategy shall consider a staged implementation of the recommended future waste collection and sorting system in Dushanbe city. It shall also recommend performance indicators (see also Study of Institutional Set-up (3.1.5, point iv.)) and pre-conditions for the implementation of each stage.

The Draft Procurement Strategy shall be provided not later than 7 months following the start of assignment.

3.1.11 Draft Feasibility Study Report

The Consultant will develop and present a draft FSWM for the implementation of recommended and agreed future municipal waste management system, consistent with the results of conducted Financial and Economic Analyses and taking into account recommendations provided in the Tariff Study and Institutional Organizational Set-up Report.

The draft FSWM shall identify problems and recommend solutions related to waste prevention, re-use, recycling, composting, residual waste collection and transfer. It shall also recommend waste management objectives and targets in accordance with the waste hierarchy and the ultimate goal of waste reduction. The FSWM shall provide a comprehensive overview of all system requirements as well in terms of investment and operations as in terms of organization and implementing steps. The planning horizon shall cover the next 20 years, so that the FSWM will qualify as long-term guidelines for future improvements and developments of the waste collection systems in Dushanbe City.

The structure and content of the FSWM shall be agreed with PIG under Smart City SUE and WB and contain at least the following:

i. Introduction and purpose
ii. Status Quo
    a. Waste streams, sources, waste quantities and composition
    b. Present status of waste collection, separate collection, re-use, recycling, recovery, treatment and disposal
    c. Overview of main provisions of national waste management legislation and policy
    d. Present organization of waste management services in Dushanbe City
    e. Key waste management issues that FSWM aims to address
iii. Waste management principles, objectives and targets
iv. Planning part
    a. Population projections
    b. Waste quantities and composition forecast
    c. Waste prevention
    d. Re-use and recycling
    e. Waste collection systems
    f. Separate waste collection
    g. Waste sorting

h. Waste disposal

v. Organization and institutional setup
vi. Financial and economic analyses, affordability analyses
vii. Financing and Implementation Plan
viii. Procurement strategy
ix. Communication and public awareness
x. Links to other plans and programs
xi. Performance indicators, reporting, update and monitoring of implementation

The Draft FSWM shall be presented not later than 9 months after commencement of activities in English, Russian and Tajik.

Comments from PIG under Smart City SUE, WBG and other stakeholders are expected within 4 weeks after submission of the draft FSWM .

The Consultant shall present the draft FSWM at a specially designated Workshop approximately 2 weeks after the submission with the participation of the PIG under Smart City SUE , SUEs, WBG and other relevant stakeholders. The workshop shall be held in English, Russian, and Tajik.

The Final FSWM shall be submitted latest 4 weeks after the reception of the corresponding comments on the draft plan.

The Final FSWM is subject to formal approval by the PIG under Smart City SUE.

3.2 Development of technical specifications and tender documents

The Consultant shall prepare detailed technical specifications and tender documents for the procurement of services, supplies and works necessary for the implementation of future municipal waste collection services in line with the agreed procurement strategy.

The technical specification and procurement documents shall include but are not limited to following:

- supply of various kinds of containers and bins in line with FSWM
- supply of various types and capacity of waste collection vehicles in line with FSWM, including training of vehicles' operators and equipment for the maintenance of vehicles
- development, supply and installation of IMS and related equipment, software and hardware
- supply of other equipment for waste collection, transfer, transportation or treatment of waste, according to the FSWM
- technical assistance to support implementation of municipal waste collection system
- technical assistance for developing the detailed concept and preliminary design of green waste composting plant (where relevant)

- technical assistance for developing the detailed concept and preliminary design of sorting plant for separately collected recyclable waste
- technical assistance for the design of SUEs operating sites and vehicle maintenance workshop(s)

The standard contract templates to be used for procurement shall be agreed in advance with WBG and the PIG under Smart City SUE.

The Consultant shall present the draft technical specifications and tender documents latest 4 weeks following the approval of the Procurement Strategy. The final sets of tender documents shall be submitted latest 2 weeks after reception of the corresponding comments to be provided by the PIG under Smart City SUE and WBG.

The Consultant shall be available to respond to requests for clarifications submitted by the potential bidders.

