Краткое содержание отчета по экологической оценке *Проекта по устойчивому управлению твердыми отходами* (проект),

1. В этой первоначальной экологической Оценке (ПЭО) обобщены мероприятия по экологической экспертизе, выполненные по техническому заданию (ТЗ), финансируемой Азиатским банком развития (АБР) UZB-9715: *Проект по устойчивому управлению твердыми отходами* (проект), который оказывает помощь Правительству Узбекистана (правительство) в подготовке общенационального инвестиционного проекта по управлению твердыми отходами (ПУТО). ПЭО кратко излагает законодательную базу сектора УТО, представляет краткое описание проекта и природно-климатические исследования объектов размещения, определяет потенциальные воздействия на окружающую среду и определяет меры по снижению этих воздействий. Затем он рекомендует подробные действия, механизмы мониторинга и проверки, которые должны быть реализованы для обеспечения того, чтобы проект соответствовал приемлемым уровням соблюдения природоохранных требований, при одновременном максимальном повышении осведомленности заинтересованных сторон, вовлеченности и инклюзивности на всех этапах разработки проекта.

2. Предлагаемый проект АБР предоставляет дополнительную поддержку Правительству в продвижении программы реформирования сектора УТО, активно поддерживая реализацию стратегии УТО в ряде областей. Как четко определено в плане действий стратегии, проект поможет Правительству (i) обновить правовую базу УТО путем разработки конкретных нормативных актов, (ii) улучшить организационные возможности сектора, создать институциональный потенциал в Ассоциации Тоза Худуд и содействовать развития государственно-частного партнерства (ГЧП), (iii) совершенствовать мониторинг окружающей среды в Государственном комитете по экологии и охране окружающей среды (ГКЭООС), и (iv) существенно улучшить услуги по сбору УТО и укрепить базу активов сектора посредством предоставления автотранспорта, спецтехники и физической инфраструктуры.

3. Проект соответствует стратегии партнерства АБР со странами, на 2019-2023 годы для Узбекистана (СПС), в которой определены три стратегические области: (i) поддержка развития частного сектора, (ii) сокращение экономического и социального неравенства, и (iii) содействие региональному сотрудничеству и интеграции.

4. Проект согласуется со следующим воздействием: улучшение окружающей среды, здоровья и условий жизни. Результаты проекта обобщены следующим образом:

Результат 1: **Усовершенствование нормативно-правовой базы сектора УТО** путем оказания правительству помощи в разработке нормативных директив для улучшения операций УТО, управления финансами, институциональной деятельности и мониторинга, и соблюдения экологических норм.

Результат 2: **Укрепление потенциала Ассоциации и Toza Hudud** путем разработки плана реструктуризации бизнеса Toza Hudud и усиления операций, превращения Ассоциации в техническую связь для государственных и частных операторов УТО, оптимизации практики ГЧП и повышения осведомленности общественности.

Результат 3: Улучшение возможностей ГКЭООС по мониторингу окружающей среды путем предоставления финансирования для развития потенциала, лабораторного оборудования и транспортных средств.

Результат 4: **Услуги по сбору и временному захоронению УТО в небольших городских центрах, пригородных и сельских районах** были улучшены по всей стране благодаря (i) созданию базы функциональных активов Toza Hudud, предоставив 300 автомобилей для сбора (вместимость 12 м3), 6000 мусорных

баков (вместимостью 1,1 м3), 13 экскаваторов, 13 бортовых грузовиков и 13 мобильных транспортных средств; и (ii) строительству 13 провинциальных центров технического обслуживания транспортных средств (сервисных центров) для обеспечения устойчивого технического обслуживания транспортных средств и оборудования.

5. Ожидается, что проект будет реализован в течение 4,5 лет, начиная с января 2020 года и будет завершен к июлю 2024 года. Предоставление всего оборудования и все строительные работы будут завершены к марту 2022 года.

6. В соответствии с национальной категоризацией, проект относится к категории IV, как проект локального воздействия. Национальный экологическая экспертиза должна быть проведена до начала строительных работ. В соответствии с Заявлением АБР о политике безопасности 2009 года (SPSS 2009), проект относится к категории B, поскольку проект будет иметь специфические для конкретной местности воздействия, лишь немногие из них будут необратимыми, и могут быть разработаны меры по смягчению для минимизации неблагоприятных воздействий.

7. ПЭО сосредоточена на экологической экспертизе областных сервисных центров Результата 4, так как эти объекты являются единственными строительными объектами, включенными в проект. Каждому Toza Hudud будет предоставлен сервисный центр для ремонта и обслуживания транспортных средств и оборудования, чтобы улучшить качество обслуживания и свести к минимуму простои. Сервисные центры будут иметь модульную конструкцию, размер которой зависит от парка транспортных средств каждого региона, а в некоторых случаях включает административные офисы для Toza Hudud. Каждый сервисный центр будет иметь как минимум три рабочих отсека для больших транспортных средств (грузовых автомобилей и оборудования), механический цех, склад запасных частей, офис управления и помещения для персонала, включая шкафчики для пола и санитарные условия. Здания будут оборудованы солнечными энергосистемами. Сам двор будет огорожен и будет вмещать затененные стоянки для автомобилей. Общая площадь здания составит до 800 м2, а все объекты будут иметь размеры от 3500 до 10000 м2.

8. Узбекистан является одной из крупнейших стран Центральной Азии, граничащей с Казахстаном (север), Республикой Кыргызстан (восток), Таджикистаном (юго-восток), Афганистаном (юг) и Туркменистаном (юго-запад). Занимая площадь 447 000 км2, она простирается на 1425 км с востока на запад и на 930 км с севера на юг. Физическая среда Узбекистана заметно различается: от горных вершин на востоке до плоской пустынной топографии центральных и западных районов, которые составляют большинство земель страны. В целом, климат Узбекистана классифицируется как континентальный, с обычно жарким летом, часто превышающим 40 ° C, и прохладной зимой около -20 ° C, но иногда ниже -30 ° C. Страна чрезвычайно засушливая, с годовым количеством осадков всего 100-200 мм, в основном выпадает зимой и весной. Водоснабжение страны осуществляется через ряд рек, озер и водохранилищ, причем две реки, а именно Амударья и Сырдарья, являются необходимыми для сельскохозяйственного сектора страны.

9. Ожидаемые воздействия проекта на окружающую среду были рассмотрены на трех этапах - до строительства, на стадии строительства и эксплуатации.

10. На этапе, предшествующем строительству, следующие аспекты могут повлиять на эффективность реализации экологических гарантий в течение всего проектного цикла и могут привести к несоблюдению требований: (i) неэффективная санитарно-защитная зона (буферная зона) для сервисных центров, (ii) не включение экологических требований в тендерную документацию и контракты, (iii) несоответствие

при получении всех необходимых разрешений, (iv) приобретение товаров, технологий и оборудования, которые не соответствуют Списку инвестиционной деятельности АБР в Приложении 5 Заявления о политике безопасности (2009 г.) и национальных стандартах об отработанных газах.

Типовой План Центра Общего Обслуживания

11. Размер буферной зоны для этого проекта обсуждался с Республиканским центром государственного санитарно-эпидемиологического надзора при Министерстве здравоохранения. Все проектные площадки были выбраны с условием, что расстояние между мастерской и ближайшими жилыми домами должно быть не менее 50 метров. Кроме того, во время выбора места было обращено внимание на наличие таких чувствительных рецепторов, как школы, больницы и исторические места. Если на этапе детального проектирования или стадии внедрения расположение сервисных центров изменится, необходимо пересмотреть требования к буферной зоне.

12. Ожидается, что воздействие проекта на окружающую среду на этапе строительства будет зависеть от конкретной площадки и будет включать пыль, образование отходов, включая асбест, и транспортировку строительных материалов. Для трех площадок (в Наманганской, Сырдарьинской и Ферганской областях) дополнительные меры по управлению отходами и борьбе с пылью включены в ПУОС на период строительства, поскольку они расположены вблизи (но за пределами буферных зон) населенных пунктов. Планы управления и утилизации асбеста также будут подготовлены в рамках ПУОС для участков, где присутствует асбест (для Наманганской и Ташкентской областей).

13. В связи с ограниченными и специфическими видами работ по техническому обслуживанию, которые будут выполняться сервисными центрами, воздействие на окружающую среду на этапе эксплуатации будет ограниченным. Воздействия связаны с качеством воздуха и шумом от грузовиков и оборудования, пылью, образованием отходов и увеличением трафика. Воздействие шума и воздуха будет смягчено за счет полива поверхности земли, замены неисправного и загрязняющего оборудования, ограничения времени простоя и ограничения рабочего времени. Сточные воды будут собираться в септики или сбрасываться в муниципальные системы, а мойка автомобилей запрещена. Почва будет защищена путем обеспечения надлежащего хранения топлива, масел и смазочных материалов и утилизации отходов. Все национальные требования по охране труда и технике безопасности (ОТТБ) будут полностью внедрены в сервисных центрах, а все работники и персонал пройдут

обучение по ОТТБ.

14. В соответствии с требованиями АБР с целью информирования общественности в зоне проекта о предстоящих консультациях, объявления о консультациях по планированию были представлены Toza Hudud в каждой области и Республики Каракалпакстан посредством официальных писем в рамках ГКЭООС. Вопросы по буферным зонам для сервисных центров обсуждались со специалистами Ташкентского городского филиала и Республиканской Санитарно-эпидемиологической службой. Состояние экологического мониторинга площадок для захоронения, действующего оборудования и потребности в дальнейшем улучшении экологической базы ГКЭООС обсуждали с Центром аналитического контроля ГКЭООС, Центральным департаментом экологического мониторинга при ГКЭООС, а также с представителями ГКЭООС на провинциальном уровне. Краткое содержание Предварительной Экологической оценки (ПЭО) и ПУОС была опубликована на сайте ГКЭООС 7 октября 2019 года. Полная версия ПЭО на русском языке будет опубликована 31 октября 2019, после завершения перевода

15. Процедура подачи жалоб и заявлений граждан обсуждалась в ходе общественных консультаций в районах проекта. Механизм рассмотрения жалоб (МРЖ) для проекта учитывает национальное законодательство, специфику площадок проекта и результаты общественных консультаций. Toza Hudud будет отвечать за создание соответствующей МРЖ после завершения проекта, а также будет выполнять функции секретаря МРЖ, чтобы обеспечить работоспособность МРЖ для эффективного решения экологических и социальных проблем лиц, затронутых проектом. Предложенная МРЖ была представлена в ходе общественных консультаций пострадавшим людям и обсуждалась с представителями 13 регионов Toza Hudud.

16. Группа по реализации проекта (ГРП) в рамках ГКЭООС будет отвечать за реализацию ПУОС и соблюдение требований АБР по гарантиям и национальным нормативам. ГУП назначит одного специалиста по окружающей среде для контроля за внедрением ПУОС. Как упоминалось выше, МРЖ для смягчения экологических и социальных гарантий была разработана и обсуждена с агентством по реализации и заинтересованными сторонами в ходе общественных консультаций. МРЖ будет создан после эффективности проекта. Отчеты по мониторингу окружающей среды (ОМОС) будут подготовлены и представлены в АБР и соответствующие государственные органы: они включают полугодовые ОМОС и окончательную ОМОС, которая будет включать экологические аудиты после строительства. ОМОС также будут обнародованы на сайтах Toza Hudud и ГКЭООС (на русском языке) и на сайте АБР (на английском языке).

17. Принимая во внимание вышеизложенное, в этом ПЭО делается вывод о том, что проект имеет мало негативных последствий, все из которых могут быть адекватно смягчены. Это улучшит состояние окружающей среды и здоровье населения примерно для 6 миллионов человек, многие из которых живут в сельских районах, путем предоставления или расширения услуг по сбору ТБО по всей стране. Сосредоточив внимание на совершенствовании нормативно-правовой базы, укреплении институтов УТО и улучшении соблюдения экологических норм, проект также представляет собой жизненно важный первый шаг в развитии современных систем УТО для Республики Каракалпакстан и каждой из областей страны. Поэтому рекомендуется, чтобы этот проект был выдвинут для немедленной реализации.

Initial Environmental Examination

Project Number: 51034-002
Loan Number: LXXXX
September 2019

Republic of Uzbekistan: Sustainable Solid Waste Management Project

Prepared by the State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 17 September 2019)

Currency unit	=	Uzbekistan Sum (UZS)
UZS 1.00	=	USD 0.00010643
USD 1.00	=	UZS 9,395.63

ABBREVIATIONS

ABMC	Amu-Bukhara Machine Canal
ACMMP	Asbestos Containing Materials Management Plan
ADB	Asian Development Bank
Association	Toza Hudud Association
CM	Cabinet of Ministers
CPS	country partnership strategy
CSES	Centre for Sanitary and Epidemiological Supervision
EGM	effective gender mainstreaming
EMP	Environment Management Plan
FFM	fact-finding mission
FMA	financial management assessment
Government	Government of Uzbekistan
GPS	global positioning system
IBA	important bird area
ICWC	Interstate Commission for Water Coordination
IEE	initial environmental investigation
IUCN	International Union for Conservation of Nature and Natural Resource
MFC	main flood collector
MSW	municipal solid waste
MSW	municipal solid waste
O&M	operation and maintenance
OM	Oliy Majlis
PIU	project implementation unit
PMU	project management unit
PPP	public-private-partnership
RUz	Republic of Uzbekistan
SCEEP	State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection
SEE	State Environmental Expertise
SES	Sanitary and Epidemiological Services
SPNA	specially protected natural area
SSEMP	Site Specific Environmental Management Plan
SSWMP	Site Specific Waste Management Plan
SWM	solid waste management
Toza Hudud	TH
TRTA	transaction technical assistance
WACS	waste characterization survey
WTP	willingness to pay survey

NOTE:
In this report, "$" refers to US dollars.

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LIST OF ABBREVIATIONS

ADB	– Asian Development Bank
CPS	- Country Partnership Strategy
EA	– Executing Agency
EIA	– Environmental Impact Assessment
EMP	– Environmental Management Plan
EMR	– Environmental Monitoring Report
FAM	– Facility Administration Memorandum
FGD	– Focus Group Discussions
GOU	– Government of Uzbekistan
GRM	– Grievance Redress Mechanism
HH	– Household
ICB	– International Contract Bidding
IEA	– Initial Environmental Assessment
IEE	– Initial Environmental Examination
O&M	– Operation and Maintenance
PMU	– Project Management Unit
PMC	– Project Management Consultant
PPP	- Public-Private Partnership
PPTA	– Project Preparatory Technical Assistance
SES	– Sanitary and Epidemiological Services
SCEEP	– State Committee on Ecology and Environmental Protection
SWM	- Solid Waste Management
TA	– Technical Assistance

GLOSSARY

Glavgosexpertisa	State Department responsible for Conducting Environmental Expertise Under SNPC
Khokim	Governor of administrative unit
Khokimiyat	Regional government authority
KMK	National acronym for Construction norms and regulations
Makhalla	A community of neighbors, which is based on full independence and self-governance.
OVOS	National acronym for EIA assessment process
PZVOS	National acronym for Concept Statement on Environmental Impact
SanR&N	Sanitary - epidemiological norms and regulations
Som	Local currency
SNiP	Set of basic regulatory requirements and regulations governing the design and construction in all sectors of national economy of Uzbekistan
Uzbekenergo	Managerial body in the electric power and coal industries, which are major structural components of the national economy
Uzhydromet	State governing body specially authorized for the solution of tasks in the field of hydrometeorology in the Republic of Uzbekistan and in its activities it is accountable to Cabinet of Ministers
ZVOS	National acronym for Statement on Environmental impact
ZEP	National acronym for Statement on Environmental Consequences

WEIGHTS AND MEASURES

LPCPD – liters per capita per day

NOTE

In this report, "$" refers to US dollars.

EXECUTIVE SUMMARY

1. This initial environmental examination (IEE) summarizes environmental due diligence activities completed for the Asian Development Bank (ADB) funded transaction technical assistance (TRTA) *UZB-9715: Sustainable Solid Waste Management Project* (project), which is assisting the Government of Uzbekistan (government) to prepare a nationwide solid waste management (SWM) investment project. The IEE summarizes the SWM sector's legislative framework, describes the project and its host environment, identifies potential environmental impacts, and specifies mitigation for these impacts. It then recommends detailed actions, monitoring and verification mechanisms to be implemented to ensure that the project meets acceptable levels of environmental compliance, while maximizing stakeholder awareness, involvement and inclusiveness throughout all phases of project development.

2. The proposed project will provide a further, ongoing opportunity for ADB to assist Government to progress its SWM sector reform agenda by actively supporting the implementation of the Government's SWM strategy in a number of areas. As explicitly identified in the action plan of the strategy, the project will assist the Government to (i) update the SWM legal framework by developing specific regulatory directives, (ii) improve the sector's organizational capabilities, build institutional capacity in the Association and Toza Hudud, and promote public-private partnerships (PPPs), (iii) improve environmental monitoring within the State Committee for Ecology and Environmental Protection (the SCEEP), and (iv) substantially improve SWM collection services and strengthen the sector's asset base by providing vehicles, specialized equipment and physical infrastructure.

3. The project is consistent with the ADB country partnership strategy, 2019-2023 for Uzbekistan (CPS),[1] which prioritizes three strategic areas: (i) supporting private sector development, (ii) reducing economic and social disparities, and (iii) promoting regional cooperation and integration.

4. The project aligns with the following impact: environment, health, and living conditions improved. Project outputs are summarized as follows:

- **Output 1: SWM sector regulatory framework enhanced** by assisting government to formulate regulatory directives to improve SWM operations, financial management, institutional performance and environmental monitoring and compliance.

- **Output 2: Association and Toza Hudud capacity strengthened** by formulating a *Toza Hudud* business restructure plan and strengthening operations, transforming the Association into a technical nexus for public and private SWM operators, optimizing PPP practices, and promoting public awareness.

- **Output 3: Environmental monitoring capabilities of the SCEEP improved** by providing funding for capacity development, laboratory equipment and vehicles.

- **Output 4: SWM collection and interim disposal services in small urban centers, peri-urban and rural areas improved nationwide** by (i) building up the functional asset bases of the *Toza Hudud* by providing 300 collection vehicles (12m^3 capacity), 6,000 waste disposal bins (1.1 m^3 capacity), 13 excavators, 13 flatbed trucks, and 13 mobile service vehicles; and (ii) constructing 13 provincial vehicle maintenance service centers (service centers) to provide for sustainable vehicle and equipment O&M.

5. The Project is expected to be implemented within a period of 4.5 years, commencing in

[1] ADB. 2019. Country Partnership Strategy: Uzbekistan, 2019-2023. Manila.

January 2020, and being completed by July 2024. The provision of all equipment and the construction of all civil works will be completed by March 2022.

6. As specifically requested by government, the project provides assistance to improve and expand MSW collection and transfer systems, while the government maintains responsibility for and continues to improve the nation's MSW disposal sites. Government's disposal initiatives currently include (i) closure of unregistered open dumpsites, (ii) closure of over half of the existing 221 registered dumpsites, (ii) rehabilitation of approximately 100 dumpsites to upgrade them to controlled dumpsites, and (iv) commencement of a program to develop sanitary landfills nationwide through the assistance of the ADB, AFD, EBRD and other resources.

7. The project will result in an additional 2.500 tons per day of MSW being collected from small urban areas, peri-urban and rural areas nationwide, to be transferred to existing disposal sites for disposal. The project is therefore considered to have a net positive environmental impact, as without the project, 2,500 tons of MSW per day would continue to be self-dumped, burned or buried throughout communities across the nation, causing environmental impacts.

8. In accordance with national categorization protocol, the project belongs to category IV, as a project with local impacts. A National Environmental Examination will be obtained prior to starting construction works. In accordance with ADB's Safeguard Policy Statement 2009 (SPS 2009), the project belongs to category B, as although the project will have site-specific impacts, few if any of them are irreversible, and mitigation measures will be developed to minimize all others. An initial environmental examination (IEE) is therefore required.

9. The IEE focuses on the environmental examination of the provincial service centers of Output 4, as these facilities are the only civil works structures included in the project. Each Toza Hudud will be provided with a service center for vehicle and equipment repairs and maintenance, in order to improve service quality and minimize downtime. The service centers will be of modular design, sized depending on the vehicle fleets of each region, and in certain cases, include administrative offices for the Toza Hudud. Each service center will have at least three work bays for large vehicles (trucks and equipment), a machine shop, spare parts storage, a management office, and staff rooms including gender-specific locker and sanitation facilities. The buildings will be equipped with solar power systems. The yards themselves will be fenced and will host shaded parking areas for vehicles. The total area of the buildings will be up to 800m^2, and the entire facilities will be on lots of sizes between 3,500m^2 and 10,000m^2.

General Service Center Perspective

10. Uzbekistan is one of the largest countries in Central Asia, sharing its borders with Kazakhstan (north), the Kyrgyz Republic (east), Tajikistan (southeast), Afghanistan (south), and Turkmenistan (southwest). Covering an area of 447,000 km^2, it extends 1,425 km from east to west, and 930 km from north to south. Uzbekistan's physical environment varies markedly: from mountain peaks in the east, to the flat, desert topography of central and western areas that comprises the majority of the nation's lands. Overall, Uzbekistan's climate is classified as continental, with generally hot summers, often exceeding 40^0C, and cool winters of around -2^0C but sometimes below -30^0C. The nation is extremely arid, with annual precipitation of only 100-200 mm, mostly falling during winter and spring. The nation's water supplies are provided through a number of rivers, lakes and reservoirs, with two rivers, namely the Amu Darya and Syr Darya, being essential to the nation's agricultural sector.

11. Anticipated environmental impacts from the project have been reviewed at the three stages – pre-construction, construction and operation stages.

