

NOVEMBER 2013  
THE EUROPEAN BANK FOR RECONSTRUCTION AND DEVELOPMENT (EBRD)

# Osh and Jalal-Abad Solid Waste Management - Environmental and Social Due Diligence

NON-TECHNICAL SUMMARY FOR JALAL-ABAD



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# 1 Introduction

The City Administration of Jalal-Abad with support of the Government of the Kyrgyz Republic has approached the European Bank for Reconstruction and Development (the EBRD) with a request for financing of an investment project to improve solid waste management (SWM) in Jalal-Abad and its surroundings.

The pre-feasibility study was conducted in late 2010. The Feasibility Study for SWM project in Jalal-Abad and a similar project in Osh was prepared from November 2012 to July 2013.

The Feasibility Study for Jalal-Abad was carried out by COWI (the Danish consulting company, the Consultant, contracted by the EBRD) in close cooperation with the Mayor's Office of the City of Jalal-Abad (the Jalal-Abad City Administration), the Representative Office of the KR Government in the Jalal-Abad Province (the Jalal-Abad Province Administration) and staff of the waste management operator Spetsavtobaza, a municipal unit established as a department of the Jalal-Abad City Administration. The Project Proposal prepared on the basis of the Feasibility Study was presented at a meeting with members of the Jalal-Abad City Council on 10 July 2013.

During the preparation of the Project Proposal a series of consultations has been carried out with municipalities of the Suzak District of the Jalal-Abad Province adjacent to Jalal-Abad. As a result, the following six neighbouring municipalities have expressed their interest to participation in the Project in cooperation with Jalal-Abad: Atabekov, Barpy, Kyzyl-Tuu, Suzak town, Tash-Bulak and Yrys.

The above listed municipalities are already partially serviced by Spetsavtobaza.

Prior to the preparation of the Project Proposal the Consultant performed a landfill site selection study in Jalal-Abad area and investigation of site in the Barpy Municipality of the Suzak District recommended for establishment of the future sanitary landfill.

In accordance with the EBRD policy and procedures the Bank has launched the Environmental and Social Due Diligence (ESDD) in parallel with the Feasibility Study.

The present Non-Technical Summary (NTS) is an element of the set of ESDD documents prepared according to the EBRD Environmental and Social Policy (2008). The other documents of the set are the Environmental and Social Management Review, the Environmental and Social Analysis (ESA) of the proposed Project, the Environmental and Social Action Plan (ESAP), and the Stakeholder Engagement Plan (SEP) prepared as separate documents.



## 2 Jalal-Abad city

Jalal-Abad<sup>1</sup> is located in the north-eastern part of the Fergana Valley about 600 km south-west of Bishkek and is the third (after Bishkek and Osh) largest city of Kyrgyzstan and the second largest city of the southern part of the country (**Error! Reference source not found.**).



Figure 1 Location of Jalal-Abad City in Kyrgyzstan

The city is the administrative centre of the Jalal-Abad Province (Oblast) including 8 Districts. The most densely populated areas in surroundings of Jalal-Abad city belong to the Suzak District of the Jalal-Abad Province. Many of them do not have borders actually separating the city and the adjacent villages and thus together with the Jalal-Abad city could be considered as a major agglomeration or the Greater Jalal-Abad.

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<sup>1</sup> The city name with a hyphen is in accordance with the Resolution of the KR Parliament (Zhogorku Kenesh) of June 2008

## 2.1 Why improve waste management system in Jalal-Abad city and its suburbs?

The current system for waste collection in Jalal-Abad and its surroundings involves the collection of solid waste from metal containers placed on the streets (collection point system), from the kerb-side where inhabitants have placed the waste on the collection day (kerb-side collection system) and from people bringing their waste directly to waste collection vehicles signalling at stops along the scheduled routes (signal collection system). The Jalal-Abad city waste management operator Spetsavtobaza provides services within the whole Jalal-Abad city area and selected adjacent residential areas.

For transportation of waste Spetsavtobaza uses 15 trucks. The existing containers and fleet of trucks do not have sufficient capacity to collect all the generated waste in Jalal-Abad City, some of the equipment is outdated and the daily operation of waste collection is a struggle to assemble equipment to keep the operation moving. Procurement of new containers and collection vehicles for replacement of existing equipment and increasing the collection capacity is urgently needed.

The collected waste is taken to the big municipal dumpsite located located 6 km south-east from the city on the territory of the Barpy Municipality of the Suzak District. Opportunities for further development of the dumpsite towards south are limited due to planned establishment of a new residential area.

Minor dumpsites can be seen in many places in Jalal-Abad and surroundings. Waste dumping "somewhere" is not a common, but occasional practice, while burning and burial of waste in back-yards is a common practice, particularly among residents of individual houses. Burning poses risk of spreading fire and nuisance from smoke. Burial of waste in pits is of limited use in densely populated areas of Jalal-Abad and suburbs, where the land plots are small.