3.3 Strengthening the capacities of Dushanbe City and SUEs in the provision of municipal waste management services

The Consultant shall prepare TORs for a separate consultancy which will undertake a Capacity Development Program (CDP) during the project implementation phase. This will support the implementation of future waste collection system in Dushanbe City. The TORs shall refer to the following activities that will be part of the scope of the CDP:

i. Develop a draft Solid Waste Masterplan document for Dushanbe City.
ii. Assistance in formulation of a suitable corporate structures for SUEs, internal and external reporting lines, decision making bodies, and staff employed implementing best international practice.
iii. Recommend an efficient organizational structures for Dushanbe City Administration and SUEs including a chart with job descriptions and staff qualifications attached to each position or group of positions, which clearly divides tasks and responsibilities between staff and departments.
iv. Advise on how the Dushanbe City Administration and SUEs should develop and implement an Equal Opportunities policy so as to facilitate employment and career development opportunities for men and women alike, as well as collect baseline data so as to enable the monitoring of the policy's implementation.
v. Develop an outline plan on the integration of Dushanbe's informal sector workers and/or on the provision of alternative livelihoods.
vi. Develop an occupational health and safety program for SUEs.
vii. Prepare drafts and assist SUEs' management to establish internal policies and regulations (financial, accounting, operational, HR, IT, environment, health and safety, etc.).

viii. Propose transparent decision-making procedures and bodies, specifying compositions and powers, including a system of delegation of responsibilities and effective internal and external control mechanisms.
ix. Recommend a personnel development plan (implementing the equal opportunities policy, including program for recruitment, training, promotion and remuneration).
x. Adopt a tariff policy and procedures to ensure that tariff increases are implemented in an efficient manner. The tariff study should also provide social analysis to determine the affordability of charges and willingness to pay. Follow up work may need to be conducted with representatives of the general public, consumers and civil society. Particular consideration should be given to the poorest and most vulnerable of households. The affordability analysis shall also take account of any plans for increase in tariffs for any other housing and communal services.
xi. Review existing and develop recommendations for improvement of bill collection procedures, including enforcement measures against late and non-payers. Special attention shall be given to measures that increase the cash revenue collection ratio, and gradually eliminate the use of non-cash settlements.
xii. Developing Public Service Contract ("PSC") that will be acceptable to the PIG under Smart City SUE and the WBG. The PSC shall specify the service levels and become the key managerial tool to support Dushanbe City in managing solid waste services and in optimizing operating costs and improving the quality of services.
xiii. Assisting SUEs in maintaining satisfactory accounting, cost control and management information systems and books of account in accordance with International Accounting Standards.
xiv. Recommend a system for budgeting to be implemented by SUEs.
xv. Recommend adequate administrative (authorization and controls) procedures for cash-management and payments.
xvi. Assist the SUEs in establishing a Maintenance Reserve and Development Account in which excess cash flow can be deposited, which can be used to support debt repayment as well as future investments.
xvii. Detail the obligations and responsibilities at SUEs related to the use, maintenance and replacement of assets, service quality and operational performance targets through the development of performance improvement plans for SUEs.
xviii. Assisting the SUEs in developing/refining performance improvements plans/ action plans necessary for establishing the quality, reliability of services and operational efficiency levels. The proposed measures need to ensure that assets are regularly maintained and replaced. Outsourcing of non-core activities shall be considered.
xix. Assist the SUEs in development of the necessary EHS Management Plans and Procedures for establishing the environmental and health and safety management systems in line with the principles of ISO 14001 and OHSAS 18001 standards.
xx. Provide the SUEs with templates of relevant Environmental and Social reports.
xxi. Prepare Stakeholder Engagement Plan (SEP).

xxii. Recommend a public participation and consultation campaign to be carried out

xxiii. Recommend a community liaison and customer relations improvement plan, including mechanisms for dealing with complaints, and on-going information dissemination.

xxiv. Assist SUEs in developing Business Plans, financial projections, internal policies, procedures and operating manuals.

The Consultant will draw upon the findings of the feasibility study under this consultancy and liaise with the PIG under Smart City SUE, waste SUEs, and the World Bank to refine the above list and potentially identify additional needs for institutional strengthening that would become part of the TORs to be developed.