12. During the pre-construction phase, the following aspects may impact on the effectiveness of environmental safeguard implementation: (i) non-efficient sanitarian-protection zone (buffer zone) for service centers, (ii) non-inclusion of environmental requirements into bidding documents and contracts, (iii) non-compliance on receiving all required permissions, and (iv) the purchase of goods, techniques and machinery which do not comply with the ADB Prohibited Investment Activities List, as set forth in Appendix 5 of the Safeguard Policy Statement (2009) and national standards on exhausted gases.

13. The extent of the buffer zone for this project was discussed with the Republican Center of State Sanitarian Epidemiological Surveillance under the Ministry of Health. All project sites were selected with the condition to keep a minimum of 50 meters distance between the workshop area of each service center and the closest living house. Moreover, during site selection, attention was paid to the presence of such sensitive receptors as schools, hospitals and historical places. If during the detailed design stage, or implementation stage, the locations of service centers will change, the buffer zone requirements need to be reassessed.

14. Environmental impacts from the project during the construction stage are expected to be site specific and include dust, waste generation including asbestos, and the transportation of construction materials. For three sites (in Namangan, Syrdarya and Ferghana provinces), additional waste management and dust control measures are included in the EMP for the construction period, due to their locations being in the vicinity (but outside the buffer zones) of settlements. Asbestos management and disposal plans will also be prepared as part of the EMP for sites where asbestos is likely to be present (for Namangan and Tashkent provinces).

15. Due to the limited and specific types of maintenance works which will be provided by the service centers, environmental impacts during the operational phase will be relatively limited. Impacts relate to air quality and noise from idling trucks and equipment, dust, waste generation and increasing traffic. Air and noise impacts will be mitigated by watering ground surfaces, replacing defective and polluting equipment, limiting idling times, and restricting working hours. Wastewater will be collected in septic tanks or discharged to municipal systems, and vehicle will be washing prohibited. Soils will be protected by ensuring adequate fuel, oil and lubricant storage and waste disposal. All national occupational health and safety (OHS) requirements will be fully implemented in service centers, and all workers and staff will be trained on OHS.

16. In compliance with ADB requirements to inform communities in the project area about upcoming consultations, the announcements on planning consultations were submitted to

the Toza Hududs for each province and the Republic of Karakalpakstan through official letters to the SCEEP. Issues on buffer zones for service centers were discussed with specialists from Tashkent city's branch, and the national level of the Sanitarian and Epidemiological Service. The existing status of environmental monitoring of disposal sites, operating equipment and demands in the further improvement of the environmental base of SCEEP was discussed with the Center of Analytical Control of SCEEP, Central Department of Environmental Monitoring under SCEEP, and representatives of SCEEP at the provincial level.

17. The submission procedure for grievances and citizens' applications has been discussed in public consultations in the project districts. The grievance redress mechanism (GRM) for the project takes into account the national legislation, the specificity of the project sites, and the results of public consultations. The Toza Hudud will be responsible for the establishment of their respective GRM after project effectivity, and act as the GRM secretary to ensure that each GRM is operational to effectively handles environmental and social concerns of project affected persons. The proposed GRM was presented during the public consultations to affected people and discussed with representatives of the 13 regions of Toza Hudud.

18. The project management unit (PMU) under the SCEEP will be responsible for EMP implementation, and compliance with ADB's safeguards requirements and national regulations. The PMU will assign one environmental specialist to oversee EMP implementation. As mentioned above, a GRM to mitigate environmental and social safeguard issues has been developed and discussed with the implementation agency and stakeholders during public consultations. The GRM will be established after project effectiveness. Environmental monitoring reports (EMRs) will be prepared and submitted to ADB and relevant government agencies: these include semi-annual EMRs, and a final EMR that will incorporate post-construction environmental audits. The EMRs will also be disclosed to the public on the Toza Hudud and the SCEEP websites (in Uzbek or Russian) and the ADB website (in English).

19. In view of the foregoing, this IEE concludes that the project has a well-supported rationale, few downside impacts of which all can be adequately mitigated, and strong public support. It will improve environmental and public health conditions for approximately 6 million people, many of whom live in poor rural areas, by providing or improving MSW collection services nationwide. With its focus on enhancing the regulatory framework, strengthening SWM institutions and improving environmental compliance, the project also represents a vital first step in the development of modern SWM systems for the Republic of Karakalpakstan and each of the nation's provinces. It is therefore recommended that this project is put forward for immediate implementation.

1. INTRODUCTION

20. Uzbekistan has one of the fastest growing economies in Central Asia, achieving a growth rate of around 8% from 2005 to 2015.[2] Since its independence in 1991, its growth has been attained through a gradual transition to a market-based economy, with emphasis on welfare and social stability. Continued growth is envisioned through further industrialization and economic diversification, together with the careful balancing of urban and rural development. Strategic investments in infrastructure, including solid waste management (SWM), are therefore essential to support economic progress and achieve the nation's development objectives.

21. The proposed project will provide a further, ongoing opportunity for ADB to assist Government to progress its SWM sector reform agenda by actively supporting the implementation of the SWM strategy in a number of areas. As explicitly identified in the action plan of the strategy, the project will assist the Government to (i) update the SWM legal framework by developing specific regulatory directives, (ii) improve the sector's organizational capabilities, build institutional capacity in the Association and Toza Hudud, and promote PPP, (iii) improve environmental monitoring within SCEEP, and (iv) substantially improve SWM collection services and strengthen the sector's asset base through the provision of vehicles, specialized equipment and physical infrastructure.

22. The project is consistent with the ADB country partnership strategy, 2019-2023 for Uzbekistan (CPS),[3] which prioritizes three strategic areas: (i) supporting private sector development, (ii) reducing economic and social disparities, and (iii) promoting regional cooperation and integration. It is also consistent with the operational priorities of ADB's Strategy 2030, which focus on strengthening governance and institutional capacity, addressing remaining poverty, reducing inequalities, promoting rural development, and fostering regional cooperation and integration.[4] The project's focus of improving SWM services in rural areas with reliance on Public-Private Partnership (PPP) modalities is therefore consistent with the CPS and ADB's Strategy 2030. The project aligns with the following impact: environment, health, and living conditions improved. The project has the following outcome: reliable and sustainable SWM services improved and expanded in priority small urban centers and rural areas nationwide. Project outputs are summarized as follows:

a. **Output 1: SWM sector regulatory framework enhanced** through (i) formulation of key regulatory directives that will rationalize and streamline the regulatory framework, (ii) improve waste reuse and recycling, (iii) increase sector financing, (iv) enhance waste transportation and disposal, (v) facilitate PPP intervention, and (vi) improve sector accountability and institutional performance.
b. **Output 2: *Toza Hudud* capacity strengthened** by (i) establishing twinning arrangements with an international training and certification facility, setting up a training center in the Association, and formulating and implementing SWM capacity development programs.
c. **Output 3: Environmental monitoring capabilities of the SCEEP improved** by providing funding for training, capacity development, laboratory equipment and vehicles.
d. **Output 4: SWM collection services in small urban centers and rural areas improved nationwide** by (i) strengthening the operational asset bases of Toza Hudud

[2] Asian Development Bank (ADB). 2016. *Uzbekistan: Economy*. http://www.adb.org/countries/uzbekistan/economy. Growth rates in 2016, 2017 and 2018 were 6.2%, 4.5% and 5.1% respectively, with forecasts of 5.2% for 2019 and 5.5% for 2020.
[3] ADB. 2019. Country Partnership Strategy: Uzbekistan, 2019-2023. Manila.
[4] ADB. 2018. Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific. Manila.

through the procurement of SWM collection vehicles, containers and disposal site machinery, and (ii) establishing vehicle and equipment maintenance service centers (service centers) in each Toza Hudud.

23. The Project is expected to be implemented within a period of 4.5 years, commencing in January 2020, and being completed by July 2024. The provision of all equipment and the construction of all civil works will be completed by March 2022.

2. POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK AND STANDARDS

2.1 Policy and Institutional Framework

2.1.1 National Institutional Framework

24. The Republic of Uzbekistan (RUz) is an independent democratic republic based upon the 1992 *Constitution* (as amended on 28 December 1993, 24 April 2003, 11 April 2007, and 18 April 2011). The national environmental and social policy in Uzbekistan is based on the provisions of the country's Constitution. Under the Constitution, all RUz citizens have equal rights and freedoms and are all equal under the law without distinction as to gender, ethnicity, nationality, language, religion, social background, convictions, personal and social status (Article 18). The Constitution also provides safeguards for human rights and freedoms proclaiming that the state secures rights and freedoms of its citizens (Article 43) and guarantees to everyone juridical protection of rights and freedoms (Article 44), and males and females enjoy equal rights (Article 46).

25. Uzbekistan is a presidential republic in which the *President* is the executive head of the state who secures efficient coordination of governmental authorities. The President issues decrees, resolutions and ordinances which shall be binding across Uzbekistan.

26. The bicameral Supreme Assembly, or *'Oliy Majlis'* (OM), comprising the Legislative Chamber and the Parliament, is the legislature with a power to shape laws. In line with the Constitution any law has legal effect provided it is enacted by the Legislative Chamber, approved by the Parliament and signed by the President. OM defines the national environmental and social policies, approves national environmental programs, develops and adopts national environmental and social legislation, coordinates environmental compliance monitoring actions, defines the rates of environmental charges and establishes respective incentives.

27. The *Cabinet of Ministers* (CM) is the executive. It comprises the Prime Minister, Deputy Prime Ministers, Ministers, State Committees Chairmen and the Government Executive of the Karakalpakstan Republic. The CM exercises state control of environmental protection and natural resources management along with the State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection (SCEEP) and the local governments. Based on its environmental and social mandate, the CM (i) pursues national environmental and social policy; (ii) regulates natural resources management; (iii) is responsible for natural resources inventory and evaluation; (iv) coordinates the development and implementation of national socio-economic programs; (v) develops mitigation measures; (vi) establishes procedures for collecting environmental charges, pollution and waste disposal fees; (vii) sets up limits for the use of natural resources and waste disposal; (viii) develops environmental education and awareness systems; (ix) identifies zones of special environmental management, environmental protection and management regimes; and (x) develops international environmental relations.

28. The Councils of People's Deputies, or *'Kengashi'*, led by governors known as 'khokims', are the representative bodies of government authority in regions, districts, cities and towns (except for towns under regional jurisdiction and city districts). Under the Constitution they address any issues within their mandate and responsibility based on the interests of the state and its citizens. The Kengashi are responsible for (i) law and order; (ii) the security and safety of citizens; (iii) issues of economic, social and cultural development; (iv) local budgets and taxes; (v) local utilities; (vi) environment protection, civil registration; (vii) local standards and regulations, and (viii) enforcement. The term of office for both the Kengashi and the khokim is five years. The khokim is personally responsible for decisions

and actions taken by the Kengash, while decisions of the khokim are binding to all ventures, institutions, organizations, associations as well as public officers and citizens across the respective territory.

29. The environmental responsibility of regional/local government authorities includes: (i) identification of environmental priorities for the respective territory; (ii) approval of regional (local) environmental programs; (iii) inventory and evaluation of natural resources; (iv) inventory of environmentally hazardous facilities; (v) logistical support to environmental actions; (vi) environmental permitting; (vii) waste management; (viii) the collection of environmental charges; and (ix) environmental control.

30. The makhalla (community level organization) is an independent local form of self-government in Uzbekistan. Makhalla pursue general initiatives and actions locally, including environment-related ones. Makhallas are responsible for taking decisions on issues of local importance, such as infrastructure improvement and development, arrangements for khashars (voluntary unpaid work on Sunday), and the provision of social aid to low-income families.

31. Settlements, kishlaks (villages) and auls (mountain villages) are governed by aksakals (chairmen) and their advisors. Theyare elected by the gathering of citizens for a period of 2.5 years.

2.1.2 Environmental Management Regulators

A. State Committee for Ecology and Environmental Protection

32. *The State Committee for Ecology and Environmental Protection* (SCEEP or Goskomecologiya) is the primary agency and environmental regulator responsible for implementing the Law on Environmental Protection (1992). The committee reports to the Parliament and is accountable to the Cabinet of Ministers of the Republic of Uzbekistan. The SCEEP is responsible for supervising, coordinating and implementing environmental protection policies and managing the usage and renewal of natural resources at the central, region and district levels.

33. The main tasks and activities of the SCEEP are:

- State administration in the field of ecology, environmental protection, and the rational use and processing of natural resources;
- Ensuring favorable environmental conditions, the protection of ecological systems, natural complexes and individual objects, and, where possible, improving environmental conditions;
- Implementation of state control over compliance with legislation in the field of solid waste management (SWM), and the organization of an effective system for the collection, transportation, recycling and disposal of waste, in close cooperation with the local authorities and the self-government of citizens;
- State environmental control over compliance with legislation in the field of protection and use of land, mineral resources, water, forests, protected natural areas, flora and fauna, and protection of atmospheric air;
- Coordination of work on ecology and environmental protection, ensuring interdepartmental cooperation in the development and implementation of a unified environmental and resource-saving policy;
- Maintaining a state cadastre in the field of ecology and environmental protection, as well as state registration of nurseries for the breeding and maintenance of wild animals, wild plants, zoological and botanical collections; and
- Organization of environmental education, as well as retraining and advanced

training of specialists in the field of ecology and environmental protection.

34. The Committee is regulated by President Resolution No. 5024 'On Improving the System of State Management in the sphere of Ecology and Environmental Protection' of 21th April 2017.

35. The structure of SCEEP takes the form of a central body in Tashkent with regional branches and agencies providing scientific and technical support. Regional environmental authorities are structured similarly to the SCEEP.

36. The other State agencies that are involved in the regulation and protection of the environment include:

- Ministry of Water Resources;
- Ministry of Agriculture;
- State Committee for Geology and Mineral Resources;
- Centre of Hydro-meteorological Service (Uzhydromet);
- Ministry of Health (MoH RUz);
- State Inspectorate for Exploration Supervision, Operations Safety Supervision of Industry, Mining and Utilities Sector (Sanoatgeokontekhnazorat); and
- Sanitary and Epidemiological Services (SES).

B. Ministry of Water Resources

37. The *Ministry of Water Resources* is responsible for water allocation among different users within the nation. Based on forecasts and limits provided by the Interstate Commission for Water Coordination (ICWC), water is allocated among users with the priority given to the drinking water supply sector.

C. Ministry of Agriculture

38. The *Ministry of Agriculture* is responsible for the implementation of a unified technical policy in agriculture, based on (i) in-depth study and implementation of advanced farming systems; (ii) ensuring stable production of the most important agricultural products; (iii) ensuring the introduction of new farming systems, highly efficient agricultural technologies, modern types of agricultural machinery for agriculture and livestock breeding; (iv) implementation of measures for reclamation of irrigated land; and (v) ensuring the expansion and rational use of forest resources, and monitoring the compliance with forest legislation and others.

D. State Committee for Geology and Mineral Resources

39. *The State Committee for Geology and Mineral Resources*, together with the Geological Survey Services of the neighboring countries, identify and study the focal points of radioactive and toxic pollution within trans-boundary territories, and prepare geological maps and atlases reflecting among other things, hazardous zones and sections. In accordance with the procedure established by legislation, the committee also exercises control over the protection of geological and mineralogical facilities, as well as groundwater from pollution and depletion.

E. Uzhydromet

40. *Uzhydromet* establishes and maintains the State Hydro-Meteorological Fund of Data, and the State Fund of Data on environment pollution. It is also responsible for (i) the state accounting of surface waters, (ii) systematic observations of air, soil and surface water, and (iii) the assessment of hydro-meteorological phenomena.

F. Ministry of Health

41. *The Ministry of Health* develops and approves sanitary regulations, rules, and hygienic standards. It also carries out state sanitary supervision functions, including the methodological supervision of the work of the sanitary and epidemiological services, regardless of their departmental subordination.

G. Sanoatgeokontekhnazorat

42. *The State Inspectorate for Supervision of Subsurface Resources Geological Investigation, Safe Work in Industry, Mining, Utilities and Household Sector (Sanoatgeokontekhnazorat)* works together with the SCEEP in the field control of geological investigations, and use and protection of subsurface resources.

H. Sanitary and Epidemiological Services (SES)

43. The *Sanitary and Epidemiological Services (SES)* – monitors the sanitary and hygienic status of environments. It is mandated for example to prohibit the use of stimulants and growth regulators of agricultural plants and animals, pesticides and others in the event of a harmful effect on human health.

2.1.3 Solid Waste Management Sector Regulators

44. In accordance with the Laws of the Republic of Uzbekistan "On Nature Protection" and "On Waste", state regulation in the field of SWM, is carried out by the ***Cabinet of Ministers of the Republic of Uzbekistan***, specially authorized state bodies in the field of SWM, as well as local governing authorities.

45. At the state level, the general authority to control compliance with legislation in the field of SWM, the organization of an effective system of collection, transportation, disposal, recycling and landfilling of MSW are entrusted to the ***SCEEP***, which, in close cooperation with local government bodies and self-governing bodies of citizens:

- Provides state control over the activities of state and economic management bodies, local executive authorities, specialized sanitation organizations in cities and district improvement offices, ***state unitary enterprises "Toza Hudud", "Maxsustrans"***, as well as legal entities and individuals on compliance with legislation in the field of SWM;
- Organizes control over the creation of the collection points, the timely removal of waste, the prevention of the formation of unauthorized waste dumpsites, the management of landfills, and the utilization, recycling, disposal and selling of waste;
- Collects and analyzes information related to SWM, maintaining the state cadastre of their landfilling and utilization sites;
- Assists self-governing citizen bodies and non-governmental non-profit organizations in the implementation of public environmental control;
- Organizes interaction with government bodies, local executive authorities, and citizens' self-government bodies on the development and implementation of measures to eliminate unauthorized dumpsites; and
- Monitors the sources of soil pollution in the areas of storage of solid waste.

46. The ***Ministry of Health of the Republic of Uzbekistan*** in the field of SWM is assigned to:

- Implement state sanitary and epidemiological surveillance for compliance with established sanitary standards and rules of SWM;

- Determine measures to protect the life and health of citizens from the harmful effects of waste;
- Issue reports of the state sanitary and hygienic examination of SWM facilities;
- Establish sanitary and hygienic requirements for goods produced from waste, and issue hygienic certificates for them;
- Determine the degree of danger of waste to the life and health of citizens.

2.2 Legal and Regulatory Framework

2.2.1 National Natural Resources and Environmental Legislation

47. The major emphasis of the environmental policy of Uzbekistan is on environmental safety being regarded as a strategic component of national security, and the most important aspect of protecting the vital interests of the state, society and identity. The environmental safety policy of the country is based on the Constitution, national laws, the National Security Concept of the Republic of Uzbekistan, the principles of the Rio de Janeiro Declaration on Environment and Development, and the Johannesburg Declaration on Health and Sustainable Development, with due regard of national commitments under international conventions and agreements, as well as the legislative experience of leading countries.

48. The conservation policy of Uzbekistan, supported with mitigation and environmental management measures, is based on the following principles:

- Integration of economic and environmental policy to support conservation and the restoration of the environment as pre-requisites for increasing the society standard of living;
- Transitioning from the protection of individual elements of nature, to the overall and integrated conservation of eco-systems; and
- Ensuring that all members of society are responsible for environment protection, biodiversity conservation, environmental improvement, and securing healthy environmental conditions for the population.

49. Since independence, Uzbekistan has developed over 100 environmental laws and regulations, and revised old Soviet legislation and policies. A key national objective is to transition to sustainable social and economic development. For this purpose, national environmental legislation has been revised and improved, new environmental laws and regulations enacted, programs and action plans developed to address environmental issues, and the sustainable use of natural resources promoted.

50. The legal framework in the field of nature protection and management provides citizens the rights and duties specified in the country's Constitution. Specific articles that address environment protection issues within the Constitution are:

- Article 50. All citizens shall protect the environment;
- Article 51. All citizens shall be obliged to pay taxes and local fees established by law;
- Article 54. Any property shall not inflict harm to the environment; and
- Article 55. Land, subsoil, flora and fauna and other natural resources are protected by the state, and considered to be resources of national wealth subject to sustainable use.

51. Uzbekistan has also enacted several supporting laws and statutes for environmental management and is party to several international and regional environmental agreements and conventions. The key national environmental law is the Law on Nature Protection (1992).

52. A brief description of this law and the other supporting laws related to environmental protection follows.

A. Law on Nature Protection (1992, last amended 19.04.2018)

53. The law "On nature protection" (Law #754-XII, 1992) states the legal, economic, and organizational bases for the conservation of the environment and the rational use of natural resources. Its purpose is to ensure balanced relations between humans and nature, to protect the environmental systems, and to guarantee the rights of the population of a clean environment. According to the legislation, the Cabinet of Ministries of Republic of Uzbekistan, the SCEEP, and the local government bodies are responsible for implementing state laws on environmental protection and management, and the use of natural resources. Article 25 of this law states that State Environmental Expertise (SEE) is a mandatory measure for environmental protection. In addition, Article 25 states that the implementation of a project without a positive conclusion of the SEE is prohibited.

B. Supporting National Legislation

54. State environmental control of issues related to the protection of soil and water, air, flora, fauna, and specifically the environmental safety of the population, is exercised through a range of national environmental laws and regulations. The main national laws applicable to this project are summarized in the following sections.

Air quality and air emissions

55. The following provides an overview of key legislation relating to air emissions in Uzbekistan, and respective national requirements applicable to the project.

56. The key regulators responsible for air emissions and ambient air quality are:

- The SCEEP, which develops air quality standards to protect the environment, the climate and the ozone layer; and
- The Ministry of Health, which develops air quality standards (sanitary norms) to protect human health, and oversees compliance with hygienic norms and standards associated with air quality.