Both the general public and the authorities can see that change of consumption habits and on-going urbanisation lead to increased generation of waste in residential areas and get interested in regular waste collection services. More and more people understand that improvement of waste collection services would require additional financing. In order to keep the residential areas and their vicinities clean and nice, the Jalal-Abad City Administration and the KR Government have approached the European Bank for Reconstruction and Development (EBRD) requesting support for the improvement of waste management in Jalal-Abad through procurement of modern waste containers, trucks and establishment of sanitary landfill for safe disposal of waste in accordance with the EU standards.

After a site selection study, the area adjacent to the existing dumpsite in the Barpy Municipality has been selected as a suitable location for a future sanitary landfill. When the sanitary landfill is constructed, the existing dumpsite will be closed and covered with soil, so that the area looks like an element of the natural landscape.

## 2.2 Reasons for including largest villages of 6 adjacent municipalities

A number of large villages administratively belong to Atabekov, Barpy, Kyzyl-Tuu, Suzak, Tash-Bulak and Yrys municipalities of the Suzak District of the Jalal-Abad Province, but are located close to the border of Jalal-Abad or even share parts of the city streets and in their day-to-day life are well integrated in the city. If these villages are not serviced by the future waste collection system, a lot of their waste may anyhow end up on neighbouring streets of the serviced area. It would definitely make sense to provide waste collection services of the same level within the areas already functioning as one agglomeration, the Greater Jalal-Abad.

It is envisaged that in the six participating rural municipalities a number of villages located far from Jalal-Abad, but accessible from main roads on the routes of waste collection vehicles, could also be serviced by the new system of waste management. The proposed service area for the future waste collection system is presented in Table 1.

*Table 1 Population of the proposed Project area. (data provided by the concerned municipalities)*

| Municipality              | Settlement               | Population, 2013 | Number of households, 2013 | Household size (persons) |
|---------------------------|--------------------------|------------------|----------------------------|--------------------------|
| <b>City of Jalal-Abad</b> | Jalal-Abad               | 104,040          | 26,000                     | 4.00                     |
|                           | <b>Total, Jalal-Abad</b> | <b>104,040</b>   | <b>26,000</b>              | 4.00                     |
| <b>Atabekov</b>           | Bek-Abad                 | 10,059           | 1,828                      | 5.50                     |
|                           | Kyzyl-Bagysh             | 866              | 197                        | 4.40                     |
|                           | Turk-Abad                | 1,349            | 327                        | 4.13                     |
|                           | Uzbek-Abad               | 531              | 133                        | 3.99                     |
|                           | Kyrgyz-Abad              | 590              | 149                        | 3.96                     |
|                           | Jiyde                    | 3,768            | 689                        | 5.47                     |
|                           | Jany-Jer                 | 2,097            | 448                        | 4.68                     |
|                           | Kara-Jygach              | 907              | 184                        | 4.93                     |
|                           | Check                    | 911              | 260                        | 3.50                     |
|                           | Munduz                   | 1,826            | 398                        | 4.59                     |
|                           | Shirin                   | 534              | 158                        | 3.38                     |
|                           | Nayman                   | 498              | 123                        | 4.05                     |
|                           | Kashkar-Maala            | 453              | 134                        | 3.38                     |
|                           | Balta-Kazy               | 1,310            | 193                        | 6.79                     |
|                           | <b>Total, Atabekov</b>   | <b>25,699</b>    | <b>5,221</b>               | <b>4.92</b>              |
| <b>Barpy</b>              | Prigorod                 | 1,687            | 385                        | 4.38                     |
|                           | Choko-Dobo               | 2,275            | 547                        | 4.16                     |
|                           | Komsomol                 | 2,716            | 587                        | 4.63                     |
|                           | Ulgu                     | 1,948            | 362                        | 5.38                     |
|                           | Osmonov                  | 763              | 180                        | 4.24                     |
|                           | Min-Oruk                 | 876              | 186                        | 4.71                     |
|                           | Tashtak                  | 822              | 174                        | 4.72                     |
|                           | Toboy                    | 1,610            | 302                        | 5.33                     |
|                           | Chokmor                  | 2,061            | 545                        | 3.78                     |
|                           | Jany-Aiyl                | 933              | 152                        | 6.14                     |
|                           | Kandy                    | 605              | 122                        | 4.96                     |
|                           | Turk-Abad                | 843              | 175                        | 4.82                     |
|                           | <b>Total, Barpy</b>      | <b>17,139</b>    | <b>3,717</b>               | <b>4.61</b>              |
| <b>Tash-Bulak</b>         | Tash-Bulak               | 6,115            | 1,124                      | 5.44                     |
|                           | Aral                     | 437              | 72                         | 6.07                     |
|                           | Irrigator                | 1,116            | 168                        | 6.64                     |
|                           | Teplichnyi               | 698              | 104                        | 6.71                     |
|                           | Gulistan                 | 1,695            | 288                        | 5.89                     |
|                           | Yntymak                  | 3,056            | 503                        | 6.08                     |
|                           | Doskana                  | 980              | 165                        | 5.94                     |
|                           | Dmitrovka                | 2,937            | 544                        | 5.40                     |
|                           | Eshme                    | 86               | 15                         | 5.73                     |
|                           | <b>Total, Tash-Bulak</b> | <b>17,120</b>    | <b>2,983</b>               | <b>5.74</b>              |
| <b>Yrys</b>               | Ladan-Kora               | 6,667            | 1,259                      | 5.30                     |
|                           | Kumysh-Aziz              | 6,052            | 828                        | 7.31                     |