In addition, the Consultant will deliver up to two (2) technical in-person training sessions to Smart City SUE staff and Waste Collection and/or Landfill SUE staff, with timing and detailed topics to be defined during the inception stage of the Consultancy.

4 Outputs, timeline, evaluation of bids

The outputs include the following:

i. FSWM and all related support analyses and studies as described in present ToR.
ii. Four workshops to present and discuss: the Situation Analysis Report; the Option Analysis Report; the Report on Institutional and Organizational Set-Up, the Financial and Economic Analysis and Tariff Study; the draft FSWM for Dushanbe City.
iii. Sets of technical specifications for services, supplies and works necessary to implement the FSWM
iv. Capacity Development Program

All reports and deliverables shall be submitted both in electronic copy (in PDF and editable version – Excel, PowerPoint, Word file, or AutoCad, or any other file format used to prepare the report/deliverable) and hard copy if requested. All reports/documents shall be prepared in English and Russian and delivered to the Client. In-person presentations shall be delivered in both English and Russian Languages.

All deliverables are subject to satisfactory approval by the PIG under Smart City SUE and WBG and must be consistent with scope described in this ToR. The consultant team will be expected to participate in regular meetings (face-to-face or video) conference calls to review project progress and any corrective actions necessary for project completion in a timely manner and within budget.

Each of the deliverables/outputs will be reviewed by a review team who will provide their views/comments to the Consultant for response and modification of the report, as necessary. Smart City SUE and the World Bank review team may ask the Consultant to attend the meetings and give a detailed presentation to assist them to obtain clarification on the issues and recommendations. Acceptance of the reports by the review team is essential to move forward to successive tasks.

The Consultant shall also provide the necessary level of quality assurance and control of the work. The Consultant shall implement its internal quality control and assurance procedures during the execution of the Contract, and shall demonstrate that they are being applied to the work.

5 Project Timeline and Deliverables Milestones

The assignment will commence on October 2024 or earlier and is expected to be concluded within 10 months of contract signing. After each draft report submission, the Consultant shall allow two (2) weeks for review and comments on the draft by Smart City SUE and the World Bank. The Consultant shall estimate draft deliverable dates to ensure final reports can be delivered on time to be approved by the Smart City SUE and the World Bank.

Schedule for Deliverables

#	Deliverable	Timeline from contract commencement
1	***Detailed project work plan***	*Week 2*
	Component I. FSWM	
2	Situation Analysis Report	Month 2
3	Option Analysis Report	Month 4
4	Financial Analysis, Economic Analysis, Tariff study	Month 6
5	Report on Institutional and Organizational Set-up	Month 5
6	Procurement Strategy	Month 7
7	Draft FSWM	Month 9
8	Final FSWM	Month 10
	Component II. Technical Specifications and Tender Documents	
9	Draft Technical Specifications and Tender documents for services	Month 8
10	Draft Technical Specifications and Tender documents for supplies	Month 8
	Component III. Strengthening the capacities of Dushanbe City and SUEs in the provision of municipal waste management services	
11	Capacity Development Program	Month 9

Submitted proposals will be evaluated based on established technical and financial criteria in the Request for Proposal in line with procurement procedures under the World Bank Procurement Regulations.

6 Terms of payment

The Consultant will be paid for the services in six instalments as specified below. The release of each instalment is subject to the acceptance of the corresponding deliverable(s) as Satisfactory by the Client and the WB review team.

Deliverable No.	Description	From start of contract
1.	Detailed project work plan	2 weeks
2.	Situation Analysis Report	8 weeks
3.	Option Analysis Report	16 weeks
4. & 5.	Financial Analysis, Economic Analysis, Tariff study Report on Institutional and Organizational Set-up	24 weeks
6., 9., 10.	Procurement Strategy Technical Specifications and Tender Documents	32 weeks
7., 8., 11.	Draft and Final FSWM Capacity Development Program	40 weeks
	Total weeks	**40 weeks**

7 Qualifications of the Consultant and Key Staff

The assignments will require a consulting company or consortium that can demonstrate experience of strategy and management assignments in application to government institutions, regional and local authorities in the environmental sector with a particular knowledge of international waste management and climate change policies.