57. The key legislation relating to air emissions and ambient air quality applicable to the project includes the following:

Table 1: Key Environmental Legislation on Air Quality and Air Emissions

National Laws
Law of the Republic of Uzbekistan on Atmospheric Air Protection (#353-I of 27.12.1996 (as amended on 14.03.2019) This law describes regulations on atmospheric protection and its objectives. It specifies standards, quality and deleterious effect norms, requirements on fuels and lubricants, production and operation of vehicles and other transport means and equipment, ozone layer protection requirements, obligations of enterprises, institutions and organizations toward atmospheric protection, and compensations for damages from atmospheric pollution. The Cabinet of Ministers, the SCEEP and local government bodies are responsible for implementing the law.
Law of the Republic of Uzbekistan on Sanitary and Epidemiological Welfare of the Population (#393 of 26.08.2015) This law regulates social relations on sanitary-epidemiological well-being and radiation safety, the rights of a person to a healthy environment and others, and the rights and guarantees of their implementation.
Criminal Code, Section 4. Environmental Crimes (approved on 22.09.1994; as amended on 09.07.2019)

This code specifies the conception and defines punishment for violations of the norms and requirements of environmental safety, willful concealment or misrepresentation of environmental pollution, and violations relating to flora and fauna, water, land, subsoil, and protected areas use.
Law of the Republic of Uzbekistan on Environmental Expertise (#73-II of 25.05.2000 (as amended on 2017). This law specifies the purposes, objectives and types of environmental expertise. It defines the qualifications, duties and obligations of environmental experts. The SCEEP has overall responsibility for implementing this legislation through The Departments of Environmental Expertise (Glavgosekoexpertiza and Gosecoexpertisa which are both under the SCEEP) and the Provincial branches of SCEEP.
Decrees
Decree of Oliy Majlis of Uzbekistan on Enactment of the Law on Atmospheric Air Protection (#354-I of 27.12.1996)
Decree of the Cabinet of Ministers of the Republic of Uzbekistan On the Approval of the Regulations On the State Environmental Expertise (#949 of 22.11.2018)
Decree of the Cabinet of Ministers of the Republic of Uzbekistan on Improving the System of Pollution and Waste Disposal Charges in Uzbekistan (#199 of 01.05.2003 (as amended on 02.04.2010)
Decree of the Cabinet of Ministers of Uzbekistan on Measures to Implement the National Strategy for Reducing of Greenhouse Gases Emissions (#389 of 09.10.2000)
Regulations
Instructions on Inventory of Pollution Sources and Rating Pollutant Emissions for Ventures in Uzbekistan enacted by Order of the Chairman of the SCEEP of the Republic of Uzbekistan (#105 of 15.12.2005)
Sanitarian Rules and Norms
SanR&N RUz No.0179-04 - Hygienic norms. List of Maximum Allowable Concentrations (MACs) of pollutants in ambient air of communities in the Republic of Uzbekistan including Annex 1.
SanR&N RUz No.0246-08 - Sanitary norms and requirements to protect ambient air in communities of the Republic of Uzbekistan
SanR&N No 0293-11 - Hygienic Norms. List of Maximum allowed concentration (MAC) of pollutants into the atmosphere air of settlements in Uzbekistan
SanR&N No 0147-04 - Hygienic Norms. List of maximum permissible concentration (MPC)-microorganism-producers in the air of settlement areas

58. Rating of pollutant emissions in the air applicable to projects under design is done by setting the maximum allowable emissions of those substances into the atmosphere (MAE). MAE is the mass of pollutant emissions per unit of time from the respective source from the perspective of its development and dispersion of hazardous substances in the atmosphere, creating ground-level concentrations not exceeding the maximum permissible concentrations fixed by SCEEP. According to the Guidelines for Inventory of Sources and Rating the Emissions into the Atmosphere for Uzbek Enterprises, registered by the Ministry of Justice on 3 January 2006, No 15-33, rated emissions by ingredients shall meet the following conditions:

$$C_m \leq MAC_{max} \times Quota, \text{ where}$$

C_m: The maximum pollutant concentration at the border of the facility is determined by calculation based on the characteristics of the emission source and the gas-air mixture by the method of CIS-86 Methodology for Calculation of Concentrations in the Air of Harmful Substances Contained in the Enterprises Emissions, 1987.

MAC_{max}: The maximum single maximum permissible concentration (MAC), mg/m^3, determined by Uzbek *SanR&N No 0179-04 Hygienic Regulations List of Maximum*

Permitted Concentrations of Pollutants in the Air of Populated Areas in the territory of the Republic of Uzbekistan.

59. The MAE standard is established based on the analysis of areas of ground-level concentrations created by all sources of the enterprise for each substance (in accordance with MAE are established for fully loaded process and gas-cleaning equipment and their normal operation). MAE shall not be exceeded in any 20-minute period of time.

60. For this purpose, inventory of all sources of pollutant exhausts shall be performed, data shall be collected by type and quantity composition of pollutants and sources shall be defined representing the greatest atmospheric air pollution hazard.

Water use and discharge

61. Water resources management, allocation and use in Uzbekistan are under the control of the Ministry of Water Resources, which oversees national, provincial and district departments of agriculture and water resources, and inter-provincial and inter-district canal management authorities.

62. Legislation related to water resources management, allocation and use within Uzbekistan is summarized as follows:

Table 2: Key Environmental Legislation on Water Use and Discharge

National laws
Constitution of the Republic of Uzbekistan (Article 55) "Land, depths, water, flora and fauna and other natural resources are national wealth, should be rationally used and are under state protection".
Law of the Republic of Uzbekistan on water and water use (#837-XII of 06.05.1993, as last amended on 11.05.2019) This law regulates the water relations and rational use of water by the population and economy. It regulates the protection of waters from pollution and depletion, and the prevention and liquidation of harmful effects of water, improvement of water bodies, and the protection of the rights of enterprises and institutions, organizations and dehkan farms and individuals in the field of water relations. The law also authorizes the State (through authorized agencies) to carry out the management and control of water use and protection. The following special state agencies are authorized to regulate water use: • Ministry Water resources management (surface water); • State Committee for Geology and Mineral Resources (or Goskomgeologia); • State Inspectorate for Exploration Supervision, Operations Safety Supervision of Industry, Mining and Utilities Sector (or *Sanoatgeokontekhnazorat*).
Land Code of the Republic of Uzbekistan (approved on 30.04.1998, as last amended on 05.04.2019) The code, which came into effect on July 1, 1998, regulates land relations in order to ensure that present and future generations (i) have science-based, sustainable use and conservation of land, (ii) breeding and improvement of soil fertility, (iii) conservation and improvement of the environment and creating conditions for equitable development of all forms of management, and (iv) the protection of individuals and legal entities' right for land, as well as strengthening the rule of law in this area. The law specifies that the system of land use management must be environmentally and resource effective, provide for the conservation of soil, and limit the impact on flora and fauna, geological resources and other components of the environment. Also, according to the Code, the estimate of impact of construction works or implementation of technologies, and the effectiveness of measures envisaged for the use and protection of land, are to be based on environmental impact assessment.

Decrees
Decree of the Cabinet of Ministers of the Republic of Uzbekistan on additional measures to improve environmental activities in communal services (#11 of 03.02.2010, as amended on 26.03.2019)
Decree of the Cabinet of Ministers of the Republic of Uzbekistan on confirming the regulations on water protection areas in water reservoirs and in other water bodies, rivers, main canals and collector, as well as drinking and domestic water supply sources, and for medical and recreation purposes in the Republic of Uzbekistan (#174 of 07.04.1992)
Decree of Cabinet Ministries of Uzbekistan on the procedure of issuing permits for special water use and consumption (#171 of 14.06.2013)
Decree of Cabinet Ministries of Uzbekistan on adoption of order of water use and water consumption in the Republic of Uzbekistan (#82 of 19.03.2013, as last amended on 10.10.2018) This decree defines the order of nationwide water use and consumption, and the state management of water use. It states that several ministries implement control on water use, including (i) local government entities, (ii) State nature protection committee, (iii) State Inspection for geological study of subsoil, safety in industry, mining and domestic sectors of the Cabinet of Ministers, (iv) Ministry of Health, and (v) Ministry of Agriculture and Water Management, in the manner prescribed by law. The decree also regulates trans boundary water bodies use.
Regulations and Standards
Regulation Document on Regulations on rationing discharges of pollutants into water bodies and on the terrain, taking into account technically achievable performance of wastewater treatment (RH 84.3.6:2004)
Regulation Document on Order of endorsement and approval of projects of wastes disposal and limits for its disposal (RH 84.3.22:2006)
O'z DST 951:2011 - Water quality. Sources of centralized household water supply. Hygienic, technical requirements and classification code
O'z DST 950:2011 - Drinking water. Drinking water. Hygienic requirements and quality control
Sanitarian Rules and Norms
Hygiene requirements for the protection of surface waters in Uzbekistan (SanR&N No 0172-04)
Main criteria for hygienic assessment of the level water bodies contamination for health risks population in Uzbekistan (SanR&N No 0255-08)
Sanitarian requirements for development and approval of maximum allowed discharges (MAD) of pollutants discharged into the water bodies with waste waters (SanR&N No 0088-99)
Others
Construction Norms and Rules on Guideline on content, endorsement and approval of design estimates for construction of enterprises, buildings (CNR) 1.03.01-96

63. All interrelations in water resources within Uzbekistan are based on the above documents and corresponding contracts on water delivery. Water is delivered on a contractual basis to all water consumers, including provincial and district water organizations and separate units. As a rule, the volume of water passing through the border of a neighboring state is specified in interstate agreements.

Solid Waste Management

64. This section provides an overview of the key legislation concerning SWM. The Cabinet of Ministers establishes and approves national policies, strategies, programs and procedures relating to SWM, including the allocation of hazardous waste disposal sites and the adjustment of waste disposal charge rates, as set forth in Article 5 of the Law on Wastes. Local governments are responsible for SWM policies, strategies and procedures at the local

level.

Table 3: Key Environmental Legislation on SWM

National laws
Constitution of the Republic of Uzbekistan (Article 55) "Land, depths, water, flora and fauna and other natural resources are national wealth, should be rationally used and are under state protection".
Law on Wastes (#362-II of 05.04.2002 (as last amended on 11.10.2018) The law addresses SWM, exclusive of emissions and air and water pollution, and confers authority to the SCEEP concerning inspections, coordination, ecological expertise and establishing certain parameters with regard to the locations where waste may be processed. It specifies that citizens have the right to a safe and healthy environment, to participate in the discussion of projects, and to compensation for damage to their lives, health or property. Dangerous waste that is transported domestically or internationally must pass ecological certification and be moved by special vehicles. The import of any radioactive waste for storage or burial is strictly forbidden. Although this is not specified in the Law, special privileges are given to persons and enterprises that develop and introduce technologies for reducing or recycling waste. Enterprises are responsible for their waste, but, if they recycle, they may be provided with assistance from the state budget, the National Fund for Nature Protection, or voluntary payments. The principal objective of this law is to prevent negative effects of waste on people's lives and health, as well as on the environment, reduce waste generation, and encourage the rational use of waste reduction techniques in household activities. The law regulates the procedures for treating solid wastes, and defines the authorities of various institutions involved in SWM. It also stipulates the rules for transporting solid waste and provides market-based incentives for the efficient treatment of solid wastes. The Cabinet of Ministers, the SCEEP, the Ministry of Health, 'Communkhizmat', and 'Sanoatkontekhnazorat' are responsible for implementing the law.
Law on Radiation Safety (#120-II of 31.08.2000) This law regulates relations related to ensuring radiation safety, protecting life, health and property of citizens as well as the environment from the harmful effects of ionizing radiation.
Decrees
Decree of the Cabinet of Ministers of the Republic of Uzbekistan on the Regulation of the Importation into the Republic of Uzbekistan and the Export from its Territory of Environmentally Hazardous Products and Waste (#151 of 19.04.2000)
Decree of the Cabinet of Ministers of the Republic of Uzbekistan on Approving Provisions on the Procedure for Conducting Separate State Cadasters (#250 of 15.11.2005)
Decree of the Cabinet of Ministers of the Republic of Uzbekistan on Measures to Strengthen Material Incentives for Improvement Workers (#91 of 1.04.2009)
Decree of the Cabinet of Ministers of the Republic of Uzbekistan on Measures to Improve the Organization of Works on the Improvement (landscaping) of the City of Tashkent (#251 of 11.11.2010)
Decree of the Cabinet of Ministers of the Republic of Uzbekistan on measures to improve the organization of work on the improvement (landscaping) of settlements of the Republic (#4 of 10.01.2013)
Decree of the Cabinet of Ministers of the Republic of Uzbekistan on the approval of regulatory legal acts in the field of ecological control (#286 of 08.10.2015)
Decree of the Cabinet of Ministers of the Republic of Uzbekistan on approval of the rules for the provision of public services (#194 of 15.07.2014)
Decree of the Cabinet of Ministers of the Republic of Uzbekistan on Approval of the Regulation on the Procedure for Implementation of State Accounting and Control in the Field of SWM (#295 of 27.10.2014)

Decree of the Cabinet of Ministers of the Republic of Uzbekistan on the Approval of the Provision on the State Committee of the Republic of Uzbekistan on Ecology and Environmental Protection (#29 of 15.01.2019)
Decree of the Cabinet of Ministers of the Republic of Uzbekistan on Approval of the Regulations on the Procedure for the Formation and Use of the Funds of the Ecology, Environmental Protection and Waste Management (#375 of 9.06.2017)
Decree of the Cabinet of Ministers of the Republic of Uzbekistan on Measures to Improve the Procedure for Fixing Territories for Carrying Out Services in the field of sanitary cleaning (#765 of 25.09.2018)
Decree of the Cabinet of Ministers of the Republic of Uzbekistan on Measures for Further Improving the Efficiency of Work in the Area of Municipal Solid Waste Management (#787 of 2.10.2018)
Decree of the Cabinet of Ministers of the Republic of Uzbekistan on Approval of the collection and disposal of used mercury-containing lamps (#266 of 21.09.2011, as last amended on 30.04.2019)
Decree of the Cabinet of Ministers of the Republic of Uzbekistan on Measures for the Further Improvement of Economic Mechanisms for Ensuring Nature Protection (#820 of 11.10.2018)
Decree of the Cabinet of Ministers of the Republic of Uzbekistan on Enhancing the Use and Recycling of Mercury Lamps and Devices (#405 of 23.10.2000)
Orders
Order of disposal of hazardous chemicals and hazardous materials on special landfills, their protection and maintenance, approved by the SCEEP, Ministry of emergency situations, Ministry of Finance, Ministry of Healthcare (#2438 of 20 March 2013). This regulation provides definitions of hazardous chemicals, toxic materials, special landfills and special transportation vehicles. The State organization "Qishloqkimyo" (Agriculture chemicals) is responsible for the transportation, handling and disposal of hazardous materials. Transportation of such materials has to be conducted in accordance with Resolution of Cabinet Ministries of Uzbekistan No. 35 of 16 February 2011 on "Rules of hazardous materials transportation on the territory of Uzbekistan". The Ministry of Health and the SCEEP are involved into the endorsement of proper completion of works. The following ministries are responsible for conducting the monitoring of special landfills: • The SCEEP – reviewing compliance with environmental requirements; • Branches of the Ministry of Health – reviewing compliance with sanitarian norms and rules during the implementation of works with hazardous chemicals, toxic materials and their packages; • Ministry of Emergency Situation – conducting works to avoid emergency situations and handling any consequences. • Branches of the State Committee on Geology and mineral resources – conducting permanent monitoring of groundwater quality.
Rules for the transportation of household waste (reg. No. 2625 of November 12 2014)
Instructions for the design and operation of landfills for municipal solid waste (reg. No. 2810 of July 14, 2016)
Regulations
RD O'z RH 84.3.15.2005 - Regulation Document on the waste inventory procedure
RD O'z RH 84.3.16.2005 - Regulation Document on Guidelines for setting waste disposal limits
RD O'z RH 84.3.17.2005 - Regulation Document on Production and consumption waste. Procedure for developing the Waste Disposal Limit Document
RD O'z RH 84.3.18.2005 - Regulation Document on Production and consumption waste. Waste Data Sheet
RD O'z RH 84.3.19.2005 - Regulation Document on Production and consumption waste management. Terms and definitions

RD O'z RH 84.3.21.2005 - Regulation Document on Guidelines for setting waste generation
RD O'z RH 84.3.22.2006 - Production and consumption waste. Waste inventory and waste disposal limits approval procedure (issued by the Goskomecologiya of Uzbekistan, 2006)
RD O'z RH 84.3.11.2004 - Requirements for handling mercury and its compounds, mercury-based waste, and mercury containing devices
RD O'z RH 84.3.10.2004 - Regulation on handling mercury-containing products in the Republic of Uzbekistan
RD O'z RH 84.3.8.2004 - Methodology for integrated waste hazard rating
Instruction for hazardous wastes generation, use and storage reporting as per Form No.3 – Hazardous Waste (half-year, annual reporting) (issued by the State Statistics Department of the Republic of Uzbekistan, 1997)
KMK 201.12-96 - A Landfill for burial and land storage of industrial hazardous wastes
Provisional waste norms for cities and regions of Uzbekistan approved by *khokimyats*
Sanitarian Rules and Norms
SanR&N No. 0127-02 - Sanitarian Rules of inventory, classification, storage and disposal of industrial wastes
SanR&N No. 0128-02 - Hygienic classifier of toxic industrial wastes in the Republic of Uzbekistan
SanR&N No. 0157-04 - Sanitarian requirements on storage and disposal of solid waste in special landfills
SanR&N No. 0158-04 - Sanitarian Rules and Norms on collection, transportation and disposal of wastes contained asbestos in Uzbekistan
SanR&N No. 0168-04 - List of asbestos-cement materials and construction, allowed for using and field of its implementation
SanR&N No. 0297-11 - Sanitary rules and standards for cleaning the territory of populated areas from solid household waste in the conditions of Uzbekistan
SanR&N № 0329-16 - Sanitary rules and standards of maintenance and landscaping of populated areas in the Republic of Uzbekistan
SanR&N no. 0350-17 - Sanitary standards and rules for the protection of atmospheric air in populated areas of the Republic of Uzbekistan
Codes
Code of the Republic of Uzbekistan "On Administrative Responsibility" (1994)
Housing Code of the Republic of Uzbekistan (1998)
Land Code of the Republic of Uzbekistan (1998)
Others
GOST 17.0.0.05-93 - Unified system of standards for environmental protection and rational use of resources. Waste Data Sheet. Composition, content, presentation and amendment procedures
GOST 17.9.0.2-99 Environment protection. Waste management. Waste Data Sheet. Composition, content, presentation and amendment procedures
GOST 17.9.1.1-99 Environment protection. Waste management. Waste classification. Waste definition by the genetic principle and categorization
GOST 30774-2001 Resources saving. Waste management. Waste Hazard Data Sheet. Main provisions
GOST 30775-2001 Resources saving. Waste management. Identification and coding. Main provisions

65. The Uzbekistan Law on Wastes regulates SWM and requires entities to carry out rating and develop limits of waste disposal in order to ensure the health and safety of both citizens and the environment. The following provides an overview of key provisions of the law applicable to the Project:

- The main objective is to ensure that SWM avoids any impact to life and health of citizens, and the environment. Any activity of any project may be restricted, suspended or terminated in case of non-compliance with waste legislation that entails damage to life and health of citizens and the environment, or when hazardous waste is generated without technical or other safety measures to protect the life and health of citizens, and the environment (Article 17);
- The project shall comply with sanitary norms and standards, safety and environmental requirements to ensure efficient SWM (Article 22);
- Waste generated by the project shall be the property of the project (Article 4); and
- Provided any international agreement signed by the Republic of Uzbekistan stipulates other requirements than those specified in the nation's SWM legislation, requirements of the international agreement shall govern (Article 3).

66. *SanR&N RUz - 0157-04 - Sanitary requirements for storage and disposal* of **municipal solid wastes (MSW)** at landfills in Uzbekistan defines that MSW shall be collected through a unified system of specialized utilities, and shall be disposed at MSW landfills.

67. Municipal solid waste (MSW) may include various items, goods, materials unsuitable for further use, and waste like paper, food waste, wood, metals, textiles, leather, rubber, glass, stones, charcoal and ash, house and street sweeps, fallen leaves, parts and screenings (particles of 15 mm or less).

68. **Hazardous waste** in Uzbekistan is defined as waste that contains substances with at least one of the defined hazardous properties (toxicity, infectivity, explosive hazard, fire hazard, high reactivity, radioactivity) and available in such amounts and in such a way as to pose an imminent or potential risk to human life and health, the environment, or both in their current state or when exposed to other substances.

69. Hazardous waste is classified into four groups known as 'hazard classes'. Waste hazard is assessed based on the provisions of *SanR&N - 0128-02 29.07.02 - Hygienic classifier of industrial hazardous waste* and *SanR&N - 0127-02 29.07.02 – Sanitary procedures for industrial waste inventory, classification, storage and disposal*.

70. Waste hazard classes include:

- Class I – extremely hazardous waste;
- Class II – highly hazardous waste;
- Class III – moderately hazardous waste; and
- Class IV – low-hazardous waste.

71. Hazard classes, physical characteristics and chemical composition of toxic industrial waste are determined by designated process laboratories of companies or research institutes requiring involvement of specialists from Goskomecologiya and the Sanitary Epidemiological Stations (SES).

72. The State Statistics Committee has generated a special statistics form to collect data on generated hazardous wastes: Form _ 3- Environment. Hazardous Waste Generation, Handling and Storage Report. This report provides information on 15 streams of waste distinguished by pollutants (chrome, asbestos, mercury, etc.) and hazard classes.