| Municipality  | Settlement              | Population, 2013 | Number of households, 2013 | Household size (persons) |
|---|-------------------------|------------------|----------------------------|--------------------------|
|   | Kurgak-Kol              | 4,956            | 771                        | 6.43                     |
|   | Aral-Sai                | 2,080            | 346                        | 6.01                     |
|   | Jar-Kishtak             | 4,732            | 809                        | 5.85                     |
|   | Totiya                  | 2,551            | 439                        | 5.81                     |
|   | Yrys                    | 1,504            | 256                        | 5.88                     |
|   | Masadan                 | 1,733            | 375                        | 4.62                     |
|   | Domar                   | 2,099            | 365                        | 5.75                     |
|   | <b>Total, Yrys</b>      | <b>32,374</b>    | <b>5,448</b>               | <b>5.94</b>              |
| <b>Kyzyl-Tuu</b>                                      | Munduz                  | 3,072            | 572                        | 5.37                     |
|   | OrtoAziya               | 2,801            | 524                        | 5.35                     |
|   | Boston                  | 2,257            | 422                        | 5.35                     |
|   | Ak Bash                 | 2,507            | 539                        | 4.65                     |
|   | Tashtak                 | 2,661            | 499                        | 5.33                     |
|   | <b>Total, Kyzyl-Tuu</b> | <b>13,298</b>    | <b>2,556</b>               | <b>5.20</b>              |
| <b>Suzak</b>  | Suzak                   | 23,145           | 5,002                      | 4.63                     |
|   | Dostuk                  | 2,015            | 295                        | 6.83                     |
|   | Aral                    | 1,992            | 287                        | 6.94                     |
|   | Blagoveshenka           | 4,859            | 843                        | 5.76                     |
|   | Kamys h-Bashy           | 1,966            | 222                        | 8.86                     |
|   | Jany-Dyikan             | 2,198            | 528                        | 4.16                     |
|   | <b>Total, Suzak</b>     | <b>36,175</b>    | <b>7,177</b>               | <b>5.04</b>              |
| <b>Surrounding Municipalities</b>                     |                         | <b>141,805</b>   | <b>27,102</b>              | <b>5.23</b>              |
| <b>Jalal-Abad City and Surrounding Municipalities</b> |                         | <b>245,845</b>   | <b>53,102</b>              | <b>4.63</b>              |
| <b>Urban Population</b>                               |                         | <b>128,290</b>   |                            |                          |
| <b>Rural Population</b>                               |                         | <b>117,555</b>   |                            |                          |

## 2.3 Who will pay for the improvements?

EBRD is considering provision of a loan combined with a loan from the EIB and a grant from the EU for covering the costs of establishing modern waste collection services for the Greater Jalal-Abad with safe disposal of waste in one specially equipped place. A grant will cover 50% of the cost. The other half is expected to be covered by a loan provided for 15 years. This is expected to be repaid from revenue generated by the introduction of new tariffs, which are to be established for households and other users in service area of the new waste management system.

### 3 Description of the future system

The future waste management system for the Greater Jalal-Abad will ensure improved collection of municipal solid waste and its placing at one sanitary landfill.

#### 3.1 Future waste collection and transportation

In Jalal-Abad city and the selected villages of adjacent 6 rural municipalities the new system will be based on further development of the existing system and include:

- › Collection point system in some of areas with multi-storey buildings in Jalal-Abad city;
- › Signal collection system in some of the areas with multi-storey buildings in Jalal-Abad city;
- › Kerb-side collection system in areas with single family houses in Jalal-Abad city;
- › Combined collection point system and kerb- side collection system in the six municipalities adjacent to Jalal-Abad city;
- › Special system for separate collection of construction and demolition (C&D) waste and other bulky waste types - on an ad-hock basis according to the actual needs.

Based on discussions with Spetzavtobaza the design of the systems is based on collection of 20% of the waste in Jalal-Abad City by the collection point system, 50% by the kerb-side collection system and 30% by the signal system. Furthermore, it is assumed that 40% of the waste in the six surrounding municipalities is collected by the collection point/ container system and 60% by the kerb-side collection system.

A combination of 10 m<sup>3</sup> and 22 m<sup>3</sup> rear-loaded compaction vehicles are recommended for the waste collection and the majority of containers will be 1.1 m<sup>3</sup> steel containers with lid and wheels.

For collection of bulky waste types two roll-off tipper trucks with changeable containers and crane to hoist bulky materials and garden waste and 32 containers of various sizes and types are recommended.