Consultant's Team Qualifications

Key experts have a crucial role in implementing the contract. These terms of reference contain the required key experts' profiles. The tenderer shall submit CVs and Statements of Exclusivity and Availability for the key experts described below.

All experts must be independent and free from conflicts of interest in the responsibilities they take on. The experts shall follow standard ethics with diligence and high degree of professionalism.

The Contractor's key experts to be assigned for successful completion of the project must have an outstanding track record and extensive professional and educational background in the various fields of studies including civil engineering, environmental engineering, other engineering specialties, finance, economics, environmental law, and social sciences. Facilitation and communication skills would be an asset.

KE 1: Team Leader

The Team Leader will lead the implementation of all the components and retain the leadership and capacity of overall coordination, communication as well as the quality control of the project's outputs and outcomes. The Team Leader will be part of and will manage the team of experts, organizes all aspects of the technical project work, ensure good communication with the project partners and PIG under Smart City SUE and liaise with the World Bank's Task Team Leader (TTL) and the project team. All key experts will report to him on the implementation of the component(s) they lead respectively. He/she should demonstrate both, engineering as well as project management/administration experience in SWM projects, including experience with procedures of international lending agencies (preferably WB procedures).

The team leader will be the single point-of-contact and is expected to be a senior professional responsible for delivering high-quality and timely deliverables consistent with the ToR. S/he will manage all the consultant team's activities and must have significant experience in managing similar projects. S/he will directly report to the World Bank's team leader(s) for this project.

Qualifications and skills

i. University degree (or any academically equivalent degree) in Environmental/Chemical/ Civil Engineering or Urban/Regional Planning or a relevant, directly related discipline, or equivalent;
ii. Excellent leadership skills and excellent writing abilities;

iii. Very good knowledge of English;
iv. Full computer literacy.

General professional experience

i. At least 7 and preferably 15 years of general experience in the field of municipal waste management;
ii. At least 4 and preferably 10 years of working experience in preparing waste management plans.

Specific professional experience

i. At least 4 and preferably 10 years of experience in a project management position (such as a team leader) in technical assistance projects for [national/regional] waste management planning and/or preparation of investment projects for waste collection and treatment infrastructure with at least one with a budget of above 2 million USD;
ii. At least 7 years and preferably 15 years of experience in developing feasibility studies, operational plans for municipal waste collection with at least one developed project with investment value exceeding 15 million USD;
iii. At least 1 and preferably 5 assignments in IFI funded investment projects;
iv. Experience in the Central Asia region will be an advantage.

KE 2: Waste Management Corporate Development Expert

Qualification and skills

i. University degree in Economics, Finance, Business Administration or Engineering, Environmental Science;
ii. Excellent drafting skills in English;
iii. Full computer literacy.

General professional experience

i. At least 7 and preferably 15 years of general experience in business development;
ii. At least 4 and preferably 10 years of working experience in in the field of waste management.

Specific professional experience

i. At least 4 and preferably 10 years of working experience in a management position in waste management company and/or in preparing business plans and operating procedures for waste management service providers, at least one of them with annual revenue exceeding 50 million USD;

ii. At least 4 and preferably 10 years of experience in preparation of investment projects for waste collection, treatment and disposal infrastructure with at least one with a budget of above 10 million USD;
iii. At least 1 and preferably 5 assignments in IFI funded investment and/or corporate development projects.

KE 3: Financial Expert

The Financial Expert shall have relevant expertise and experience in assessing and developing financial aspects of municipal WM, especially development and implementation of tariff models, cost/revenue accounting, assessment of investment and operation cost with regard to affordability to pay, cash flow assessment. The expert shall have experience in developing financial analyses and economic analyses for IFIs' financed investment projects.

Qualification and skills

i. University degree in Economics, Finance, Business Administration, or a relevant, directly related discipline, or equivalent. Diploma could be replaced by 5 years of relevant experience (in addition to the years required as general professional experience);
ii. Very good knowledge of English;
iii. Full computer literacy.

General professional experience

i. At least 7 and preferably 15 years of general experience in developing financial and economic cost benefit analyses for investment projects and/or waste management plans
ii. At least 4 years and preferably 10 years of working experience in the field of waste management.