Waste Transportation

73. The transportation of hazardous wastes shall be in specially designated types of vehicle with a waste transportation certificate and a permit. Responsibility for safe transportation of hazardous waste shall be with a transporting organization (Law on Wastes, Article 20).

74. Provided generated waste is subject to export and import operations, or hazardous waste is subject to transportation, an environmental certification procedure shall be completed by the project to confirm compliance with sanitary and environmental norms and standards associated with SWM (Law on Wastes, Article 19).

Waste Recycling and Re-use

75. *MSW* may be re-used as material for backfilling open pits and quarries provided food waste content is less than 15%.

76. The national requirement for *mercury-containing waste and materials* (spent mercury lamps, devices, etc.) is to use only specialized contractors for recycling and treatment properly licensed by Goskomecologiya of Uzbekistan. Currently mercury recycling facilities are available in Tashkent, Andijan, Fergana, Navoi, Zaravshan and Bukhara cities (Decree of the Cabinet of Ministers of the Republic of Uzbekistan on Enhancing the Use and Recycling of Mercury Lamps and Devices No.405 of 23.10.2000).

Waste Storage and Disposal

77. The Law on Wastes (Article 22) specifies general requirements for waste storage and disposal. Waste disposal of recyclable waste is prohibited in Uzbekistan. Storage and disposal of waste in the environment including in nature conservation and protected areas, settlements, health and recreational areas or historical and cultural facilities is prohibited. Waste disposal in subsoil is allowed in exceptional cases provided special investigations prove it is safe for health, the environment, and natural resources.

78. All wastes (hazardous and non-hazardous) generated and landfilled by the project will be subject to waste disposal charges used in Uzbekistan as an economic instrument to promote waste recycling and re-use.

79. *MSW landfills* in Uzbekistan are supposed to be accommodated in such a way as to ensure that landfill operations comply with sanitary and epidemiological requirements and are safe to both human health and the environment. A MSW landfill may service one settlement or a group of settlements.

80. MSW landfills may be used to dispose of construction waste and some types of industrial waste rated at Hazard Class III and IV however this will require a special approval from a respective Centre for Sanitary and Epidemiological Supervision (CSES).

81. Decontamination and disposal of toxic industrial wastes shall be carried out at special engineering facilities - landfills - taking into account their class of hazard, by incineration, neutralization or dumping.

82. Industrial hazardous waste shall be disposed at hazardous waste landfills as specified in SanR&N RUz - 0127-02 29.07.02 – Sanitary procedures for industrial waste inventory, classification, storage and disposal.

83. Related to the disposal of *wasted asbestos*, SanR&N No 0158-04 regulates a

procedure of wasted asbestos handling. It describes the procedure of collecting wasted asbestos. Wastes containing asbestos have to be disposed of by methods that avoid dust generation. In the case of manually collected wastes, personnel protection equipment for respiratory organs (respirators) have to be used. Bulk materials collected by other methods should be placed into impermeable bags (containers). Replacement of the bags (containers) should be conducted by mechanized methods.

84. Solid wastes containing asbestos should be storage in places where they will not be destroyed during the period of storage. Bags (or other containers) used for storage of wastes should be disposal by grinding and packing into dense transportable piles in the special indicated places. These bags could not be reused as a waste paper or package.

85. All containers with asbestos wastes should have appropriate inscriptions and labeling. During the process of operations on collecting and temporarily storage of wastes contained asbestos, all workers should wear appropriate clothing and respirators. Works related with wastes loading, transportation, unloading and disposal should be mechanized; transportation should avoid spilling of wastes and prevent pollution of environment. Transportation of unpacked asbestos in open trucks and railway cars is prohibited.

86. Asbestos wastes belonging to Hazard Class IV could be disposed on MSW without limitations (quantity). Disposal of asbestos wastes under Hazard Class III is limited and the amount of such wastes should not exceed 30% of the general amount of solid wastes. Asbestos wastes should be disposed of in landfills with engineered liner systems. This legislation also provides specifications of landfill locations and organization (arrangement and structure).

87. Permits for the combined landfilling of industrial and municipal waste are granted by the local CSES based on the results of analyses completed by accredited laboratories (SanR&N RUz - 0157-04).

88. Landfill owners are responsible for the safe storage and disposal of waste to avoid potential impacts to human health and the environment (SanR&N RUz - 0157-04).

Soil

89. Issues related to the protection of geology, soils and groundwater in Uzbekistan are regulated by relevant national legislation including:

Table 4: Key Environmental Legislation of Uzbekistan on Soil, Subsoil and Groundwater

National laws
Law of the Republic of Uzbekistan on Subsoil (#2018-XII of 23.09.1994)
This law aims to ensure sustainable and integrated use of mineral resources to meet the needs of the mineral raw materials and other needs, protection of mineral resources, environment, safety of operations in subsoil use and protection of subsoil users, protecting the interests of individuals, society and state. According to the Law, the monitoring of subsoil, which represents a system of observations of the subsoil to timely detect changes, assess, prevent and redress the negative processes, is established (Article 18). Geological studies are permitted only after obtaining a positive opinion of the state environmental assessment (Article 25). Licenses for construction and operation of underground facilities for the storage and disposal of waste shall be issued by the SCEEP as a result of direct negotiations.

Decrees
Decree of the Cabinet of Ministers of the Republic of Uzbekistan on Approval of Regulatory Documents in Conformity with the Law of Uzbekistan on Subsoil (#19 of 13.01.1997 (as amended on 17.12.2010) Annex No. 2, Regulations on state control and supervision for usage and protection of subsoil, geological survey of subsoil and rational usage of mineral resources
Decree of the Cabinet of Ministers of Uzbekistan on Improving the System of Pollution and Waste Disposal Charges in Uzbekistan (#199 of 01.05.2003 (as amended on 02.04.2010)
Decree of the Cabinet of Ministries of the Republic of Uzbekistan on Regulation on Measures for Ground Water Management, Enhancement of Ground Water Protection against Pollution and Depletion (#179 of 08.04.1992)
Sanitarian Rules and Norms
SanR&N No 0272-09 - Sanitary rules and Norms on Development of hygiene studies to schemes of soil pollution in Uzbekistan
SanR&N No 0212-06 - Sanitary rules and Norms on Hygienic assessment of the contamination level of soils of different land use types in the specific conditions of Uzbekistan
SanR&N No 0183-05 - Hygienic requirements for the quality of the soil in settlements areas in specific natural-climatic conditions of Uzbekistan

Biodiversity

90. The national biodiversity policy in Uzbekistan is based on the provisions of the National Constitution of 1992. Article 55 defines that flora and fauna as well as other natural resources are protected by the state and considered to be resources of national wealth subject to sustainable use. Biodiversity management and conservation in Uzbekistan are regulated through a range of national laws and regulations, gathered in Table 5 below.

Table 5: Key Environmental Legislation of Uzbekistan on Biodiversity

National laws
Law of the Republic of Uzbekistan on protected natural areas (#710-II of 03.12.2004, as last amended 09.01.2019) This law regulates relations in organization, protection and use of conserved territories, and management of protected nature reserved or territories. In the law are given the categories and management of conserved territories such as integrated (landscape) wildlife preserves, nature parks, state natural objects, areas for protection, conversion and restoration of certain natural and manmade objects and complexes. SCEEP and local government bodies are responsible for implementing state control and protection of nature conserved territory and its usage.
Law of the Republic of Uzbekistan on Protection and use of flora (#543-I of 26.12.1997; new addition - #409 of 21.09.2016) This law regulates the protection and usage of flora growing in natural conditions, as well as in cultivation, and its reproduction and conservation of the gene pool of wild plants. The Cabinet of Ministers, local government bodies and special authorized agencies implement the law. The SCEEP and the Head Department of Forestry under Ministry for Agricultural and Water Resources Management are the authorized agencies for flora protection and its usage. The Cabinet of Ministers, local government bodies, the SCEEP and Head Department of Forestry are responsible for implementing national level administration of the law.
Law of the Republic of Uzbekistan on protection and use of fauna (#545-I of 26.12.1997; new addition - #408 of 19.09.2016) This law defines the legal relationship aimed at regulating relations in the protection, use, restoration and reproduction of fauna in order to ensure the conditions of its existence, preservation of species diversity, the integrity of natural communities and habitat. The choice of sites for all types of

construction, pre-planning, design and project documentation, implementation of which may have impact on the wildlife or its habitat and projects unit hunting and fishing, projects, work on acclimatization and hybridization of animal protection plants, dangerous to wildlife and its habitat is subject to the state environmental assessment.
Law of the Republic of Uzbekistan on Forestry (#770-I of 14.04.1999; new addition - #475 of 16.04.2018) This law describes the main objectives of forest regulations and the state forest fund, and provides the mechanism of state regulations and controls in the fields of forest protection, conservation, use, and reproduction. The law stipulates the order of forest management, its types and cutting conditions of trees and bush plantations. The Cabinet of Ministers, local government bodies, the SCEEP and the Head Department of Forestry under the Ministry for Agricultural are responsible for implementing the law.
Decrees
Decree of the Cabinet of Ministers of the Republic of Uzbekistan **on Approving a Strategy for the Conservation of Biological Diversity in the Republic of Uzbekistan for the Period of 2019-2028 (#484 of 11.06.2019)** This Strategy for the conservation of biological diversity for the period 2019-2028 (hereinafter referred to as the Strategy) identifies priority areas, goals and objectives, planning, methods for their effective achievement, as well as the stages of implementation of state policy in the field of formation and development for the long term sustainable system for the conservation and use of biodiversity. The strategy is based on the Constitution of the Republic of Uzbekistan, the laws of the Republic of Uzbekistan "On nature protection", "On the protection and use of fauna", "On the protection and use of flora", "On the protected natural territories" and "On forestry", as well as Strategies for action in five priority areas of the development of the Republic of Uzbekistan in 2017 - 2021, approved by Decree of the President of the Republic of Uzbekistan dated February 7, 2017 No. UP-4947.
Decree of the Cabinet of Ministers of the Republic of Uzbekistan on the Settlement of the Use of Biological Resources and the Procedure of Permission of the Resolving Procedures in the Field of Nature Use (#290 of 20.10.2014 as last amended 27.05.2019)
Decree of the Cabinet of Ministers of the Republic of Uzbekistan on Measures to Improve the Public Administration System in the Sphere of Protected Natural Territories (#4247 of 20.03.2019)
Decree of the Cabinet of Ministers of the Republic of Uzbekistan on the Approval of the strategy for the preservation of biological diversity in the Republic of Uzbekistan for the period 2019-2028 (#484 of 11.06.2019)
Decree of the Cabinet of Ministers of Uzbekistan About measures on the organization of the preparation, edition and management of the red book of the Republic of Uzbekistan (#1034 of 19.12.2018)
Decree of the Supreme Council of Uzbekistan on Reinforcement of the Protection of Valuable and Endangered Species of Flora and Fauna and Harmonization of their Use (#937- XII of 03.09.1993)
Appendix of the Decree of the Cabinet of Ministers of the Republic of Uzbekistan on Classification of technogenetic, natural and environmental emergencies (#455 of 27.10.1998)

Cultural Heritage

91. The preservation of national cultural heritage's objects in Uzbekistan is based on the Constitution of the Republic of Uzbekistan, main Law of the Republic of Uzbekistan on the protection and use of objects of cultural heritage, and several other decrees (Table 6).

Table 6: Key Environmental Legislation of Uzbekistan on Cultural Heritage

National laws
Constitution of the Republic of Uzbekistan (Article 49)

The Constitution of the Republic of Uzbekistan states that "Concern for the preservation of historical monuments and other cultural values - the chore and duty of citizens of Uzbekistan"
Law of the Republic of Uzbekistan on the protection and use of objects of cultural heritage (#269-II of 30.08.2001, as last amended 19.04.2018) This law regulates relations in the field of protection and usage of objective of archeological heritages, defines ownership rights of such objectives and responsible entities, and provides a procedure of archeological investigation of the objectives of archeological heritage. It states (para 20) that under "saving of cultural heritages is considered their conservation, repairing, rehabilitation, adopting for current usage and conduction related scientific-production research, design and production works". An official permission from the Ministry of Culture needs to be received prior starting of rehabilitation works.
Decrees
Decree of the Cabinet of Ministries of the Republic of Uzbekistan About measures on further development protection and usage the historical heritages (# 269 of 29.06.2002)

92. The Main Scientific-Production Department (MSPD) on the protection of cultural heritages under the Ministry of Culture is the designated entity responsible for the protection of cultural heritages. The scientific-production workshops and a number of private companies conduct rehabilitation works.

93. For objects which could be considered as cultural heritage but which have not been registered yet, a full procedure on registration needs to be implemented in accordance with the Resolution of the Cabinet of Ministries of the RUz (RCM) # 269 dated from June 29, 2002 "About measures on further development protection and usage the historical heritages".

94. Therefore, for any project works related to the rehabilitation of registered cultural heritages or work near to such objects, permission needs to be received from province level branch of Ministry of Culture for the: (i) conduction of works inside heritage sites, and (ii) conduction works which could be located in any buffer zone relating to a heritage site. Such permission needs to be received prior starting construction or rehabilitation works by the project initiator – local hokimiyats.

2.2.2 International Treaties and Obligations

95. The Republic of Uzbekistan has ratified the following international conventions that are part of this IEE. These are shown in the Table 7 below. Fulfillment of the terms of these commitments contributes to environmental sustainability, attracts external funding for the stabilization and prevention of degradation of natural resources and cultural heritage, and enhances the country's capacity to use its natural and cultural resources as a basis for poverty reduction and socio-economic development.

Table 7: Uzbekistan Republic participation in international conventions relevant to the Project

International Conventions and Treaties	**Date of Ratification**	**Date of coming into force for Uzbekistan**	**Main objectives**
United Nations Framework Convention on Climate Change	20 June 1993 (acceptance)	21 March 1994	Stabilizing greenhouse gas concentrations at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system.

International Conventions and Treaties	**Date of Ratification**	**Date of coming into force for Uzbekistan**	**Main objectives**
Kyoto Protocol	20 August 1999	16 February 2005	Setting internationally binding emission reduction targets.
United Nations Convention Combat Desertification	31 August 1995	29 January 1996	Reversing and preventing desertification and land degradation in affected areas in order to support poverty reduction and environment sustainability.
United Nations Convention on Biological Diversity	6 May 1995 (accession)	17 October 1995	Conservation of biodiversity, sustainable use of its components, and equitable sharing of the benefits.
Convention on the Conservation of the World Cultural and Natural Habitats	22 December 1995	15 June 1996	Protection of natural and cultural heritage.
Convention on International Trade in Endangered Species of Wild Fauna and Flora	25 April 1997 (accession)	8 October 1997	Ensuring that international trade does not threaten wild animals and plants.
Convention on the Conservation of Migratory Species	1 May 1998 (accession)	1 September 1998	Global platform for the conservation and sustainable use of migratory animals and their habitats.
Ramsar Convention on Wetlands of International Importance Especially as Wildlife Habitat	30 August 2001 (accession)	8 February 2002	Conservation and wise use of all wetlands through local and national actions and international cooperation to achieve sustainable development.
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	22 December 1995 (accession)	7 May 1996	Regulation, reduction and restriction of hazardous wastes transboundary movement.
Stockholm Convention on Persistent Organic Pollutants	22 May 2001	8 May 2019	The Convention is a global treaty to protect human health and the environment from chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of humans and wildlife, and have harmful impacts on human health or on the environment.

2.3 Uzbekistan Republic Environmental Assessment Requirements

96. The project is subject to the environmental assessment requirements of both the Uzbekistan Republic and the ADB. This section describes national requirements.

97. The national EIA procedure is regulated by the Law "On the Environmental Examination" and the Regulations "On the State Environmental Expertise" (SEE), approved by the Resolution of the Cabinet of Ministers No. 949 dated November 22, 2018. The Resolution specifies the legal requirements for EIAs in Uzbekistan. According to the Resolution, SEE is a type of environmental examination carried out by specialized expert divisions to set up the compliance of the planned activities with the environmental requirements and determination of the permissibility of the environmental examination object implementation.

98. The special authorized state body in the field of state environmental examination is the SCEEP. An SEE is carried out by the following specialized expert divisions of the SCEEP:

- The state unitary enterprise "The Center of the State Environmental Examination" of the State Committee for Environmental Protection, hereinafter referred to as "The Center of the State Environmental Examination SUE";
- The state unitary enterprise "The Center of the State Environmental Examination" of the Republic of Karakalpakstan; and
- The state unitary enterprises "The Center of the State Environmental Examination" of regions and Tashkent city.

99. "The Center of the State Environmental Examination SUE" carries out the state environmental examination of EIA of the objects of economic activity classified as the I and II categories of environmental impact (high and medium risk).

100. The state unitary enterprises "The Center of the State Environmental Examination" of the Republic of Karakalpakstan and regions carry out environmental examination of EIA of the objects of economic activity classified as the III and IV categories of environmental impact (low risk and local impact).

101. The regulations describe the procedure of arrangement and carrying out of the SEE (Annex 1 to PCM) and the procedure of the SEE (Annex 2 to PCM). The three stages of the EIA and their required results are summarized as follows:

- ✓ **Stage I:** "A Preliminary Statement of the Environmental Impact ("PSEI") shall be carried out at the planning stage of the proposed project prior to the allocation of funds for development.
- ✓ **Stage II:** "A Statement of the Environmental Impact" ("SEI") shall be prepared in due time, in conclusion, by Glavgosekspertiza / State Environmental Expertise at the stage I, to conduct the required additional studies or analyses. The Conclusion shall be submitted to Glavgosekspertiza / State Environmental Expertise prior to the approval of the feasibility study of the project and, therefore, prior to the beginning of the construction.
- ✓ **Stage III:** "State Environmental Consequences" ("EPZ") is the final stage of the SEE process and shall be carried out prior to the start of the project. The report describes in detail the changes in the project made as a result of the analysis of the Glavgosekspertiza / State Environmental Expertise during the first two stages of the EIA process, the comments received during public consultations, the environmental standards applicable to the project, and the environmental monitoring requirements related to the project, as well as the main conclusions.

102. All types of SEE economic activities are classified into one of four categories:

- Categories I and II are "high and medium risks of environmental impact" (SEE will be within 30 days, all stages of EIA are required);
- Category III is "Low risk of impact" (all stages of EIA are required); and
- Category IV - "local impact" (only the first stage of EIA - PSEI is required).

103. According to paragraph 24 of the "Regulations on SEE", the positive conclusion of an SEE is a mandatory document for opening of financing by banks and other credit institutions, and execution of implementation of the object of the state environmental examination by legal entities and individuals. The Conclusion of the SEE shall be valid for three years from the date of its issuance. If the object is not implemented within three years from the date of issue of the Conclusion, the EIA report needs to be revised and re-submitted to the Center of the State Environmental Examination for revision and approval.

104. The Conclusion of the SEE shall be sent to the relevant regional (city) control inspections in the field of ecology and environmental protection for control. Such inspections under the SCEEP supervise the compliance with the requirements and conditions specified in the Conclusion of the SEE.

105. As per national legislation the project belongs to Category 4 with respect to the environmental impact (local impact risk)[5]. Prior to commencing construction, such project therefore requires the conduct of an Environmental Impact Assessment and Environmental Appraisal from the SCEEP at the provincial level.

2.4 Applicable ADB Policies and Environmental Assessment Requirements

106. Environmental and social safeguards are a cornerstone of ADB's support to inclusive economic and environmentally sustainable growth. ADB Safeguards Statement Policy (SPS) adopted in 2009 governs the environmental and social safeguards of ADB's operations. The objectives of the SPS are to avoid, or when avoidance is not possible, to minimize and mitigate adverse project impacts on the environment and affected people, and to help borrowers strengthen their safeguard systems and develop the capacity to manage environmental and social risks.

107. SPS builds upon the three previous safeguard policies on the environment, involuntary resettlement, and indigenous peoples, and brings them into a consolidated policy framework that enhances effectiveness and relevance. The SPS applies to all ADB-supported projects. ADB works with borrowers to put policy principles and requirements into practice through project review and supervision, and capacity development support. The SPS also provides a platform for participation by affected people and other stakeholders in project design and implementation[6].

108. The objectives of ADB's safeguards are to:
(i) avoid adverse impacts of projects on the environment and affected people, where possible;
(ii) minimize, mitigate, and/or compensate for adverse project impacts on the environment and affected people when avoidance is not possible; and
(iii) help borrowers/clients to strengthen their safeguard systems and develop the capacity to manage environmental and social risks.

109. ADB will not finance projects that do not comply with its safeguard policy statement, nor will it finance projects that do not comply with the host country's social and environmental laws and regulations, including those laws implementing host country obligations under international law.

110. Based on preliminary review, projects are assigned to one of the following categories:
Category A. A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment is required.
Category B. A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination is required.
Category C. A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed.

[5] Appendix 2 of the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 949 dated November 22, 2018 "On the Approval of the Regulations On the State Environmental Expertise"
[6] www.adb.org/site/safeguards/overview

111. ADB pays special attention to processes of information disclosure, and consultations and participation during the project preparation and implementation phases. ADB publishes final or updated environmental impact assessments and/or initial environmental examinations on its own website. ADB is committed to working with borrowers/clients to put meaningful consultation processes into practice. Consultation processes with communities, groups, and affected people start at the earliest stages of project preparation and continue through all processes of environmental assessment.

112. ADB requires that the borrower/client establish and maintain a Grievance Redress Mechanism to receive and facilitate resolution of affected peoples' concerns and grievances about the borrower's/client's social and environmental performance at the project level.

113. The Project belongs to **Category B**, as a project with site-specific impacts, few of which are irreversible, and where in most cases mitigation measures can be designed. The Project requires an initial environmental examination (IEE), which will be based on data from the feasibility study, preliminary design, site visits and interviews with technical experts, as well as primary and secondary data including feedback received during the public disclosure process.