The precise number and placing of containers, the number and routes of vehicles, the waste collection schedule for various parts of the serviced area shall be determined and, when necessary, adjusted in the implementation phase of the Project.

### 3.2 Upgrading of Spetsavtobaza premises

The existing administration building of Spetsavtobaza is too small, the staff building and vehicle maintenance workshop are inadequate. An improvement of the sanitary conditions of the administration building is proposed alongside with construction of new staff building with toilets and shower facilities and construction of a well-equipped indoor workshop for vehicle maintenance.

### 3.3 Sanitary landfill

Sanitary landfill is required for safe disposal of waste, i.e. burial of waste with minimal risks for the human health and the environment. The Project assumes that the new sanitary landfill is designed and operated in accordance with the EU Directive 99/31/EC on the Landfill of Waste.

Basing on a site selection study a site north of the existing dumpsite in the Barpy Municipality has been recommended for establishment of sanitary landfill.

The landfill site location next to the existing dumpsite means that the distance of waste transportation from Jalal-Abad will remain approximately the same, about 6-7 km.

The site is located in the upper (northern) part of a long valley partially occupied by the existing dumpsite located approximately in the middle of the valley (Figure 2). The valley in the upper part splits in 2 major "tributaries" each having a V-shaped profile. At present the area is used as a public owned winter pasture of the Barpy rural municipality, where the livestock is grazing from about 10 October to 10 May. The distance from the site to the nearest residential areas (east of the site, on the southern bank of the Shor-Bulak Brook) is more than 2 km.



*Figure 2 Location of dumpsite and landfill site in a valley east of Jalal-Abad (1- shepherd houses in a valley east of the valley with dumpsite; 2 – shepherd houses in a valley west of valley with dumpsite; 3 – houses of 2 families at junction of access road to the dumpsite and the main public road following the Shor-Bulak Brook; 4 – brick factory near the main public road 5 – area of planned new residential area)*

Distances from the site to the nearest shepherd houses (marked 1 and 2 in **Error! Reference source not found.**) are about 500 m. The shepherd houses are located in adjacent valleys separated from the valley with dumpsite by hill rows (adyrs) and are not visible from the dumpsite or landfill site. However, they are visible from tops of hills surrounding the valley with the dumpsite and the landfill site and separating this valley from valleys with the nearest stand-alone houses. No buildings are located with the valley with dumpsite, except for two poor quality buildings located at the entrance to the dumpsite from the access road. A high voltage power line crosses the north-western part of the valley.

Distance from landfill site to residential houses (marked 3 on Figure 2) of two families located south-south-west from the site is more than 1 km. Distance from the landfill site to the private brick factory located at the main public road south of the site is about 800 m. Distance from the site to the planned new residential area south of the site is about 1 km.

The site proposed for establishment of the sanitary landfill is located further north from the main road going along the Shor-Bulak Brook, than the existing dumpsite (Figure 3).





*Figure 3 General view of site located north of existing dumpsite and recommended for landfill (view from the dumpsite)*

The total area for establishment of the sanitary landfill is 24.8 ha. The existing dumpsite located inside this area covers approximately 8.9 ha (after remediation).

The waste disposal area of 10.2 ha will be divided into four sections with steep (up to 1:2) slopes developed in 2-3 vertical steps each having a height of about 10 m.

The landfill is designed for operation during 19-20 years with total capacity of 1,045,000 m<sup>3</sup> of waste sufficient for disposal of all municipal solid waste generated in the Project area.

The waste disposal cells will be constructed with an impermeable bottom structure consisting of a compacted clay soil covered with a layer of special high density polyethylene. This structure installed on bottom and slopes of each section will protect the groundwater and landfill surroundings from spreading of leachate (liquid present in waste due to rain, snowmelt water and decomposition of waste). Leachate generated in the landfill section will be collected by drainage system placed on the bottom liner. The collected leachate will be stored in and evaporated from a leachate pond with impermeable bottom. Spraying of leachate over the waste surface could speed up the evaporation.

The landfill area will be fenced and include paved entrance and parking area, weighbridge, office and staff building, water supply and sanitation facilities with drinking water well, surface water collection system, garage and vehicle maintenance workshop, wheel wash facility (at exit), fire protection system,

facilities for leachate collection, storage and evaporation, access road and internal roads, power supply, lighting and communication systems.

Landfill gas collection and flaring system as well as top cover for disposed waste will be established during the planning period when a landfill cell is filled up.

### 3.4 Will the waste be sorted at the landfill?

Currently there is no formal system for separation and collection of recyclables in the Project area. The market for the recyclables is poor. Private initiatives show no capacity to recover and sell any reasonable portion of recyclables.

All waste delivered by waste collection trucks to the new regional landfill will be weighed and registered at the landfill entrance. The trucks will then take the waste without any processing to a landfill section for disposal.