Specific professional experience

i. At least 2 and preferably 5 assignments in developing cost estimates, financial and economic cost benefit analyses for waste management investment projects with a value exceeding 10 million USD.
ii. At least 1 and preferably 5 assignments in developing IFI funded investment projects or waste management plans.

KE 4: Local project coordinator

The Local Project Coordinator will be responsible for the organization of all activities in Jordan, for the communication with local stakeholders and Dushanbe City in particular and for coordinating the activities of national short-term experts.

Qualification and skills

i. University degree in Law, Economics, Finance, Business Administration, Engineering, Environmental Science or a relevant, directly related discipline, or equivalent;
ii. Very good knowledge of English and Tadjik languages;
iii. Full computer literacy.

General professional experience

i. At least 7 years and preferably 15 years of professional experience in public administration or provision of consultancy services in Jordan;
ii. At least 4 and preferably 10 years of working experience in waste management sector.

Specific professional experience

i. At least 4 and preferably 10 years of working experience in implementing IFIs funded technical assistance projects in environmental sector in Jordan;
ii. At least 3 and preferably 7 years of relevant working experience in developing and/or implementing legal requirements, policy documents, plans and/or investment projects in waste management sector in Jordan;

The indicative time input of key experts for the completion of assignment is as follows:

Consultants	Indicative minimum input (working days)
KE 1: Team Leader [waste management policy expert]	120
KE 2: Corporate Development Expert	80
KE 3: Financial Expert	120
KE 4: Local Project Coordinator	180

The Consultant's proposal must fully describe the key experts to be assigned to the project, their precise domain of expertise applicable to the project, their individual roles in the achievement of the project objectives, and the timing, duration and location of their assignments.

All key experts having had professional experience in the beneficiary ministries/institutions must have terminated their work contacts in the above said ministries/institutions at least six months before the signing of this contract.

The Consultant is responsible for ensuring that all necessary qualifications for the described tasks are covered. Experience will only be counted as of the day the required diploma was obtained. Experience in excess of the upper threshold will not be taken into account during the scoring of

the offers. In case of part-time employment, only the actually worked time will be taken into account.

Time to be spent in the beneficiary country and at the home office is to be clearly shown. The Contractor has to ensure that the team leader and the 2 international key experts will spend at least 90% of their available person-days in the beneficiary country.

All experts must be independent and free from conflicts of interest in the responsibilities they take on.

Non-Key Experts

CVs for experts other than the key experts are not examined prior to the signature of the contract. CVs for non-key experts should not be submitted in the tender, but the tenderer will have to demonstrate in their offer that they have access to experts with the required profiles.

The Consultant must select and hire other experts as required to implement these Terms of Reference. An indicative list of expertise required for the non–key experts is as follows:

i. Legal expert(s) with knowledge of national environmental legislation, the applicable trade and procurement laws;
ii. National waste management experts;
iii. National financial expert;
iv. International waste management expert(s) with experience in developing option analyses and preparing investment projects for municipal waste collection, composting and recycling.
v. Institutional capacity building expert;
vi. Stakeholder's involvement and communication expert;

To qualify as senior expert he/she must comply with the following requirements:

Qualifications and skills: A bachelor degree (where a university/academic degree has been awarded on completion of four years of study in a university or equivalent institution); and

Professional experience: A minimum of 5 years of relevant working experience.

Experts not matching those criteria will be considered as junior experts.

The national technical expertise in the respective waste management areas is an added value for implementation of the project activities. The Contractor is encouraged to involve experts with technical knowledge and experience of national policy and waste management practices.

The selection procedures used by the Contractor to select these non-key experts must be transparent, and must be based on pre-defined criteria, including professional qualifications, language skills and work experience, and shall be approved by the PIG under Smart City SUE . The findings of the selection panel must be recorded. The selected experts must be subject to

approval by the PIG under Smart City SUE before the start of their implementation of tasks according to a preliminary agreed methodology.

Indicative minimum number of working days for non-key experts is 500 days.

The Consultant will provide support facilities to his team of experts (backstopping) during the implementation of the contract.

The Contractor must ensure that experts are adequately supported and equipped. In particular it must ensure that there is sufficient administrative, secretarial and interpreting provision to enable experts to concentrate on their primary responsibilities. It must also transfer funds as necessary to support their work under the contract and to ensure that its employees are paid regularly and in a timely fashion.