114. GAP analysis between ADB safeguards requirements and Uzbek environmental legislation is presented in Table 8.

Table 8: Gap Analysis Between ADB Safeguards Requirements and Uzbek National Environmental Legislation

Aspect	Asian Development Bank	National Uzbek Regulations	Harmonized Framework
Environmental Policy and Regulations	ADB's SPS (2009) sets out the policy objectives, scope and triggers, and principles for three key safeguard areas: i. Environmental safeguards, ii. Involuntary resettlement safeguards, and iii. Indigenous people's safeguards	Environmental assessment and permitting procedure in Uzbekistan is set out in the following laws and regulations: i. The Law on Nature Protection (1992); ii. The Law on Environmental Expertise (2000), and iii. Decree of Cabinet Ministries (DCM) # 949 (November 22, 2018) on "Regulation on Environmental Expertise"	
Screening	ADB carry out project screening and categorization at the earliest stage of project preparation when sufficient information is available for this purpose using REA checklist. Categorization into Category A, B, C, FI.	The category of the project is defined in accordance with Appendix 1 to RCM # 949. The Appendix provides a list of activities divided on 4 categories.	The Project is categorized into 'Category B' (ADB classification) and Category 4 (national legislation)
Scoping	Avoid, minimize, mitigate and/or offset for adverse impacts and enhancement of positive impacts through environmental planning and management.	The environmental assessment should evaluate: (i) compliance of proposing project with environmental requirements, (ii) level of risk related to project implementation on people's health and environment, and (iii) efficiency of developed measures to mitigate identified impacts.	Conduct a process of Environmental Assessment that will consider in an integrated manner the potential environmental (including labor, health, and safety) risks and impacts of the project.
	EA takes into account potential impacts (direct, indirect and cumulative) and risks on physical, biological, resettlement, socio-economic (including health and safety), and physical cultural resources	Environmental assessment considers the project's potential impacts on the physical, biological, socio-economic and cultural resources, including cumulative impacts.	The environmental assessment will take into account natural environment (air, water, and land); human health and safety; social aspects (involuntary resettlement, indigenous peoples, and physical cultural resources).
Alternatives	Examination of financially and technically feasible alternatives to the project location, design,	For the ZVOS, consideration of **alternatives** is required. Alternatives that may be assessed include alternatives in;	Assessment of alternatives will include the location and design.

Aspect	Asian Development Bank	National Uzbek Regulations	Harmonized Framework
	technology and components, and their potential environmental and social impacts Consider the 'no project' alternative.	processing, technical design, location of the facility, architectural and planning options. Another mandatory requirement is consideration of the **zero option**.	
EIA Report	Guidelines and Table of Contents are provided for EIA report in SPS (2009): (i) Executive Summary, (ii) Policy, Legal and Administrative Framework, (iii) Description of the Project, (iv) Description of the Environment, (v) Anticipated Environmental Impacts and Mitigation Measures, (vi) Analysis of Alternatives, (vii) Information Disclosure, Consultations, and Participation, (viii) Grievance Redress Mechanism, (ix) Environmental Management Plan, and (x) Conclusion and Recommendation. The EMP will include proposed mitigation measures, monitoring and reporting requirements, institutional arrangements, schedules, cost estimates and performance indicators.	The RCM # 949 defines activities which are needed to be undertaken under ZVOS preparation. Description of undertaken activities needs to be included into the ZVOS report. The RCM requires conduction of the followings: (i) assessment of existing environmental conditions and socio-economic conditions, (ii) project description, (iii) anticipating discharges, emissions, wastes, their impact on environment and waste disposal, (iv) collection, storage and disposal of wastes (v) analysis of alternatives, (vi) institution, technical and technological mitigation measures, (vii) analyze of emergency risk, probability of occurrence and emergency containment measures, (vii) forecast of changes in environment after project commences operation. The complexity of the report depends on the category of the project.	The IEE and EMP reports will follow the table of contents proposed in ADB's SPS (2009).
Public Consultations	Carry out meaningful consultations with affected people and facilitate their informed participation Ensuring women's participation in consultation. Involving stakeholders, project- affected people and concerned NGOs early in the project preparation and ensure that their views and concerns are made known and understood by decision makers and taken into account The consultation process and its results are to be documented and reflected in the environmental assessment report.	Public meetings are held if required at the time of the ZVOS (second stage). But this requirement is not mandatory. The need for public consultations is identified at the time of the PZVOS. Participants at public meetings include the author of the PZVOS, the project developer and stakeholders. Public consultation meetings have to be announced in the media. If public consultations have been conducted, the results of the public meetings are formalized by the minutes and verified by the signatures of the attendees. The	Consultations will be carried out with the stakeholders, affected people, and NGOs. Questions and concerns raised during public consultations held in feasibility stage are considered. Rural Citizen Assembly level consultations will be held with the affected people with inviting the main stakeholders. All questions and concerns raised during public consultations will be included in the IEE. Signed lists of

Aspect	Asian Development Bank	National Uzbek Regulations	Harmonized Framework
		minutes of the public meeting or the shorthand records shall be attached to the materials of the draft IEE. As a result of the public meetings, the people have an opportunity to state their proposals, to influence on the decision making and if required to appeal for their reconsideration.	participants, and photographs from the meetings will be attached to the IEE.
Public Disclosure	The draft IEE will be published on the ADB website	National environmental legislation does not require publishing PZVOS (ZVOS).	The IEE report (English and Russian) will be published on ADB, the SCEEP and Toza Hudud's websites. Copies of the IEE report will be made available with the district hokimiyats and provincial branches of the SCEEP.
Monitoring and Reporting	The borrow/client has to monitor and measure the progress of implementation of the EMP, and prepare periodic monitoring reports that describe progress with implementation of the EMP and compliance issues and corrective actions, if any.	Monitoring of implementation of mitigation measures developed under the IEE is the responsibility of the design company that developed the Feasibility Study (author's supervision). External monitoring could be conducted by representatives of the SCEEP. There are no requirements on the submission of reports during the construction period in national environmental legislation.	The Environmental Monitoring Plan will be developed under this IEE to monitor implementation of EMP requirements. The IEE also includes requirements on for preparation of semi-annual Environmental Monitoring Reports and their submission to ADB for further disclosure on the ADB, the SCEEP and Toza Hudud websites.
Grievance Redress Mechanism	The GRM has to be established to receive and facilitate the resolution of affected peoples' concerns, complaints, and grievances about the project/s environmental performance.	A grievance redress procedure in Uzbekistan is also regulated by the national legislation of Republic of Uzbekistan, in particular by the law "On Citizens' Applications" and the "Law on the order of submission of appeals of physical and legal entities" ((#378, 03 December 2014).	The GRM for this project will be developed based on ADB requirements, while also taking into account national requirements.

3. DESCRIPTION OF THE PROJECT

3.1 Proposed Project

115. Responding directly to priority needs, the project will assist government to progress its SWM sector reform agenda by actively supporting strategy implementation in targeted areas. As explicitly identified in the strategy's action plan, the project will assist the government to (i) update the SWM legal framework by developing specific regulatory directives; (ii) build institutional capacity in, and improve the sustainability of the Association and Toza Hudud; (iii) develop and mainstream environmental education, awareness and advocacy; (iv) strengthen Toza Hudud asset bases and improve collection services through the provision of vehicles, equipment and physical infrastructure; and (v) improve the SCEEP's environmental testing capabilities. The project is aligned with the following impacts: environment, health and living conditions improved. The project will have the following outcome: reliable and sustainable SWM services improved and expanded in small urban centers, peri-urban and rural areas nationwide. The project includes the following four outputs:

116. **Output 1: SWM sector regulatory framework enhanced** by assisting government to formulate specific regulatory directives, as identified in the strategy. These will (i) enhance SWM operations by establishing waste assessment protocols, and strengthening waste transportation and disposal site regulations and compliance; (ii) improve public accountability and tariff setting methodologies; (iii) further promote a PPP enabling environment; and (iv) establish a performance management framework (including key performance parameters) for SWM operations. A revised 'Law on Waste' will also be formulated.

117. **Output 2: Association and Toza Hudud capacity strengthened** by establishing a SWM operator training center within the Association, and formulating and delivering training modules in (i) performance-based management, incorporating key performance indicators and performance benchmarking for SWM operations; (ii) management information systems (MIS) for billing, customer relations and public reporting; (iii) SWM corporate management to transform the Toza Hudud to asset management companies;[7] and (iv) SWM system operations. Senior Toza Hudud personnel will also be trained and professionally certified by accredited international training centers in basic SWM utility management, financial management and SWM system operations and maintenance (O&M), and a long-term twinning arrangement will be established with an international SWM training and certification facility.

118. **Output 3: Environmental monitoring capabilities of the SCEEP improved** by providing funding for capacity development, laboratory equipment and vehicles.

119. **Output 4: SWM collection and interim disposal services in small urban centers, peri-urban and rural areas improved nationwide** by building up the functional asset bases of the Toza Hudud. This includes the provision of the following physical components:

Medium sized waste trucks (300 in total): With a load volume of 12 m^3, these trucks are able to reach virtually all waste collection points and most curbside (door-to-door) collection areas (**Figure 1**). Due to their overall size and height limitations, they are also able to access many rural areas for curbside collection, and still maintain reasonable economies of scale in extended transfer distances. These sized trucks are the most common trucks in Uzbekistan. The 300 trucks will increase the Toza Hudud nationwide service delivery capacity from its current 5,000 tons per day to a total of 7,

[7] Including performance management, asset management, financial management, customer relations management, and external and internal accountability mechanisms.

500 tons per day, providing waste collection services to an additional unserved or underserved population of about 6 million people.

Figure 1: Waste Collection Truck

Waste collection bins (6,000 in total). Collection bins will be provided for the collection trucks, of size 1,100-liter capacity.

Operational equipment (13 excavators, 13 flatbed trucks, and 13 mobile service vehicles). To support the Government's ongoing dumpsite improvement initiatives, as outlined in the national SWM strategy, each Toza Hudud will be provided with an excavator, together with a flatbed truck in order to transport the excavator and other equipment between sites.

120. In addition, each Toza Hudud will receive a mobile service vehicle to provide for the mobile servicing of vehicles and equipment remote from the vehicle maintenance service centers. Vehicle breakdowns are unfortunately an unavoidable part of fleet operations. As such breakdowns usually happen in the field, the availability of a mobile service vehicle is a crucial part of economical operating fleet management, and therefore a necessary part of this project. These light commercial vehicles (vans) will be equipped with an internal workplace and work bench, generator, welding equipment, and general and special tools, and also carry common spare parts for the onsite repair of the vehicles of the Toza Hududs.

121. **Vehicle maintenance facilities.** Each Toza Hudud will also be provided with a service center for vehicle and equipment repairs and maintenance in order to improve service quality and minimize downtime **(Figure 2)**. Each service center will be sized to the specific demands of each region. The provincial service centers will be designed as a modular system which can be sized depending on the existing and planned vehicle fleet of each region. They could also host administrative offices for the Toza Hudud. Each service center will have at least three work bays for large vehicles (trucks and equipment), which all should have a reinforced concreted service pit to reach the undercarriage of the vehicles.

Figure 2: General Service Center Perspective

122. The building will also be equipped with an extra machine shop with work tools and work benches, and spare part storage, an office for workshop management, staff rooms including gender specific locker and sanitation facilities in accordance to OHS (Operational Health and Safety standards), and building maintenance areas (**Figure 3**). For power and heating, the building will be equipped with a self-serving energy recovery system to produce its own power and possible utilize excess energy for heating purposes. The total area of the building will be up to 800m^2, as the entire facility should have at least 3,500m^2 of land for the maneuvering and parking of vehicles. The yard itself will be fully fenced, and will host shaded parking areas for the vehicles. Depending on local circumstances and requirements, the yard can also host additional buildings for operational purposes, based on the actual local requirements.

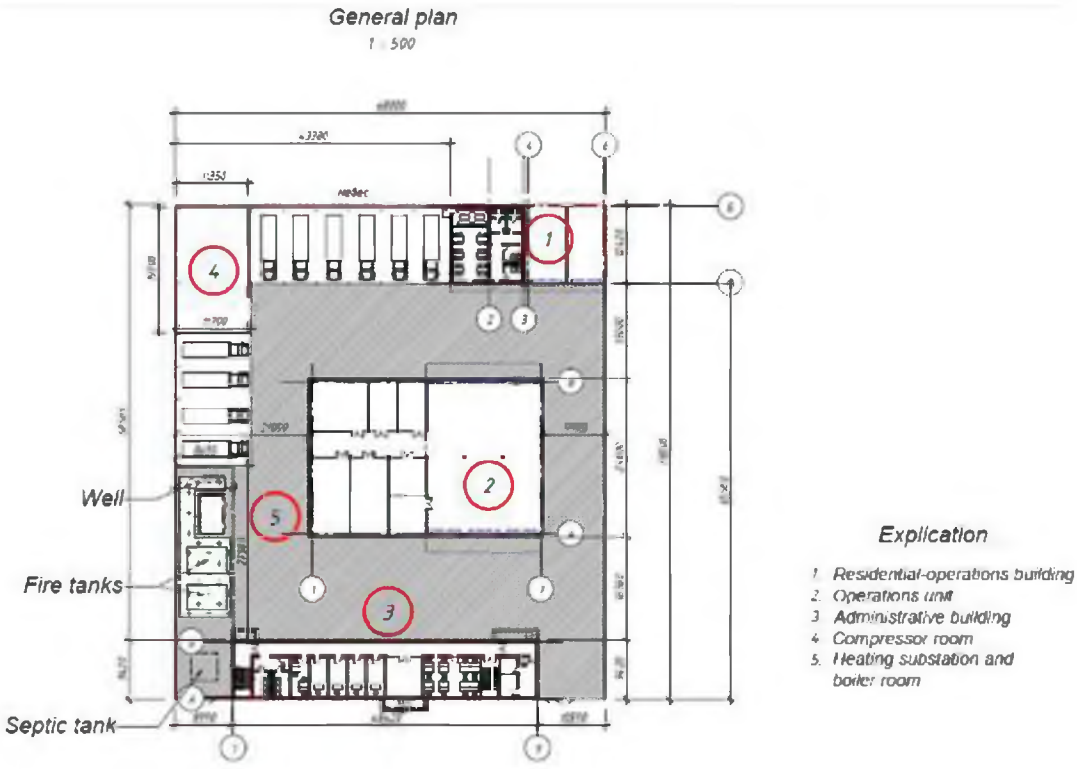

Figure 3: Service Center General Layout

123. A summary description and site location plan of each of the sites proposed for the development of the Toza Hudud service centers follows.

3.1.1 Autonomous Republic of Karakalpakstan Service Center Site

124. The service center will be located in an industrial zone of the Nukus district of Karakalpakstan, which is surrounded by workshops and production. This territory belonged to the Karakalpakstan branch of the SCEEP, and in August 2018 it was transferred to Karakalpakstan Toza Hudud's jurisdiction as SCEEP's sub-entity. There is drinking water and electricity supply on the project site. There are no settlements close to the project site and public facilities (school, hospitals and etc.). The total area of the site is 5 ha.

125. The nearest residential area is located more than 1 km away from the site. The site is surrounded by an open non-used area and industrial zone. There are all utilities on the site: gas, water supply pipes and electricity.

Figure 4: Location of site in Karakalpakstan

3.1.2 Kashkadarya Service Center Site

126. The service center in Kashkadarya province will be located on the territory of "Agrofirma" massive of Karshi district. The land belonged to Karshi district's Khokimiyat and it wasnot in use. In September 2019, the land was transferred to Karshi district Toza Hudud.

127. There is small drainage on the left side of the site. The closest living houses are located on the distance between 190 and 220 meters from a fence of the site. The total area of the site is 0.5 ha.

Figure 5: Location of Site for Service Center in Kashkadarya Province

3.1.3 Bukhara Service Center Site

128. The service center's site in Bukhara province will be located on the territory of "Istiqlol" massive of Bukhara district and it will occupy area in 0.6 ha. The site is surrounded by non-irrigated lands and it is located 900 meters away from settlements.

129. Due to the lack of irrigation and unfavorable soil conditions, this site is not suitable for agriculture. It was in reserve lands of the Khokimiyat and in September 2019 was transferred to the Toza Hudud.

Figure 6: Location of Service Center in Bukhara Province

3.1.4 Samarkand Service Center Site

130. The service center in Samarqand province will be located at the site of the Toza Hudud agency in Samarqand city. The site has been used by the Toza Hudud since 2017 as a parking area for solid waste collection trucks and as an operation and maintenance (O&M) facility. The main office is also located on this site.

131. The existing extent of the site is 0.78 ha. There are some administrative buildings on the site which will not be demolished during the construction stage. All construction works will be implemented within the perimeter of the existing facility. The site is located in an industrial zone and surrounded by workshops and small enterprises. The site has all utilities: gas, water and electricity supply. A residential area is located behind industrial zone.

Figure 7: Location of Service Center in Samarqand Province

3.1.5 Djizzak Service Center Site

132. The project site is located on the outskirts of Djizzak city, which is the administrative center of Djizzak province. To the west of the project site are agricultural lands, and to the east are non-used lands which are being developed as an industrial zone. A small culverted stream in a concrete channel flows to the west of the site. Currently the project area is not used for any purposes.

133. All necessary utilities are close to site: electricity, water supply and gas. The closest residential area is located more than 1000 meters from the site. There are water and gas pipelines, and electricity transmission lines along the road.

Figure 8: Location of Service Center in Djizzakh Province

3.1.6 Fergana Service Center Site

134. The service center in Ferghana province will be located in Kokand city, and in an industrial zone. The site covers an area of 1 ha. It is unused land that belonged to the Khokimiyat as reserve land. In August 2019, the land was transferred to the Ferghana provincial Toza Hudud.

135. The closest residential area is located more than 100 meters from the site. There are no schools, hospitals and other social developments located closer than 500 meters from the site. The site is bordered with a car market on the west and empty space to the east. There is a small drainage canal flowing on the northern part of the site. The site has all utilities: gas, water and electricity supply.

Figure 9: Location of Service Center in Ferghana Province (Kokand)

3.1.7 Khorezm Service Center Site

136. The project site in Khorezm province is located in an industrial part of Urgench city, the provincial capital. The land belonged to the Urgench city Khokimiyat, and in September 2019 it was transferred to the Toza Hudud. The land was categorized as non-used. The total area of the site is 0.50 hectares.

137. There are no residential areas or public facilities, such as schools or hospitals, near the project site. The closest residential buildings are located 135 m away. There is a syringe factory and a cow market (that reportedly works once per month) near to the site. There is all necessary infrastructure on the site: electricity, water, gas supply and sewage.

Figure 10: Location of Service Center in Khorezm Province (Urgench city)

3.1.8 Andijan Service Center Site

138. The service center site in the Andijan province is located in Khodjaobod district, and occupies an area in 0.6 ha. The land was allocated from state land reserves to the Andijan province Toza Hudud in February 2019.

139. The land allocated to the Toza Hudud is barren, and not suitable for agricultural activity. No land acquisition or resettlement impacts are expected. The nearest residential area is located about 400 meters away from the site. There are all necessary utilities on the site: water supply, gas and electricity.

Figure 11: Location of service center in Andijan province

3.1.9 Surkhandarya Service Center Site

140. The service center site in Surkhandarya province is located in Termez district, near to Termez city which is the province's administrative center. The site has an area of 1 hectare and is located in a deserted area that is unsuitable for agriculture. The land, which is from the state land reserve was allocated to the Toza Hudud in August 2019.

141. The nearest residential area is located about 700 meters away from the site. There are small productions at distances of between 200-300 meters from the site, and a historical site is located over 600 meters to the north-west of the site. The site has necessary utilities including water supply, gas and electricity.

Figure 12: Location of Service Center in Surkhandarya Province

3.1.10 Syrdarya Service Center Site

142. The site of the service center in Syrdarya province is located on the outskirts of Gulistan city, which the administrative center of the province. Its area is 0.30 hectares. The land is from the state land reserve, which was allocated to the Toza Hudud in January 2019. The land is barren and unsuitable for agricultural activity.

143. The nearest residential buildings are located about 50 meters away from the site. However, some facilities are located near the site, such as a cow house and a hay storage house. The site has necessary utilities including water supply, gas and electricity.

Figure 13: Location of Service Center in Syrdarya Province

3.1.11 Navoi Service Center Site

144. The project site in Navoi province is located in the territory of Karmana district, which is near to Navoi city, the province's administrative center. The land belonged to the Karmana district's reserve lands, and was subsequently transferred to the Toza Hudud in August 2019. The total area of site is 1 ha.

145. The site is located in an industrial zone with all necessary infrastructure: water, gas and electricity. There are no residential areas or public places within one kilometer of the site. There are also no water courses close to the project site.

Figure 14: Location of Service Center in Navoi Province

3.1.12 Namangan Service Center Site

146. The project site in Namangan province is located in the territory of Tashbulok city, and will occupy an area of approximately 0.31 ha. The land, which is from the state land reserves, was allocated to Toza Hudud in August 2019. It contains old facilities.

147. The project site is mostly surrounded by industrial zones and open space. There are however two small residential houses located close to the site. The nearest of these is located about 15 meters away from the site perimeter, and about 55 meters away from the location of the proposed main service facility building. The layout of the service center will therefore be designed in the way to allow for compliance with sanitary protection zone (buffer zone) standards, that require that this distance be at least 50 meters. The site has necessary utilities including water supply, gas and electricity.