### 3.5 How will the waste be placed at the landfill?

Only one of the four disposal sections will be constructed and operated at a time. The waste unloaded from a truck into a disposal section will be rolled over by a heavy vehicle (compactor) rolling the waste into a layer. Each layer of waste will be systematically covered with a thin layer of soil (daily cover) preventing possible spreading of waste by wind, birds and animals. Thus during the landfill operation the waste will be open only at the tipping front of a disposal section currently being filled. The average height of waste body with daily cover constituting about 10% of the volume in each section of the landfill will be approximately 10 m including 1 m thick top cover layer with vegetation.

Once the whole landfill is filled and no longer used for waste disposal, there will be an aftercare period for least 30 years. Aftercare will include further collection of leachate, monitoring of landfill gas, monitoring of groundwater and surface runoff. In principle, the monitoring should continue until leachate and/or landfill gas no longer pose risks for the surrounding environment.

The landfill will be owned by Jalal-Abad city and operated by the trained staff of municipal waste management unit (Spetsavtobaza).

### 3.6 When will the existing dumpsite be closed?

The dumpsite closure and remediation will be started during construction of the landfill and will be completed immediately after start of the landfill operation.

The existing dumpsite is established as one pile of waste in central part of a valley, with rather thin layers of waste in the northern part of the dumpsite. The waste in the northern part of the site will be excavated and re-disposed in the southern part of the dumpsite during construction of the new landfill site.

The dumpsite closure and rehabilitation will reduce the environmental and health impacts and to secure stability of the site. The re-profiled dumpsite will be

compacted and levelled with a relatively flat top surface with a slope of 2.5% towards south and with a southern steep slope reaching the existing ground level. All waste will be covered with minimum 0.9 m of soil and 0.1 m of topsoil and finally seeded with grass. The soil and topsoil will come from excavation during construction of the new sanitary landfill.

After closure and remediation no waste at the old dumpsite will be visible, disposal of waste in this area will be prohibited, any excavation and construction activities will be restricted, but other activities (e.g. recreational use) could be acceptable.

Closure and rehabilitation of the dumpsite will be to the benefit of the surrounding communities affected by poor operation of the dumpsite.

Closure and remediation of the existing dumpsite will be the responsibility of the Jalal-Abad City Administration and will not be financed from the loan and grant provided for the proposed Project.

### 3.7 Any alternatives for the Project?

A number of project alternatives have been considered during the Project preparation as summarised in Table 2. The table presents a systematic comparison of feasible alternatives of the Project in terms of location, technology or design carried out for comparison of potential environmental and social impacts.

Table 2 presents a spectrum of concepts typically discussed during feasibility studies and impact assessments related to development of regional waste management systems.

*Table 2 Alternative concepts considered during the Feasibility Study*

| No | Concept title                                 | Details of the concept  | Key challenges   |
|----|---|---|--|
| 1  | No Project                                    | No changes in the existing waste collection and disposal practice | High environmental and health impacts, visual impact, low comfort                            |
| 2  | Alternative location of the sanitary landfill | Location to the south from the existing dumpsite of Jalal-Abad    | Less than 500 m distance from existing and planned residential areas                         |
|    |   | Location in the adjacent valley to the west from the dumpsite     | Absence of access road, presence of soil hotspot of Siberian plaque ( Anthrax)               |
|    |   | Clay quarry east of Jalal-Abad                                    | Access road passes by recreational areas and famous tourist destination                      |
|    |   | Near a farm west of Jalal-Abad                                    | Long distance from waste generation centres. Land use plan in conflict with establishment of |

| No | Concept title                                 | Details of the concept  | Key challenges   |
|----|---|---|--|
|    |   |   | landfill. Construction of new access road is required.   |
|    |   | South-east of Jalal-Abad near border with Uzbekistan  | Access road via a mountain passage, location in catchment area of transboundary river  |
| 3  | Alternative design of landfill                | Landfill of other type (e.g. without bottom liner)  | Not meeting the EU standards   |
| 4  | Alternative collection system                 | Separate collection of recyclables at sources (e.g. in plastic bags or containers of different colours) | High costs of collection, poor market for recyclables  |
|    |   | Separation of recyclables at central facility for sorting of mixed waste                                | Low quality of recyclables, poor market for recyclables  |
| 5  | Alternative treatment and disposal technology | Composting, anaerobic digestion (AD), mechanical biological treatment (MBT)                             | High investment and operation costs, poor market for products  |
|    |   | Incineration (Waste-to-Energy)  | High investment and operation costs, low energy prices in KR   |
| 6  | Management of other types of waste, too       | Recycling of construction and demolition waste  | High investment costs, low prices for natural mineral materials  |
|    |   | Separate management of hazardous waste fraction of household waste                                      | Separate collection and temporary storage will not make sense because a long-term disposal solution is not expected within realistic time (i.e. 5 years) |
| 7  | Alternative area serviced                     | Only Jalal-Abad city serviced   | Jalal-Abad and adjacent villages generate the common waste flow  |
|    |   | Other number of villages/Municipalities   | All densely populated areas with good access roads should be included, but transportation distances to landfill should be short                          |

The alternatives may also include other combinations of facilities within the waste management centre and/or transfer station(s), other timing for construction and implementation of source separation schemes, combination of various schemes in specific areas, alternative financing mechanisms for full cost recovery and a variety of other alternatives.