Figure 15: Location of Service Center in Namangan Province

148. The site also will be cleaned from existing buildings and facilities.

Figure 16: Existing Building on the Site Namangan Province

3.1.13 Tashkent Service Center Site

149. The project site in Tashkent province is located in the Qizil Shalola settlement of Kibray district, and occupies an area of 1 ha. It is located on the territory of a former tractor park that has not been used for more than 10 years. In accordance with the decision of the

Kibray district Khokimiyat, the site was transferred to the Toza Hudud in August 2019.

150. There are small production activities to the south of the site, and a private company that segregates waste to the north-west of the site. From the west and north, the site is also bordered with private houses. Due to the relatively large size of the site however (more than 1 ha), the layout of the service center will be designed in a way to ensure compliance with a 50 meter buffer zone from these properties (**Figure 17**). The site has necessary utilities including water supply, gas and electricity.

Figure 17: Location of Service Center in Tashkent Province

151. Although the site has reportedly been inactive for long time, there are old buildings and strewn garbage on the site. These will therefore be removed and the site cleaned prior to commencement of service center construction (**Figure 18**).

Figure 18: Existing Building on the Site in Tashkent Province

3.2 Project Implementation Schedule

152. **Figure 19** presents the implementation schedule for the project. As shown, the project is scheduled to commence in Q1 2020, and be completed by Q2 2024. Of relevance to the IEE is the proposed schedule for the construction of the service centers, which is shown in Output 4.4 to be between Q3 2020 and Q1 2022.

Figure 19: Project Implementation Schedule

Indicative Activities	2019				2020				2021				2022				2023				2024				2025			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Feasibility Study																												
ADB Approval - Loan Negotiations																												
Approval of Feasibility Study by Government of Uzbekistan																												
Establishment of Project Management Unit and Consultant																												
Selection of Project Management Unit																												
Selection of Project and Loan Management Consultant																												
Selection of Detailed Design Consultant (Government of Uzbekistan)																												
Design, Tendering, Supervision																												
A. Design and Monitoring Framework																												
Output 1 – SWM Sector Regulatory Framework Enhanced																												
1.1. Mobilize consultants																												
1.2. New regulations to enhance gender-responsive SWM operations																												
1.3. Regulations to improve public accountability and transparent tariff setting methodologies, incorporating gender elements, adopted																												
1.4. International best practices in gender-inclusive PPP in SWM adopted																												
1.5. Adopt a law on waste																												
1.6. Conduct public hearings with at least 50% women participation																												
Output 2 – Association and Toza Hudud Capacity Strengthened																												
2.1. Mobilize consultants																												
2.2. Establish twinning arrangement with an international SWM training and certification facility																												
2.3. Association training center with at least 30% women personnel for SWM operators made functional																												
2.4. Operationalize the Association training center																												
2.5. Design, install and make operational the gender-disaggregated MIS for customer relations and public reporting																												
2.6. Train at least three officers (of which at least one officer is a woman) from each *Toza Hudud* though an accredited international training center in basic SWM utility management, financial management, gender-responsive HR policy, and SWM system O&M																												
2.7. Design and conduct at least 4 training modules in SWM operations, including one on gender-sensitivity																												
2.8. Operationalize gender-sensitive grievance redress mechanism																												
2.9. Design, install and make operational gender-responsive customer relations system, with at least 50% of female staff																												

Indicative Activities	2019				2020				2021				2022				2023				2024				2025			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2.10. Adopt a gender-responsive performance-based management framework, including KPIs and performance benchmarking for SWM operations																												
Output 3 – Environmental monitoring capabilities of the SCEEP improved																												
3.1. Equip and operationalize the environmental laboratories																												
3.2. Complete the training and certification programs for laboratory staff																												
Output 4 – SWM Collection and Interim Disposal Services in Small Urban Centers, Peri-Urban and Rural Areas Improved Nationwide																												
4.1. Commence procurement of waste collection trucks and equipment																												
4.2. Award the waste collection trucks and equipment contracts																												
4.3. Complete commissioning of all waste collection trucks and equipment and trucks maintenance service center contracts																												
4.4. Operationalize trucks maintenance service centers																												
4.5. Conduct awareness raising campaigns on sustainable waste management																												
4.6. Design and dissemination of information Toolkit for schools																												
4.7. Production of 4 gender responsive knowledge products focused on youth																												
B. Management Activities																												
Environment management plan key activities																												
Specific gender measures key activities																												
Inception, annual and mid-term reviews																												
Project completion report																												

Activity Period Defect Liability Period

ADB = Asian Development Bank, EA = Executing Agency, KPI = key performance indicator, MIS = management information system, MSW = municipal solid waste, O&M = operation and maintenance, PPP = public private partnership, Q = quarter, SCEEP = State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection, SWM = solid waste management.
Source: Asian Development Bank.

4. DESCRIPTION OF THE ENVIRONMENT

153. This chapter describes the physical and biological environment, and provides the socio-economic baseline for the project. Uzbekistan has 13 regions (provinces), namely Andijan, Fergana Namangan, Bukhara, Djizzak, Kashkadarya, Khorezm, Navoi, Samarkand, Surkhandarya, Syrdarya, Tashkent, and the Republic of Karakalpakistan (**Figure 20**). These are described in detail in the following sections.

4.1 Ferghana Valley (Andijan, Ferghana and Namangan provinces)

154. The Ferghana Valley is located in the eastern extremity of the nation. It comprises of three interconnected provinces, Andijan, Ferghana and Namangan.

Geography and topography

155. **Andijan province** is located in the eastern part of the Ferghana Valley. Bordering with with Kyrgyzstan and the provinces of Ferghana and, it has an area of 4,300 km^2, of which 47% is arable land, about 1% forestry and over 5% pasture. The western part of the province comprises an elevated plain, while the eastern part is occupied by the foothills of the Ferghana and Alay mountain ranges, which protect the valley from intrusions of cold air.[8] Andijan, the largest city in the Ferghana Valley, is located on the ancient deposits of Andijanzai at an altitude of 450 m above sea level. From the east and southeast, the Adyr ridge Alamyshik comes close to it. It separates Andijan from the Karadarya valley.

156. **Ferghana province** is located in the southern part of the Ferghana Valley. It shares a border with Tajikistan in the north-west, Kyrgyzstan in the south, and with Namangan and Andijan provinces. Covering an area of 6,800 km^2, equivalent to 1.5% of the total national territory the length of its border is 600 km. A total of 79% of the region's area is plains, with the balance being mountains and foothills.

157. **Namangan province** is located in the north-eastern part of Ferghana Valley. It borders with Ferghana in the south, Andijan in the southeast, Tashkent province in the west, and has a state border with Kyrgyzstan and Tajikistan in the north. Covering an area of 7,440 km^2, it has a heterogeneous relief, including part of the Syrdarya River floodplain.

Climate

158. The climate of Ferghana Valley is arid, continental and differs across districts depending on elevation, the proximity to mountains and distance from the open, arid, westerly windy part of the valley.

159. The climate of **Andijan province** is sharply continental, with relatively mild winters and long hot summers. The main climate feature of Central Ferghana is hot, dry summers and especially cool and humid winters. The average coldest monthly temperature (January) is -3.4°C, the hottest (July) is 26.8°C,[9] and the average year-round temperature is 13.4°C. The average yearly precipitation total is 208 mm, with 89% of annual precipitation falling in winter and spring months. March accounts for the highest monthly precipitation (33 mm), with July to September being the lowest. Mainly north and north-westerly winds are characteristic of this province, and heavy dust storms can cause wind erosion are normally observed during April and May.

[8] Resulting in the weather in winter being more stable than in the rest of Central Asia.
[9] The maximum recorded temperature was 44°C (in the shade), and the minimum was -29°C.

Figure 20: Map of Uzbekistan Showing Provinces and Population Density

160. The climate of **Ferghana province** is also sharply continental, arid, and with an abundance of heat and light. The temperature regime is also positive, with the average annual average air temperature being + 13°C. The coldest month is January: the average monthly air temperature is -3.2°C, with an absolute minimum of -28°C. The hottest month is July with an average monthly air temperature of + 26.8°C and an absolute maximum of + 43°C. The province enjoys 227 frost-free days per year, where its freezing depth is 31 cm. The province's summers are hot and dry, and winters are mild. Annual precipitation is 172 mm, which is almost seven times less than evaporation. Precipitation is not evenly distributed throughout the year. The average monthly wind speeds range from 1.0-1.5 m/s to 2-2.1 m/s, increasing to 10-15 m/s, and with individual gusts in excess of 15 m/s. Primary wind directions are western, northwestern, northern, and southeastern.

161. The climate of **Namangan province** is continental. Summers are hot and long, winters relatively mild and short. There is wide diurnal temperature fluctuation, and little precipitation. In January, temperatures on the plains average 3.5°C, and in July they average +25°C. Annual precipitation on the plains is between 100-200 mm, increasing in the foothills to up to 600 mm. The vegetation period in Namangan province lasts for 229 days. It is the longest period with respect to the southern and eastern parts of the Ferghana Valley.

Surface water and ground water resources

162. The main sources of surface water for the valley are (i) the Naryn and Karadarya rivers, that form the Syrdarya river after their confluence, (ii) the Sokh and Shakhrikhansay rivers, and (iii) a group of small mountain streams. All rivers are typical for mountainous areas, being fed by snow and ice, low flows in April-May, high flows from end-June till mid-August, and with a wide range of discharge during day-and-night. To balance flows with irrigation requirements, main irrigation canals have been constructed, such as Big Ferghana Canal (BFC), Big Andijan Canal (BAC) and South Ferghana Canal (SFC), to transfer excess water from the rivers to zones with water deficits. In addition, river regulation and storage was provided by the construction of the Toktogul, Kampirravat, Sokh, Kurgantepa and other reservoirs. Figure 22 shows the large rivers and canals of Ferghana Valley.

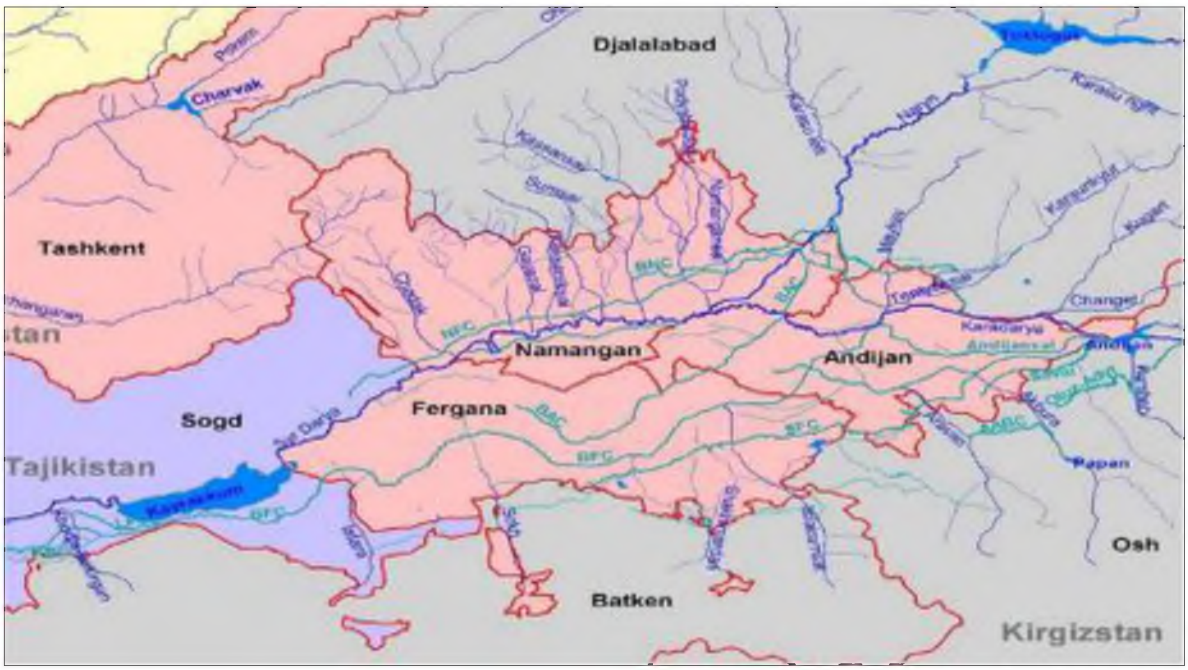

Figure 21: Hydrological Network of Ferghana Valley

163. Ferghana Valley is rich in groundwater resources, having about 38.6% of the nation's total underground water reserves. The total stock of underground water in Ferghana Valley is estimated to be about 6,500 m^3 per day.[10] In the Ferghana Valley territory, a trend has been set in recent years of a growth in mineralization and total hardness of groundwater with respect to their background content that often results from the irrigation of lands. These studies of the state of underground water show that there were no changes recorded in the regional plan, but there are qualitative changes in dry residues and the total hardness.

164. Orographic features of Ferghana Valley have determined a variety of hydrogeological conditions. The following zones are differentiated: (i) the submersion zone with stable, deep groundwater occurrence and low mineralization (adyrs and upper parts of alluvial cones); (ii) the fringe zone with stable close groundwater occurrence with low and medium mineralization (middle part of alluvial cones); and (iii) the dispersion zone with unsecured outflows and unstable, close occurrences of groundwater with increased mineralization (lower part of alluvial cone and interconal declines). The value of groundwater salinity ranges from 1.2 to 3.74 g/l, very low-mineralized and brackish, which enables the development of sub-irrigation owing to their shallowness in order to reduce irrigation water discharge. The water has a qualitative – sulphated – composition, with high calcium and magnesium content.

165. **Andijan province.** The main water artery of the province is the Karadarya river that crosses the province from east to the west, and its water is mainly used for irrigation. There are also three reservoirs and several lakes. Andijan province is famous for its springs, the water of which has good taste and is useful. Thus, there are natural areas of protection in the province's territory, namely Baliqchi district, where the springs such as Sariq Suv, Kul, Uch Buloq, and Tuzloq Buvi are located. The settlements of Nayman, Bouta Qori, Olim, Doustlik, Imom Ota hold the springs of Qora Bosh Buloq, Olim Buloq, Qirq Buloq, Qambar Ota, and Imom Ota. In total, there are 26 springs, predominantly of ascending type, registered in the territory. All of the springs have approaches and power grid.

166. **Ferghana province.** Numerous rivers of the Ferghana Valley have a great importance for irrigation. The main river is the Syrdarya River.[11] Numerous tributaries rush from the surrounding mountains to the Syrdarya - Sokh, Aksu, Shakhimardansay, Kasansay, Isfara, Akbura and others. There are several reservoirs and lakes in the region. In the mountainous and foothill areas of the region, there are more than 10 springs.[12]

167. **Namangan province.** The main water artery of Namangan province is the Syrdarya river that is formed within the province by the confluence of the Naryn and Karadarya rivers. The Kosonsoy, Chortoq, Eski Yer reservoirs were built to regulate the rivers' runoff, and there are more than 15 lakes. The province has about 90 springs with cold water, the most famous of which are (i) the Imom Ota spring located in Parda Tursun settlement, (ii) the Kengulsoy spring, Chust in Chust city, and (iii) the Abdullah Bur on the boundaries of Yangi Qourghon settlement.

[10] Including about 1,900 m^3 per day for Andijan province, and 1,700 m^3 per day for Namangan province. The formation of underground water reserves takes place through infiltration from rivers, canals, streams, and irrigated fields.

[11] The Podshaotasoy, Chortoqsoy, Namangansoy, Kasansoy, Novasoy, Chodaksoy, Govasoy, and others also flow down to it from the mountain slopes.

[12] The most famous of them are: Kaynar Bulok, located Elash; Toshbulok, located in the same village on the banks of the Naiman River; Oydin bun, around which a recreation center was created near the village of Mingtut; Kudash, located in the area of the village of Kudash; Chimion, located near the village of Chimion; Satkak, located in the area of Satkak village; Nor Bulok, located in the area of the village of Auval, etc., is visited by numerous tourists throughout the year.

Soils

168. Historically, Ferghana Valley soils are the most productive in Uzbekistan, which, together with climatic conditions, is a major prerequisite for the agricultural importance of the project area. Other factors contributing to this are the regulated river runoff and that adequate natural drainage is present.[13]

169. In **Andijan province**, at the foothills and in the intermountain valleys, nonsaline bright, typical and fuscous sierozems are developed in good drainage conditions of the upper terraces of river valleys, alluvial cones, and deeply defined loessial terraces. The soil cover of the **Ferghana province** is composed of soils of desert conditions of soil formation, which, under the influence of a close occurrence of groundwater, were transformed into meadow and desert-meadow. In **Namangan province**, sierozem soils predominate: bright sierozems – up to a height of 700-850 m, typical and fuscous sierozems – from 850 to 1,200 - 1,500 m, and chestnut and chernozem-like soils – from above.

Biodiversity, ecological and cultural heritage

170. **Andijan province**. The main crop in the province is cotton, followed by cereals, grapes, pomegranates, figs, persimmons, peaches, apricots, melons and others. The flora is rich and diverse, a large number of different types of plants grow in the floodplains of the rivers, such as: turanga, tamarisk, chyngyl, reed, licorice and Alhági. Two rare species of Uzbekistan's flora listed in the Red Book grow in the province: the Fergana tulip and the Allochrusa gypsophiloides. The species composition of the province is diverse. There are also species of animals listed in the Red Book, such as: Luciobarbus capito conocephalus and other fish's representatives, Phalacrocorax pygmeus, white stork, Aythya nyroca and several others. There are also archeological monuments in Andijan province, such as Jami complex and Bobur monument.

171. **Ferghana province**. The main crops in the province are cotton, wheat, alfalfa and others. In the farms of the province, grapes, fruits and vegetables are also grown for sale in local markets, as well as many crops for their own consumption. The local fauna consist of species that carry agricultural activities, including birds such as turtledove, oriole, goldfinch, blackbird, woodpecker, swallow, cuckoo, small passerine oatmeal, crows, common lane, house sparrow and others. According to official data, foxes, badgers, rodents, hares, turtles, hedgehogs and jackals are also found in the agricultural areas. It is likely that their existence, as well as some small birds, largely depends on the presence of shrubbery, resulting from the flooding of certain areas, and an increase of soils. Pastures support domestic animals, that is, rams and cows. In the Ferghana Valley, and in particular in the Yazyavan district of the Ferghana province, the *State Natural Monument "Yazyavan Chullari"* (1994; area - 1,962 ha) was created to preserve the unique natural sand massif along with the desert habitat. Besides natural protected areas, there are also many famous archeological monuments in Ferghana province.[14]

172. **Namangan province**. The climatic conditions are favorable for the cultivation of cotton and other warm-weather crops, and apricots, pomegranates, figs, grapes, persimmons, apples and pears ripen here. The vegetation in the plains and in the adyr belt is ephemeroid-type, and, above this point, it is replaced by sagebrush, then saltwort-sagebrush, graminaceous-sagebrush, and forb-fescue steppe. There are forest communities

[13] Ferghana Valley soils are formed by the main soil formation conditions as follows: climatic, lithological, geomorphological, hydrogeological, and ameliorative processes.

[14] These include: Palace of Khudoyar Khan, Ferghana Regional Museum of Local Lore; Modari Khan, Pirsiddick, Tomb of Dahma-i-Shahan mausoleums; Narbut Biya, Said Ahmad Hodja, Emir, Jomi madrassas; Chakar Mosque; Eski-Kurgan; and Jami Mosque.

with walnut, alycha, apple, etc., while at an altitude of about 3,000 m archa (juniper) communities occur. Upwards, there are subalpine meadows – a belt of summer pastures.

173. There are two specially protected natural areas (SPNA) in Namangan province, which were created to conserve desert complexes and species of entomofauna and two important ornithological territories (IBA) on the territory of the province:

Table 9: Main Protected Natural Areas and IBA Zones in Fergana Valley

SPNA name, organization year	Location		Area, km²	IUCN Category
	Administrative conformity	Geographical location		
Natural monuments				
Ming Buloq (1991)	Namangan province		10	
Chust (1994)	Namangan province		0,96	
IBA				
Angren Plateau	Namangan province (Pap district)	Western Tien Shan, in the upper river Ahangaran at an altitude of 2700 to 3420 m above sea level	253,1	
Tugay Mirzaaral	Namangan province (Pap district)	in a large bend of the Syr Darya River on its right bank, 10 km southwest of Pap.	18,62	

174. Among natural protected areas, there are protected sites falling into the International Union for Conservation of Nature and Natural Resources (IUCN's) categories III, IV, and V. Pursuant to resolutions # 178 and #179 of 13th April 2004 of the Cabinet of Ministers of Uzbekistan, the following water conservation zones are located in the territory of Andijan and Namangan provinces of Ferghana Valley:

1. Water conservation zones of Naryn river in Namangan province;
2. Water conservation zones of Karadarya river in Namangan and Andijan provinces; and
3. Water conservation zones of Syrdarya river in Andijan province.

175. Local hokimiyats, branches of Ministry of water resources, and Forest Administrations are charged with establishing and ensuring the security of water conservation zones. Fergana Valley holds underground water stocks, and some of the underground water formation zones in Andijan and Namangan provinces were granted the status of natural areas of protection. The location and territory of such zones is presented in Table 10.

Table 10: Fresh underground water formation zones with the status of natural area of protection in Andijan and Namangan provinces

No.	Province and district	Deposits	Area (ha)
Province-level deposits			
1.	Namangan province	Olmos-Vorsiq, Iskovot-Peshku	22,664.8 49,677.2
Country-level deposits			
2.	Namangan province	Noryn	5,685
3.	Andijan province	Osh-Aravon	35,294
	Total		**113,321**

Source: IWRM Plan Report, September 2013

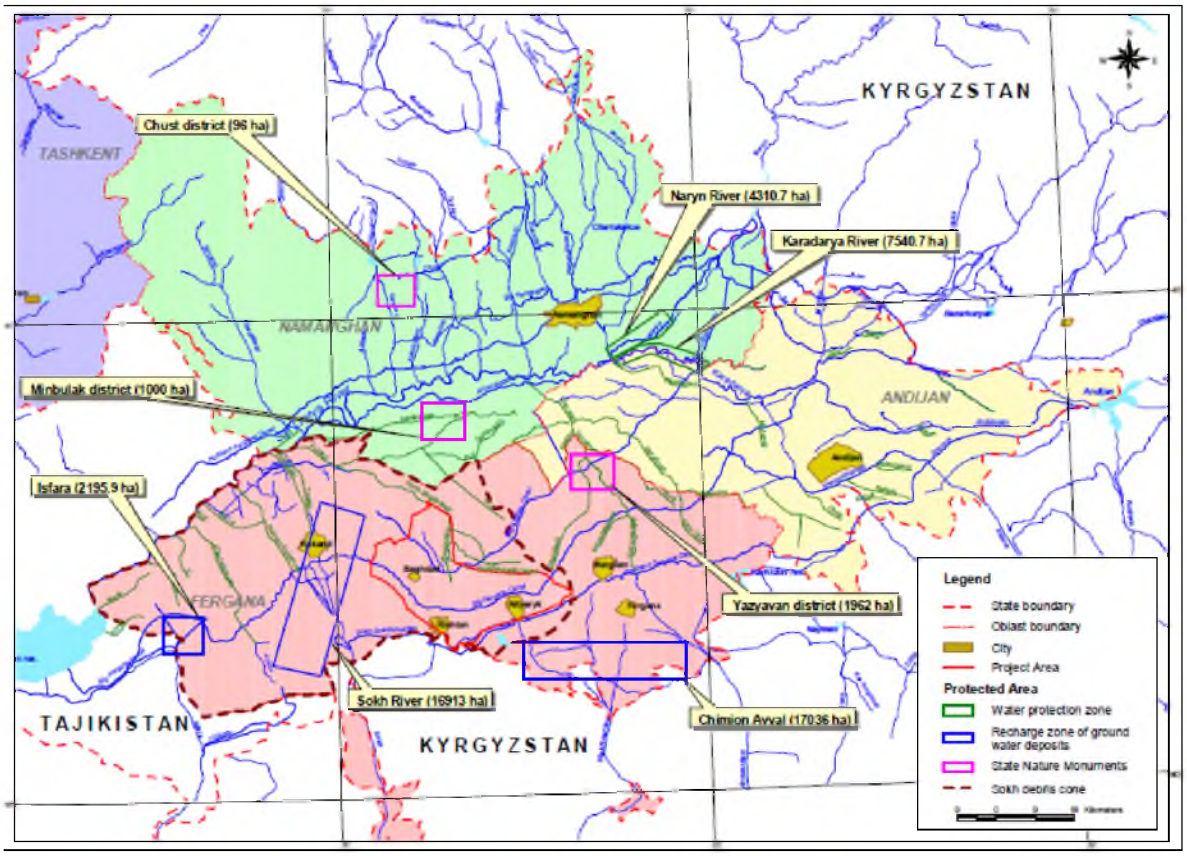

Figure 22: Location map of natural areas of protection in Ferghana Valley

176. There are archeological monuments in Namangan province, including the Mullah Kirghiz, Ota Valihon-Tura Madrassas and Mausoleum of Khoja Amin Cabri.

Socio-economic conditions

177. **Andijan province**. Andijan province was founded on March 6, 1941. It has an administrative center, Andijan city, and the region is divided into 14 administrative districts.[15] The administrative division of Andijan province is presented on Figure 24. The main sectors of agriculture are cotton growing, grain growing, vegetable growing, horticulture and viticulture, meat and dairy farming, and sericulture. The primary industries are mechanical engineering and metalworking, electric power, automotive, and light and food industries.

[15] These are Andijan, Asaka, Balikchi, Boz, Bulakbashi, Izbaskan, Jalakuduk, Khodjaobad, Kurgantepa, Marhamat, Oltinkol, Pakhtaabad, Shakhihon, Ulugnor.

Figure 23: Administrative map of Andijan province

178. **Ferghana province**. Fergana province was founded on January 15, 1938. It is divided into 15 administrative districts, namely Altarik, Baghdad, Besharik, Buvayda, Dangara, Fergana, Furkat, Koshtepa, Kuva, Rishton, Sokh, Tashlak, Uchkuprik, Uzbekistan, and Yozyovun. The administrative division of Ferghana province is presented on Figure 25. The main sectors of agriculture are grain growing, cotton growing, horticulture and viticulture, meat and dairy farming, poultry farming, and sericulture. The primary industries are electric power, machine building, building materials, fuel, (oil and gas), chemical, petrochemical, light and food industries.

Figure 24: Administrative map of Ferghana province

179. **Namangan province.** Founded on March 6, 1941, Namangan province has an administrative center, Namangan city, and the 11 administrative districts of Chartak, Chust, Kasansay, Mingbulak, Namangan, Naryn, Pap, Turakurgan, Uchkurgan, Uychi, Yangikurgan. The administrative division of Namangan province is presented on Figure 26. The main

sectors of agriculture are grain growing, cotton growing, horticulture and viticulture, meat and dairy farming, and sericulture. The primary industries include the electric power, machine building, metalworking, building materials, and light and food industries.

Figure 25: Administrative map of Namangan province

180. The primary socio-economic indicators of the Andijan, Ferghana and Namangan provinces are provided in Table 11.

Table 11: Socio-economic indicators of Andijan, Ferghana and Namangan provinces

Name		Indicators		
		Andijan province	Ferghana province	Namangan province
Territory, km²		4300	6 760	7 440
Population				
Population density, per/km²		713 200	545	370
Total number of people		3 066 900	3 683 300	2 752 900
Women, per		1 541 600	1 828 300	1 355 600
Men, per		1 552 300	1 855 000	1 397 300
Urban population, per		1 603 700	2 082 500	1 777 600
Rural population, per		1 463 200	1 600 800	975 300
Educational institutions				
Primary schools		743	920	687
Secondary professional (colleges)		120	148	110
Academic lyceums		9	9	9
Higher education institutions		4	3	3
Medical institutions				
Hospitals		130	125	1,123
State clinics		383	460	352
Infrastructure, km				
Transport	Car roads	2457	4001	3,168
	Railways	155.8	228,6	228.1

Name		Indicators		
		Andijan province	**Ferghana province**	**Namangan province**
	Airport	International Airport Andijan	International Airport Fergana	International Airport Namangan
Social (was commissioned)	Gas pipelines, km	33.6	32.4	6.6
	Water supply networks, km	141	279.7	272.9

4.2 Bukhara Province

Geography and topography

181. Bukhara region is located in the central and southwestern part of Uzbekistan, it borders Kashkadarya and Navoi provinces and also the Republic of Turkmenistan. The total area of the province is 4,193.7 hectares, of which about 5% of the area is sown land, almost 8% of the territory is covered by forest, and more than 60% of the territory is pastures. The territory of the region is a wavy plain, with separate elevations, and a significant part of the territory is occupied by the sands of Kyzylkum. Only in the south, in the lower reaches of Zarafshan, there are small irrigated oases: Gizhduvan, Bukhara, and Karakul.

Climate

182. The climate is desert, sharply continental, with harsh winters and dry, hot summers. The absolute minimum recorded temperature was -34°C, and the absolute maximum recorded was + 46°C. The average duration of frost in the province is 51 days. Relative humidity varies widely throughout the year, with the highest values being observed in the winter months of December: in January its value is 70-80%. The average annual humidity in Bukhara and Karakul is 55-53%. The long-term average annual rainfall is only 186 mm in Bukhara, and 143 mm at Karakul. During the year, the overwhelming proportion of precipitation falls in the winter-spring period: moreover, in spring the amount is about 50% of the annual amount.

Surface water and ground water resources

183. The main waterway in Bukhara province is the Zarafshan river. In its lower reaches it is lost in the sands, forming salt lakes. The Amu-Bukhara, Amu-Karakul and other canals pass through the province. The Amu-Bukhara Machine Canal (ABMC) is designed to irrigate 266,500 hectares of land in Bukhara, and 23,200 hectares of Navoi province by supplying water to the Amudarya river in an irrigation system previously fed from low-water Zarafshan. There is also a reservoir and more than 60 lakes, with a total area of more than 100,000 hectares. More than 25 species of fish are found in the reservoirs of the region, five of which are of commercial importance.

184. The territory is poorly drained, therefore, on irrigated territory, groundwater levels lie close to the surface, causing soil salinization. With depth, the salinity of groundwater increases. The mirror of mineralized groundwater on the territory lies at depths less than critical, which leads to the development of an intensive process of soil salinization. The almost steady surface (i = 0.0005-0.001) creates difficult conditions for the outflow of groundwater, resulting in the formation of a hydrogeological region “B1” - an extremely difficult general inflow and outflow of groundwater with a depth and a regime that depends on local conditions.

185. Irrigation is concentrated within the Karakul delta. In the irrigated zone, groundwater with medium and high salinity (5-10 g / l and 10-20 g / l) is located close to the surface,

determining the development of salt accumulation in the root zone. The main event in these conditions is the fight against salinization. Given the predominant medium loamy soil texture, a safe groundwater level (when salt accumulation in the upper soil horizons is virtually eliminated) is recommended at about 2.2 m.

Soils

186. The soils of Bukhara province are mainly represented by meadow-oasis soils of the desert zone, salted mainly loamy, and to a lesser extent - takyr saline, clay and loamy in mechanical composition.

Biodiversity, ecological and cultural heritage

187. In the flat territories of Bukhara province, ridge-hilly sands are common, fixed on a considerable area with shrubs. Saxaul, calligonum comosum, wormwood and glasswort grows here. Along the canals banks, various grassy vegetation and groups of trees grow. Arable lands are mainly occupied by cotton. Vegetables and gourds are also grown: there are also orchards and vineyards. Pastures are used mainly for the development of astrakhan sheep breeding. There are seven specially protected natural areas (SPNA) and eight important ornithological territories (IBA) on the territory of the province:

Table 12: Main Protected Natural Areas and IBA Zones in Bukhara Province

SPNA name, organization year	Location		Area, km²	IUCN Category
	Administrative conformity	Geographical location		
Reserves				
Kyzylkum State Tugay-Sand Reserve (1971)	Bukhara province (Romitan district); Khoresm province (Drujba district)	The right bank of the middle course of the Amudarya river	103,11	I
Preserve				
Karakul Preserve (1990)	Bukhara province	Southern Kyzylkum	100,0	IV
Karakyr Preserve (1992)	Bukhara province	Lake Karakir 30 km north of Gazli	300,0	IV
Dengizkul Preserve (1973; 1992)	Bukhara province (Alat district)	Dengizkul Lake	500,0	IV
Important Ornithological Territories (IBA)				
Dengizkul Lake	Bukhara province (Alat district)	75 km south-southwest of the Bukhara city, near the border with Turkmenistan	496,58	
Tudakul and Kuyumazar reservoirs	Bukhara province (Qagan district); Navoi province (Qiziltepa distrcit)	Tudakul is located in 23 km northeast of the Bukhara city. Kuyumazar is located in1 km northwest of Tudakul	336,48	
Khoja-Davlet	Bukhara province (Alat district)	2 km south of the Khoja-Davlet railway station, 4 km south of the regional center of Alat and 140 km	42,42	

SPNA name, organization year	Location		Area, km²	IUCN Category
	Administrative conformity	Geographical location		
		south-west of Bukhara		
Zekry Lake	Bukhara province (Bukhara district)	30 km southeast of the city of Bukhara	15,55	
Qagan fish farm	Bukhara province (Qagan district)	27 km east of Bukhara, not far from the Bukhara-Kyzyltepe highway	17,63	
Karaqyr Lakes	Bukhara province (Peshku district)	30 km north of the city of Gazli and 120 km northwest of Bukhara, in the southwest of the Kyzylkum desert	642,42	
Vardanzi	Bukhara province (Shafirkan district)	50 km northwest of Bukhara and 7 km from the city of Shafirkan	3,26	
Jeyran Ecocenter	Bukhara province (Qagan district)	42 km southeast of Bukhara	327,09	
Natural monuments				
Vardanzi (1975; 1983; 1991)	Bukhara province (Shafirkan district)	Kimerekum	3,0	
Breeding centers				
Republican Center for the Breeding of Rare Species of Animals - Ecocenter "Jeyran" (1976)	Bukhara province (Qagan district)	Southwest Kyzyl Kum	327,09	
Nurseries				
Beauty bustard nursery (2007)	Bukhara province			

188. Besides natural protected areas, there are many archeological monuments. These include: Gaukushan Kosh-Madrasah, Lyabi-house and Poy-Kalyan ansambles, Samanid and Chasma Ayub mausoleums, Abdulla-khan, Kulba-Kukeldash, Miri-Arab, Modari-khan, Nadir Divanbegi, Chor Minor, Abdulaziz-khan, Ulugbek's madrasahs and many others.

Socio-economic conditions

189. Bukhara province was founded on January 15, 1938. The administrative center is Bukhara city, and the province is divided into 11 administrative districts. These are: Alat, Bukhara, Gijduvan, Jondor, Kagan, Karakul, Karavulbazar, Peshku, Ramitan, Shafirkon, Vobkent. The administrative division of Bukhara province is presented below.

Figure 26: Administrative map of Bukhara province

190. The main socio-economic indicators of Bukhara province are provided in Table 13 below.

Table 13: Socio-economic indicators of Bukhara province

Name		Indicators
Territory, km²		40 320
Population		
Population density, per/km²		303 400
Total number of people		1 835 700
Women, per		963 000
Men, per		917 000
Urban population, per		610 100
Rural population, per		1 225 600
Educational institutions		
Preschools		
Primary schools		536
Secondary professional (colleges)		83
Academic lyceums		6
Higher education institutions		4
Medical institutions		
Hospitals		76
State clinics		456
Infrastructure, km		
Transport	Car roads	3969
	Railways	493,5
	Airport	International Airport Bukhara
Social (was commissioned)	Gas pipelines, km	11,5
	Water supply networks, km	796

191. The main sectors of agriculture are grain growing, cotton growing, vegetable growing, sheep breeding. The main industries are fuel, (oil and gas), chemical and petrochemical, building materials, light (cotton gin) and the food industry.

4.3 Djizzak Province

Geography and topography

192. Djizzak province is located in the central part of the nation, between the Syrdarya and Zarafshan rivers. It borders in the north and northeast with the Republic of Kazakhstan and Syrdarya province, in the southeast with the Republic of Tajikistan, and in the west and southwest with Navoi and Samarkand provinces. The total area is 2117.9 thousand hectares, of which about 12% is sown land, almost 8% is covered by forest, and more than 35% is pasture. The central, northern and northwestern parts of the province are located in Hungry Steppe and Kyzylkum desert. The province is framed by spurs of the Turkestan Ridge (Malguzar) from the south, and from the west – by spurs of Nuratin Ridge, which are separated from Turkestan Ridge by the narrow Valley of Sanzar river.

Climate

193. By its natural and climatic conditions, Djizzakh province belongs to the zone of sharply continental climate: summers are hot and dry, and winters are relatively mild. The average temperature in January is between + 1°C, to + 4°C, and in July it is between + 26°C, + 28°C. Up to 400-500 mm of precipitation falls during the year. The vegetation period lasts 240-260 days. Relative humidity is 78-80%, and in the summer 20-40%.

Surface water and ground water resources

194. The main waterways of the province are the Zaaminsu, Sanzar river and Eski Tuyatartar Canal. There are also numerous mountainous watercourses, such as the Achisay, Jalair, Ravat and others that flow down from the slopes of Turkestan and Nuratin Ridges. The province has water reservoirs and lakes; the largest of them is the Aydar-Arnasay system of lakes (AASL) that cover an area of more than 350,000 hectares. AASL is located in two administrative provinces: Jizzak and Navoi. There are more than 25 fish species in the reservoirs of Djizzak province, eight of them have commercial value. In the mountainous and foothill areas of the province, more than 200 spring-type springs with cold water have been recorded. The most famous springs are the Kattatoy, Avliye ota and others.

Soils

195. The south of the region is represented mainly by soil types such as typical brown and low carbonate, dark and light gray soils; in the east - gray earth meadow; in the north of the region, semi-fixed and non-fixed sands prevail.

Biodiversity, ecological and cultural heritage

196. A total of 28 of plant species inscribed in the Red Data Book of the Republic of Uzbekistan grow in the territory of Djizzak province. A total of 26 of them are endemic, such as the Astragalus reedy-bubbly, Olga's Stubbendorfiya, Isakul's onion, Shirach Lacteous-flowery, Sage Calvish and others. There are 44 species of animals inscribed in the Red Data Book of Uzbekistan that also live in the province; four of them, the Fedchenko's Assassin Bug, Shestakov's Digger Wasp, Sulfur Flowerfly and Desert Monitor, are endemics. There are also four specially protected natural areas, and five important bird areas (IBA) in the province:

Table 14: Main Protected Natural Areas and IBA Zones in Djizzak Province

SPNA name, organization year	Location		Area, km²	IUCN Category
	Administrative conformity	Geographical location		
Reserves				
Zaamin mountain-juniper Reserve(1926; 1960)	Djizzak province (Zaamin and Bakhmal districts)	Pamir-Alay, Northern Slope of the Turkestan Range	268,4	I
Nurata mountain-nut-fruit Reserve (1975)	Djizzak province (Farish province)	Pamir-Alay, Northern slopes of the central part of the Nurata Range	177,52	I
National parks				
Zaamin National Park (1976)	Djizzak province (Zaamin district)	Pamir-Alay, Northern Slope of the Turkestan Range	241,1	II
Preserves				
Arnasay (1983)	Djizzak province	Arnasay water system	663,0	IV
Important Bird Areas (IBM)				
North Aydarkul	Djizzak province, Navoi province	50 km northeast of the district center of Nurata	1581,98	
Arnasay Lake System	Djizzak province (Mirzajul district)	45 km northwest of the city Gagarin	317,06	
Tuzkan Lake	Djizzak province (Arnasay and Farish provinces)	35 km west of the village of Dustlik	1077,32	
Nurata Range	Djizzak province (Farish province); Samarkand province (Payaryk and Koshrabat districts)	in the central part of the Nuratau ridge, 120 km west of the city of Jizzak	346,81	
Jum-Jum	Djizzak province (Bahmal district)	north-western spurs of the Turkestan Range, 60 km east of the city of Samarkand and 50 km south of the city of Jizzak	415,17	

197. Among the natural protected areas, there are the Tamerlane Gate (the road laid in the mountains and forming a "gate" of rocks), Khoja Nuriddin XIX madrasa, Gubdin-ota spring (XIX-XX centuries) and others.

Socio-economic conditions

198. Jizzakh province was founded on December 29, 1973. The administrative center of the province is Jizzakh city. The province is divided into 12 administrative districts: namely Arnasay, Bakhmal, Dustlik, Farish, Gallaorol, Jizzakh, Mirzachul, Pakhtakor, Yangiabad, Zaamin, Zafarobod, Zarbdor. The administrative division of Djizzak province is presented below.

Figure 27. Administrative map of Djizzak province

199. The main socio-economic indicators of Djizzak province are provided in Table 15.

Table 15: Socio-economic indicators of Djizzak province

Name		Indicators
Territory, km²		21 210
Population		
Population density, per/km²		638 000
Total number of people		1 352 400
Women, per		672 100
Men, per		680 300
Urban population, per		634 500
Rural population, per		717 900
Educational institutions		
Primary schools		544
Secondary professional (colleges)		76
Academic lyceums		3
Higher education institutions		2
Medical institutions		
Hospitals		60
State clinics		180
Infrastructure, km		
Transport	Car roads	2540
	Railways	274,1
	Airport	
Social (was commissioned)	Gas pipelines, km	42,6
	Water supply networks, km	317,9

200. The main sectors of agriculture in the province are cotton growing, grain growing, vegetable growing, horticulture and viticulture, and meat and dairy farming. The main industries are electric power industry, machine building, metalworking, building materials, and light and food industry.

4.4 Kashkadarya Province

Geography and topography

201. Kashkadarya province is located in the southern part of Uzbekistan, in the basin of the Kashkadarya river on the western slope of the Pamir Alay Mountains. The total area is 2856.8 thousand hectares, of which about 24% of the area is sown land, 4% is covered by forest, and more than 50% is pasture. The province borders on Samarkand province from the north, Bukhara province from the north-west, and Surkhandarya province from the east and southeast. The state borders with Tajikistan from the north-eastern part, and Turkmenistan from the western part. The perimeter of the common border is 795 km, of which 400 km pass through mountain ranges.

Climate

202. The climate is sharply continental, partially subtropical, and dry. The mountain ranges bordering the region from the northeast, east and south impede the penetration of cold air masses. Winters are warm. The absolute minimum recorded temperature is -29°C in the mountains, and the absolute recorded maximum is + 49°C. In the summertime, the winds of the northern rhombuses prevail, the speed of which reaches 4 m/s, and in the spring and autumn the north-western ones pass at a speed of 2-3 m / s. In winter, southeasterly winds blow at the same speed. The number of days in a year with strong winds is 20 days, with 31 days of strong storms.

Surface water and ground water resources

203. The main waterway of the province is the Kashkadarya river, which has numerous tributaries flowing from the mountains. Reservoirs and irrigation canals form an oases of irrigated agriculture: Kitabo-Shakhrisab, Guzar-Kamash and the largest - Karshi oasis. More than 25 species of fish live in the reservoirs and lakes, of which five species are commercial. In the mountainous and foothill areas of the region, about 140 springs have been recorded, the most famous of which are: (i) Karabulak, located 10 km north-east of the town of Kitaba; and (ii) Khoja Imkon, which is located on the southeastern outskirts of the village of the same name, east of Kitaba and others. Groundwater forms in cover sediments of the province, and sub-pressure water forms in the underlying, well-permeable sands. The groundwater level is opened at a depth of 1.5 to 4 m. Mineralization of groundwater varies widely from 3 to 5 g/l, and in places - 10 g/l. According to the chemical composition, groundwater chloride-sulfate and sulfate, including sulfates SO_4 - 3.2 g/l.