Any additional elements of the waste management system (e.g. separate collection and interim storage of hazardous waste fractions of MSW, collection and recycling of construction and demolition waste, etc.) will require additional costs and thus higher tariffs for the new system. And the higher would be the increase of tariffs, the lower would be the chance for collecting the payments.

Based on the Feasibility Study the combination of 4 waste collection technologies (system with 1.1 m<sup>3</sup> containers at collection points, kerb-side system, signal system, system with roll-off tippers for bulky waste, garden waste, construction and demolition waste), direct transportation and landfilling of waste has been selected as the most feasible option for the Project.

In addition to proposing technical options, the Feasibility Study included consideration of alternative locations of the regional landfill. Several sites were studied from the viewpoint of the local and international criteria applied for the landfill site selection. A separate report on the landfill site selection was prepared during the Feasibility Study and disclosed in Russian language for stakeholders in Jalal-Abad city and the Jalal-Abad Province in March 2013.

Sanitary landfill of waste is recognised as the cheapest waste management option in the Project area, but collection and use of recyclables could be introduced when the affordability allows doing so in order to economise the use of sanitary landfill volume. A sanitary landfill is always necessary in a waste management system, but it is the international good practice to economise the landfill consumption for as long as possible use of the site and delaying the date where a new site must be found.

## 3.8 What will be the Project impacts?

The process of environmental and social impact assessment for the Project will involve an assessment and comparison of potential major impacts which may occur during some of the Project phases and the identification of adequate measures for mitigation of negative impacts, as well as for enhancement of possible positive impacts.

### 3.8.1 Environmental impacts

Key impacts of the proposed Project on the environment will be mostly related to the construction works during establishment of landfill and to the accumulation of a big quantity of waste.

To minimise the negative impacts on the environment the landfill location is selected in an area on northern slope of a hill range, which is rather inconvenient for agriculture or urban development, but has the natural loam layers with low permeability, i.e. suitable for protection of soil and groundwater against any contamination from accumulated waste. In addition to natural protection, the bottom and sides of landfill sections for disposal of waste will be covered with a layer of compacted natural loam and a layer of strong impermeable synthetic material. The landfill site and access road to it are located far from protected nature

areas, rivers, lakes. Waste will be transported in closed trucks and along the existing roads. Thus the landfill will be equipped for protection of soil, surface water and groundwater from contamination. Waste delivered to the landfill will be covered on a daily basis with locally available soil. The landfill will be equipped with a landfill compactor and front-end loader for compression of the waste and daily cover of the waste with soil.

The operation and filling of the landfill assumes the following:

- › The landfill sections will be filled in by smaller fragments allowing for one day's waste to be spread in the fragment; the filling will be carried out only during day hours;
- › The waste in each fragment will be spread and compacted in layers not exceeding 0.3 m;
- › Each daily layer of waste in a fragment will be covered by a layer of soil (thickness about 0.2 m); the daily cover soil could be removed in case of further filling of waste in the same fragment;
- › It is expected that the filling height at the landfill will be about 10 m, i.e. the waste will partially fill in the existing depressions on the hill range slope.

After the quantity of accumulated waste has reached the landfill capacity, the landfill will be equipped with a top cover and a system for collection and flaring/utilisation of landfill gas.

The final cover system of the landfill will include:

- 0.1 -0.2 m fertile top soil with vegetation;
- 0.8 m clayed soil;
- 0.2 m gravel drainage package (regulation layer, drainage layer and landfill gas distribution layer).

The shape of the closed and covered landfill surface will be developed to match the surrounding landscape and to ensure stability of the cover.

Landfill gas flaring/utilisation system will be established at the regional landfill after the final cover is installed for landfill cells. Landfill gas flaring will be the only option for management of the collected landfill gas. Installation of initial gas collection wells and connecting pipes is included in the design for the new landfill, but the pumps and flaring units are supplied and installed after 2-3 years of active operation of the landfill when they can be put directly in operation. The international experience shows that many deliveries of gas flaring equipment for new landfill projects happen too early. The recommended later purchase of this equipment for Jalal-Abad landfill will allow to avoid the corrosion during storage

and to put the equipment in operation, when the performance guarantee and defects liability period are still valid.

In 4-5 years after commence of the landfill utilisation of the landfill gas could be considered. As no industry or other potential user of the landfill gas is present in the neighbourhood of Jalal-Abad landfill, the only obvious option for utilisation of the landfill gas is production of electricity and maybe utilisation of the excess heat in a central heating system if installed in administration building or it may be realistic to utilise excess heat in greenhouses to be established at the nearby farmland. When production of electricity is economically feasible depend on potential amount of gas collection and in particular in the price for selling the electricity.

Appropriate measures for control the accumulated gas and migration of gas is included in the project and satisfy the EU landfill directive. The landfill will have a system for monitoring of gas emissions, groundwater and surface water runoff. A weighing bridge with an electronic system will be installed for registration of waste delivered to the landfill.

### 3.8.2 Social impacts

Key negative elements of the proposed Project in terms of social impact will be related to the introduction of changes in the waste collection system (e.g. types of containers for waste, location of containers, waste collection schedule) and related to the increase of waste tariffs.

To minimise the negative social impacts, the changes should be discussed with the communities and staff of the waste collection unit Spetsavtobaza. The changes should be introduced gradually, starting from trial areas. The containers and waste collection trucks will be purchased not in one go, but according to the lessons learned from the trial procurement.

## 3.9 Environmental and social benefits of the Project

The Project is expected to provide major environmental and social benefits for Jalal-Abad city and adjacent rural municipalities where a modern system will be introduced for collection and disposal of municipal solid waste, so that the waste dumping and its burning could be stopped.

The following specific benefits could be achieved during the Project implementation:

- › Improved collection and transportation of waste in Jalal-Abad and adjacent densely populated areas of municipalities belonging to the Suzak District of the Jalal-Abad Province;

- › Improved environmental conditions and visual image of residential areas and their surroundings;
- › Sound and safe disposal of waste and one sanitary landfill;
- › Improved working conditions for employees of waste collection unit (Spetsavtobaza);
- › Cleaner yards and streets, better health and safety conditions for women and children;
- › Improved environmental awareness, education, public participation, background for better waste management habits of all age groups;
- › Improved attractiveness of the region for tourists;
- › Local business development and capacity building;
- › Development of convenient electronic (non-cash) billing and payment registration system for waste management services,
- › Improved governance and transparency of waste management system.

It is expected that the environmental and social benefits of the Project will have a long-lasting effect for Jalal-Abad city and adjacent municipalities, but will also have a demonstration effect for the Kyrgyz Republic and other countries.



## 4 Summary of ESAP

According to the Environmental and Social Policy of the EBRD, an Environmental and Social Action Plan (ESAP) should be developed for and implemented during the Project in order to ensure implementation of the project according to the EBRD Performance Requirements (PRs).

The ESAP prepared for the propose Project is related to:

- › establishment of a new waste collection system and sanitary landfill (new facilities),
- › upgrading of Spetsavtobaza premises (existing facility), and
- › closure and remediation of existing dumpsite<sup>2</sup> (existing facility) after start of the sanitary landfill operation.

The ESAP includes the programmes and systems to address the environmental and social impacts with allocated timeframes, responsibilities and resources required. The ESAP also includes a provision for capacity building such as training of the PIU staff and employees of municipal waste management unit Spetsavtobaza, contingency and emergency response plans and measures.

The national EIA (ESIA) procedure and obtaining the Project approvals according to the procedures of the Kyrgyz Republic are among the activities included in the ESAP.

Closure of existing dumpsite is an integral element for the establishment and sustainable operation of the new waste collection system in Jalal-Abad and its surroundings with the sanitary landfill. Therefore, closure of existing dumpsite will be a precondition for the Project implementation.

The ESAP includes the environmental and social management systems and measures to be implemented:

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<sup>2</sup> Closure and remediation of the dumpsite will be financed by Jalal-Abad City Administration

- › by the PIU during pre-construction phase (preparation of documentation, procurement of contractor works for construction of landfill and procurement of waste collection and transportation equipment from suppliers),
- › by the PIU and contractors during landfill construction,
- › by the PIU, Spetsavtobaza (operator of the new waste collection system and the sanitary landfill) and contractors (e.g. for construction of new cells at the landfill) during operation and development of the landfill and the new waste collection system.

The ESAP for the Project is part of the ESDD package prepared for disclosure in the Russian language at the office of Jalal-Abad City Administration and the office of Spetsavtobaza.

## 5 Planned engagement of stakeholders

### 5.1 Who are the stakeholders?

The stakeholders are the organisations and individuals, who are responsible for, interested in or affected by the proposed Project. The employees of Spetsavtobaza are the internal stakeholders of the Project. Other parties are the external stakeholders.

### 5.2 How and when are the stakeholders engaged?

The Project is prepared by the Jalal-Abad City Administration. The Administration makes sure that the local governmental agencies in Jalal-Abad and adjacent municipalities, local community organisations, NGOs, the mass media and the general public including men and women are informed about the Project and can participate in the process of identifying and communicating the issues of concern, and in an analysis of the Project and its alternatives. This involvement is important during the Environmental and Social Impact Assessment process<sup>3</sup>, which allows incorporating the relevant recommendations into the Project design and into the Environmental and Social Action Plan.

Meetings with representatives of the Jalal-Abad City Administration, the Jalal-Abad Province Administration, management of Spetsavtobaza, authorities of Rural Municipalities, local communities, women councils, NGOs, interviews with residents of Jalal-Abad and surrounding residential area and stand-alone houses were carried out in December 2012 to May 2013 during assessment of existing waste management conditions and preliminary formulation of the proposed Project. The elaborated Project Proposal was presented at the meeting with members of the Jalal-Abad City Council on 10 July 2013. All the meetings included active discussions.

The Project related information and consultation activities will be also carried out during all other phases of the Project preparation and implementation, so that

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<sup>3</sup> Environmental Impact Assessment according to the Kyrgyz Republic procedure includes environmental and social aspects

concerns of people potentially affected by the Project could be known and addressed. It is envisaged that information and consultation activities will be among responsibilities of the Project Implementation Unit (PIU) established in Jalal-Abad.

The information provided about the Project should be sufficient at least for describing what changes will be caused by the Project, where these changes are expected and when they are expected.

A lot of information about the Project preparation was provided to stakeholders at meetings during the EBRD funded Feasibility Study and the Environmental and Social Due Diligence in December 2012 – July 2013. The Stakeholder Engagement Plan (SEP) has been prepared, its implementation initiated. The PIU will update the SEP and use it as an instrument for planning and recording of the public information and consultation activities. The updated versions will be disclosed by the Jalal-Abad City Administration.

Local television companies have been recommended by the local authorities and NGOs as the most reliable media channel to regularly communicate the local news and information to the general public in Jalal-Abad and adjacent municipalities. Majority of the households in Jalal-Abad and rural areas have TV sets at home and are used to see the local news programs of TV companies.

### 5.2.1 Contacts for information requests

People in the Kyrgyz Republic often prefer to ask questions and express their opinions on the phone. Questions in Kyrgyz and Russian regarding the Project preparation and requests for additional information could be addressed from 10:00 to 16:00 during the week days to the following contact persons in Jalal-Abad:

Tairbek Choibekov  
Vice Mayor of Jalal-Abad City  
38, Erkin-Too Street,  
Jalal-Abad, 715600, Kyrgyz Republic  
Tel: +996 3722 5 32 42,  
Mobile: +996 777 84 06 07  
E-mail: [agon\\_86@inbox.ru](mailto:agon_86@inbox.ru)

Talant Kasymov  
Director of Spetsavtobaza  
1, Gagarin Street, Jalal-Abad, Kyrgyz Republic  
Mobile: +996 559 00 02 20, +996 777 92 07 07  
E-mail: [agon\\_86@inbox.ru](mailto:agon_86@inbox.ru)

Answers to the questions and the requested additional information will be provided in Kyrgyz or Russian.

### 5.2.2 Information in hard copies

Hard copies of the NTS and ESA in Russian will be available for reading (and electronic versions will be available for copying on visitor's USB stick) during the office hours in Jalal-Abad City Administration office and in office of Spetsavtobaza.

Hard copies of NTS will be available in offices of Administrations of Atabekov, Barpy, Kyzyl-Tuu, Suzak, Tash-Bulak and Yrys Municipalities.

Hard copies of the NTS and ESA documents could be provided on request at the cost of the copying.

Information boards with leaflets about the Project will be established in the office of the Jalal-Abad City Administration, in the Suzak District Administration, in the office of Spetsavtobaza and Administrations of Atabekov, Barpy, Kyzyl-Tuu, Suzak, Tash-Bulak and Yrys Municipalities.

### 5.2.3 Comments during disclosure of E&S Analysis

During the ESA disclosure the comments will be received as filled in forms with specified contact details for submission. The contact details of the local authorities and NGOs will be provided in announcement on TV, in posters and information leaflets distributed in the project affected communities to ensure the public consultation. Questions and comments expressed during the public meetings will be recorded and addressed in the ESA document and then during the practical preparation and implementation of the Project.

The contact details for submitting the comment forms in Kyrgyz, Russian or English are as follows:

Tairbek Choibekov  
Vice Mayor of Jalal-Abad City  
38, Erkin-Too Street,  
Jalal-Abad, 715600, Kyrgyz Republic  
Tel: +996 3722 5 32 42,  
Mobile: +996 777 84 06 07  
E-mail: [agon\\_86@inbox.ru](mailto:agon_86@inbox.ru)

## 5.3 Grievance mechanisms for stakeholders

At the stage of construction, rehabilitation and operation of the Project facilities (construction of sanitary landfill near Jalal-Abad with upgrading of access road, establishment of modern collection points for municipal waste, development of optimal routes for waste collection trucks, closure and rehabilitation of dumpsite, upgrading of Spetsavtobaza premises) the comments, questions and possible complaints will be addressed within the grievance mechanism. The Project Stakeholder Engagement Plan includes special mechanism for receiving and

addressing the grievances from the internal stakeholders (workers of Spetsavtobaza) and external stakeholders during the Project implementation. This grievance mechanism will be based on written forms, which can be filled in by any affected person or organisation and submitted to the Jalal-Abad City Administration (later the Project Implementation Unit in Jalal-Abad), who will take action, if required, and within 10 days inform the author of grievance on the action taken in response to the submitted grievance.