Soils

204. The soil cover of Kashkadarya province was formed in the climatic conditions of the desert, and is represented by desert-sandy, takyr-like, gray-brown soils, complexes of gray-brown, desert-sandy and takyr-like soils. Under irrigation and the effects of soil moisture with shallow-lying groundwater (less than 3 m), zonal soils transformed and acquired features of hydromorphic soils, partially losing their original properties. Currently, meadow-desert and desert-meadow (depending on the depth of groundwater) prevail on the irrigated part of the region.

Biodiversity, ecological and cultural heritage

205. Artificial tree planting, flower beds and lawns, as well as self-renewing weed groups from mesophytic and halophytic species are combined in the vegetation cover of the Kashkadarya region. Communities of hydrophytes — cattail, reed, and rare bushes of combed grass — are found along the banks of the reservoirs. The fauna of the region is mainly represented by the following species: Asiatic locust, ground toad, Ablepharus deserti Strauch, Eremias velox, watery snake, Pallas' coluber, Orsini's viper, hedgehog, ground squirrel, hamster, jackal, tolai hare, rat, house mouse. Of the birds, the most typical are the yellow wagtail, magpie, black crow, hoopoe, rook, Bukhara tit, eagle owl, swallow, small dove, field sparrow, common starling. There are three specially protected natural areas and two important bird areas (IBA) in Kashkadarya province.

Table 16: Main Protected Natural Areas and IBA Zones in Kashdarya Province

SPNA name, organization year	Location		Area, km²	IUCN Category
	Administrative conformity	Geographical location		
Reserves				
Gissar Mountain-Juniper State Reserve (1983)	Kashkadarya province (Yakkabag and Shakhrisyab districts)	Mountain ecosystems of the Gissar Range	809.86	I
Kitab geological (1979)	Kashkadarya province (Kitab district)	Pamir-Alay, Western slopes of the Hissar Range	39.38	I
Preserves				
Mubarek State Reserve (1998)	Kashkadarya province		2200	IV
Important Birds Areas (IBM)				
Gissar State Reserve	Kashkadarya province (Yakkabag and Shakhrisyab districts)	The western slopes of the Gissar Range within elevations from 1750 to 4349 m above sea level	11010.51	
Southwestern Foothills of Gissar	Kashkadarya province (Dehkanabad district)	northwest of the low Sakyrtau ridge and 40 km south of the regional center - Dekhkanabad city		

206. Besides natural protected areas, there are many archeological monuments. These include: Ak-Saray Palace; Memorial complex "Dorut Tilovat"; Statue of Amir Timur; Dorus Saodat Complex; Mausoleum of Dorus Saodat; Tomb of Tamerlane; Kok Gumbaz Mosque; Mausoleum of Khazrati – Imam; Maidanak observatory; and Langar-Ota Sanctuary.

Socio-economic conditions

207. The date of the foundation of Kashkadarya province is January 20, 1943. The administrative center is Karshi city, and the province's 13 administrative districts are: Chirakchi, Dehkanabad, Guzar, Kamashi, Karshi, Koson, Kasby, Kitob, Myrishkor, Muborak, Nishon, Shakhrisabz, and Yakkabog. The administrative division of Kashkadarya province is presented below.

Figure 28: Administrative map of Kashkadarya province

208. The main socio-economic indicators of Kashkadarya province are provided in Table 17.

Table 17: Socio-economic indicators of Kashkadarya province

Name		Indicators
Territory, km²		28 570
Population		
Population density, per/km²		112,5
Total number of people		3 213 100
Women, per		1 589 200
Men, per		1 623 900
Urban population, per		1 383 600
Rural population, per		1 829 500
Educational institutions		
Primary schools		1123
Secondary professional (colleges)		139
Academic lyceums		6
Higher education institutions		2
Medical institutions		
Hospitals		81
State clinics		391
Infrastructure, km		
Transport	Car roads	3396
	Railways	492,7
	Airport	International Airport Karshi
Social (was commissioned)	Gas pipelines, km	23,4
	Water supply networks, km	104,4

209. The main sectors of agriculture are cotton growing, grain growing, horticulture and viticulture, meat and dairy farming, sheep breeding, and sericulture. The main industries are electric power, fuel (oil and gas), chemical and gas chemical, building materials, light and

food industry.

4.5 Navoi province

Geography and topography

210. Navoi province is located in the central part of Uzbekistan. The area of the province is 110,800 km^2, or a considerable 24.8% of the total area of the nation. The province borders in the north and east with the Republic of Kazakhstan and Jizzakh province, in the west with the Republic of Karakalpakstan, and in the south with Samarkand, Bukhara and Kashkadarya provinces. The north-western part of the region is occupied by the Kyzylkum plateau: the Nurata mountain ranges extend in the east, and the Zarafshan river borders the south of the region. The territory of Navoi province is divided into 3 parts:

1. The northwest part of the region is occupied by Kyzylkum desert (Karakatta, Mulyli, Mingbulak depressions) –200 m bsl,
2. Sandy plains and sandy mountains (Ovminzatay, Etimtay, Bo'kantov, Tomditay and others) – between 600 and 1000 m asl,
3. The southern part of the Nurota mountain range is represented by the low and average altitude mountains (Qaratay, Oktay and others) – between 1000 and 2000 m asl.

211. The northern and western parts of the region are composed of sand dunes and clay rocks. The Mingbulak depression is the lowest depression in Uzbekistan (12.5 m below sea level).

Climate

212. Navoi province is located in the Kyzylkum agroclimatic district, which covers the Kyzylkum desert. In terms of the temperature in winter time, the district differs little from the neighbouring Nizhneamudaryinsky. The average temperature in January varies from -4 to -7°C in the north-west, to -1 to -2°C in the south-east. The duration of winter in the northern parts is around two months. The absolute minimum recorded temperature was -34°C. The summers are hot, with average July temperatures of 29°C to 31°C. The maximum recorded temperature reached 46°C. Annual precipitation is around 100 mm.

Surface water and ground water resources

213. The Zarafshan river is the main waterway. The provincial territory has some water reservoirs and lakes. The largest lake is the Aydarkul. Reservoirs and lakes have more than 30 kinds of fishes, and 8 kinds of them are commercial. Mountain and foothill districts of the province include about 60 springs of descending and ascending types. The most known and often visited of them are Nuratau, Deybalyand, Irlir, Kulkuduk, Avliyo, Jakhangir, Urta-aul, Kurbulok, Zim ota.

Soils

214. All desert areas of Kyzlylkum steppe feature automorphous and hydromorphous soils with certain development of vegetation. Automorphous soils occupying a large area were formed under the impact of an extreme desert climate, with biological and organic factors. These soils are divided into desert grey-brown, sandy, sandy loam, and takyr and saline soils. Grey-brown desert soil is mainly developed from gypsum gravel-sand, gravel-sand rocks of alluvial and proluvial sediments forming plateaus and high foothill plains. Desert sandy and sandy loam soils occupy the periphery of the ancient delta of the Zarafshan river and foothill plains.

215. In certain places, the soils are saline due to surface moistening, or in other cases due to ground moistening, and intensive evaporation. Takyr soils are divided into takyr-type soils, takyr and takyr salt marsh. Of these, the first is widespread, while the other two are developed around salt marshes. Takyr-type soils are developed on the relatively lower parts of the ancient delta of the Zarafshan river and dry stream bed of Daryaliksay. The surface of takyr soils is usually of light grey colour and covered with a grid of fine fractures.

Biodiversity, ecological and cultural heritage

216. A total of 34 species of plants listed in the Red Data Book grow in Navoi province: astragalus silver-colored, Seseli turbinatum, mixed onion, Silene tomentella, Jurinea, Lagochílus inébrians, Lappula nuratavica and others. There are 55 kinds of animals inscribed in the Red Data Book, and seven of them are endemic, such as the Tugay Undewing Moth, Kozhevnikov's Flowerfly, Aral White-eyed Breem, Turkestan Barbel, Aral Goldside Loach, Sleek Gecko and others. The main protected natural areas and IBA zones is presented in the table below:

Table 18: Main Protected Natural Areas and IBA Zones in NAvoi Province

Ref. on map	Name national/International	Status IBA/National classification/IUCN	Area (ha)
Uz008	Rogatoe lake	IBA	3,764
Uz010	Aktau mountain	IBA	4,176
Uz012	Karakyr lakes system		62,496
Uz013	Nature park Sarymysh	IBA/Nature park/	5,700
Uz015	Tudakul and Kuyumazar water reservoirs	IBA	32,530
Uz018	Karnabchul steppe	IBA/	170,818
Uz020	Zekry lake	IBA	1,504
Uz021	Dengizkul lake	IBA/State conservation area/Ramsar	48,038
Uz022	Achinskoe lake	IBA	6,138
Uz023	Talimarzhan water reservoir	IBA/priority KBA	85,989
Uz029	Aydarkul lake	IBA/Ramsar	155,947
Uz030	Arnasay lakes system	IBA/Ramsar	30,303
Uz035	Tuzkan lake	IBA/Ramsar	103,064
Uz037	Nurota ridge	IBA/State reserve	33,278
Uz038	Kattakurgan water reservoir	IBA	14,057
Uz041	Chimkurgan water reservoir	IBA	4,130
Uz043	South-west Gizzar Foothills	IBA	19,655
Uz051	Ayakagytma lake and surrounding desert	IBA	32,854
1	State conservation area "Karakir"	State conservation area /IBA	30,000
2	National park of local importance "Sarymish"	Nature park/IBA	2,520
3	State conservation area "Aktay"	State conservation area	15,420
4	"Nurota" mountain nut-fruits state reserve	State reserve/IBA	17,752
5	State conservation area "Koshrabat"	State conservation area /IBA	16,300
6	"Arnasay" ornithology state conservation area	State conservation area /IBA	66,300
7	state conservation area "Navoi"	State conservation area /IBA	25,000
8	state conservation area "Karnachbul":"	State conservation area /IBA	40,000
9	state conservation area "Mubarek"	State conservation area /IBA	236,846
10	"Sechankul" state conservation area	State conservation area	7,037
11	State ornithology conservation area Dengizkul	State conservation area /Ramsar/IBA	86,225

217. There are cultural and archeological monuments in Navoi province. These Include: Deggaron, Kasym-sheykh, Shakhimardan, Caravansarai Rabati Malik complexes; Tashmechet, Nurat Ensembles; Khodzhi Khusrava, Mir Sida Bahroma Mausoleums and others.

Socio-economic conditions

218. Navoi province was founded on April 20, 1982. The administrative center is Navoi city. The province is divided into 8 administrative districts: Kanimekh, Kiziltepa, Khatirchi, Navbakhor, Navoi, Nurata, Tamdy, and Uchkuduk. The administrative division of Navoi province is presented below.

Figure 29: Administrative map of Navoi province

219. The main socio-economic indicators of Navoi province are provided in Table 19.

Table 19: Socio-economic indicators of Navoi province

Name		Indicators
Territory, km²		111 090
Population		
Population density, per/km²		8,8
Total number of people		979 500
Women, per		482 700
Men, per		496 800
Urban population, per		478 100
Rural population, per		501 400
Educational institutions		
Primary schools		356
Secondary professional (colleges)		46
Academic lyceums		5
Higher education institutions		2
Medical institutions		
Hospitals		29
State clinics		246
Infrastructure, km		
Transport	Car roads	3 841

Name		Indicators
	Railways	469,3
	Airport	International Airport Navoi
Social (was commissioned)	Gas pipelines, km	
	Water supply networks, km	56,3

220. The main sectors of agriculture include cotton growing, grain growing, horticulture and viticulture, meat and dairy farming, sheep breeding, and sericulture. The main industries are electric power, non-ferrous metallurgy, chemical, building materials, and light industry.

4.6 Samarkand province

Geography and topography

221. Samarqand province is located in the central part of Uzbekistan, in the Zarafshan valley. It borders with Djizzak province in the northeast, Tajikistan in the east, Kashkadarya province in the south, and Navoi province in the west and northwest. It covers an area of 16,400 km².

Climate

222. The Samarqand province is completely located in the Middle Zarafshan climatic region, that extends to the Samarqand and Sanzar-Nurata intermountaine basins with facing mountain slopes. The Middle Zarafshan climatic region lays between Kashkadarya (on the south) and Golodnostepskiy (on the north) climatic regions. It borders with the Lower Zarafshan climatic region (on the west). Average temperature in January range from 0.5°C to -3°C. Wintertime lasts between 28 days and 71 days. The absolute minimum recorded temperature is -25°C. The average temperature in July is 28°C, and the absolute maximum temperature being recorded is 42.4°C. Annual precipitation rises from 180-280 mm on the west to 425 mm on the east. The winter-spring portion of precipitation reaches 33-44% of the annual sum. The region is located between the 0.15 HTC (hydrothermal coefficient) contour line on the west, and the 0.32 HTC contour line on the east. The flat part of the region has rich thermal resources, from 4,500° to 4,000°.

Surface water and ground water resources

223. The hydrographic network is represented by the Zarafshan River and its tributaries and a wide network of irrigation canals. The Zarafshan River originates near the node of the site of the Turkestan and Gissar ranges at an altitude of about 2,750 m above the sea level of the Zarafshan Glacier. The river stretches from east to west, its length is 750 km. The upper course of the river passes among the mountain ranges: it emerges from the gorges and carries water along a wide multi-channel floodplain. In the middle reaches of the Zarafshan River, it divides into the Akdarya and Karadarya rivers, which again merge, forming the channel of the Zarafshan River.

224. Within the territory of Uzbekistan, the river has no tributaries. The lower course of the river is lost in the sands in the middle and lower reaches, including in the Samarqand region, the waters of the river are intensively disassembled for irrigation by a network of irrigation canals. The flow of the river within the Zarafshan depression is regulated and greatly changed. More than 60 main canals emanate from large canals such as the Dargom, Bulungur, Narpay, Eski-Angar, Big right-bank, Shakhrud and others. The Siab, Obi-Mashat, Siabcha canals pass through the city of Samarqand.

225. The chemical composition in the river is formed under the influence of pollution from industrial enterprises discharging sewage waters in populated areas, including the city of Samarqand and sinks of farmland. In addition, it should be noted the high level of contamination of Zarafshan along the sleeve of the Karadarya and the Siab collector with nitrites (correspondingly registered maximum concentrations of 0.241 mg/l and 0.586 mg/l at annual average values of 0.167 mg/l), as well as copper compounds (1.3 mkg/l) due to discharge of sewage from sewage treatment plants and unorganized city drains.

Soils

226. The soils of the investigated area are of gray-loamy loamy loess on loess. These soils are significantly modified by irrigated agriculture and completely lost the structure of the profile of serozem, from which they divorced. They are characterized by a greater thickness and monotonous brownish-gray coloration of the pro-humus part of the soil by soil-worms and the absence of a carbonate horizon. Characteristic features and properties acquired in the development of serozem-oasis soils are clearly pronounced glowing, an increase in the exchange capacity of the proportion of absorbed magnesium, mobile ferrous forms of iron, and general reserves of humus, nitrogen and assimilable phosphates. Soil-forming rocks of this subtype of serozem soils are mainly loess and loesslike loamy rocks. The thickness of the humus horizon is 10-20 cm. These soils are characterized by a high content of silty, the particles are not affected by salinity.

Biodiversity, ecological and cultural heritage

227. The vegetation of the Zarafshan valley is very diverse. The more complex the relief, the richer the vegetation cover and the brighter it reflects an entire ecological complex. As in other areas of Central Asia, xerophyte types of vegetation predominate in the region under study. The distribution of plant groups in the region is determined by the absolute height and terrain conditions, with an important role played by the exposure of slopes. The fauna of nearby territories is characterized by species typical of anthropogenic landscapes. Basically, these are rodents: a house mouse, a gray rat, a blindfold, a vole, a long-eared hedgehog.

228. Ornithofauna of Samarqand province is represented by 25 species, among which dominates the field and Indian sparrows, the small turtledove, the ordinary starling, the swallow whale, the red-swallow swallow, the black swift and the Maina. In addition, there are black crow, magpie, jackdaw in the province. Synanthropic species - house mouse (*Mus museums*), gray rat (*Rathis norvegicus*) are a constant human companion, these species are simultaneously found in other anthropogenic landscapes and in the wild. Some species - earthen rats (Nesokia indica), muskrat (*Ondatra zhibetica*), a number of species of bats (Chiroptera), etc. - quickly adapt to man-made landscapes and human structures. The main protected natural areas and IBA zones is presented in the table below:

Table 20: Main Protected Natural Areas and IBA Zones in Samarkand Province

SPNA name, organization year	Location		Area, km²	IUCN Category
	Administrative conformity	Geographical location		
Reserves				
Zarafshan Valley-Tugay Reserve (1975)	Samarkand province (Bulungur and Djambay districts)	Right bank of the middle course of the Zarafshan river	23,52	I
Preserves				
Karnabchul (1992)	Samarkand province	Karnabchul steppe	400,0	IV
Koshrabad (1992)	Samarkand province	Aktau ridge	163,0	IV
Important Bird Areas (IBM)				

SPNA name, organization year	Location		Area, km²	IUCN Category
	Administrative conformity	Geographical location		
Zarafshan Valley-Tugay Reserve	Samarkand province (Bulungur and Djambay districts)	IBA includes the entire territory of the Zarafshan Reserve, located in the middle reaches of the Zarafshan River. It starts from the Chapan-Ata heights 8 km east of the city of Samarkand and stretches along the right bank of the river upstream to the Pervomay dam.	23,52	
Kattakurgan Reservoir	Samarkand province (Kattakurgan district)	60 km west of the city of Samarkand, in the southern vicinity of the regional center - the city of Kattakurgan	142,49	

229. Samarkand province has a significant number of cultural and historical monuments. Among the famous monuments, are: Registan; Ensembles: Khoja Ahrar, Abdi-Darun; Madrassas: Nadir Divan Run, Sherdor, Tilla-Kari; Mausoleums: Bibi Khanum, Mazar Khoji Daniyar, Ak-Saray, Gur Emir, Rukhabad, Mazgum-bobo, Isharthona, Chorsu, Muhammad al-Bikhari, Hodzha Doniyor, Saint Daniel, Kusam Ibn Abbas; Mosques: Mahdumi Khorazmi, Khazret-Khizr, Khodzha Zumrod, Bibi Khanum, Kodzha Nisbatdor; Memorial complex Imam al-Bukhari; Ulugbek Observatory and many others.

Socio-economic conditions

230. Samarkand province was founded on January 15, 1938. The administrative center is Samarkand city. Samarkand province is divided into eight administrative districts: Bulungur, Ishtikhon, Jomboy, Kattakurgan, Koshrabot, Narpay, Nurobod, Okdarya, Pakhtachi, Payariq, Pastdargom, Samarkand, Toyloq, and Urgut. The administrative division of Samarkand province is presented below.

Figure 30: Administrative map of Samarkand province

231. The main socio-economic indicators of Samarkand province are provided in Table 21.

Table 21: Socio-economic indicators of Samarkand province

Name		Indicators
Territory, km²		16 770
Population		
Population density, per/km²		226,5
Total number of people		3 798 900
Women, per		1 889 800
Men, per		1 909 100
Urban population, per		1 414 700
Rural population, per		2 384 200
Educational institutions		
Primary schools		1220
Secondary professional (colleges)		162
Academic lyceums		11
Higher education institutions		6
Medical institutions		
Hospitals		87
State clinics		434
Infrastructure, km		
Transport	Car roads	4 084
	Railways	282,9
	Airport	International Airport Samarkand
Social (was commissioned)	Gas pipelines, km	67,9
	Water supply networks, km	340,4

232. The main sectors of agriculture include cotton growing, grain growing, horticulture and viticulture, meat and dairy farming, sheep breeding, and sericulture. The main industries include light and food industry, machine building and metalworking, non-ferrous metallurgy, chemical, and building materials.

4.7 Syrdarya Province

Geography and topography

233. Syrdarya region is situated in the east of the country, on the left bank of the Syrdarya river at its outflow point from Ferghana Valley. It borders in the north with Kazakhstan and in the south with Tajikistan. In physical and geographical terms, the Syrdarya region in the south is surrounded by the Turkestan ridge, in the north and east - by the Chatkal ridge. From the west, it borders the Kyzylkum desert and the Hungry Steppe, and is open for the penetration of warm air masses, which affects the climate.

Climate

234. The climate of Syrdarya province is sharply continental, with relatively mild winters and long hot summers. According to observations over the past ten years, the average annual air temperature is + 15.8°C, the average maximum temperature of the hottest month of July is + 36.7°C, and the minimum is –1.6°C. The sharp continentality of the climate is characterized by a large temperature amplitude: the absolute maximum is in the range + 42.9- + 44.0°C, the minimum is -15.5-16.9°C. The prevailing wind directions are southeast and east-southeast, with a repeatability of 16.5 and 13.0%, respectively.

235. The average annual wind speed is 2.7 m/s. Most often, weak winds (0-1 m/s) and winds with a speed of 2-3 m/s are recorded, the repeatability of which reaches 38.2% and 36.8%. The repeatability (10.2 and 6.2%) of high wind speeds of 4-5 m/s and 6-7 m/s is great. The first autumn frosts occur mainly at the end of October to the beginning of November. The duration of the frost-free period averages 260-270 days. About 390 mm of precipitation falls, 80% of which falls on winter-spring time.

Surface water and ground water resources

236. The hydrographical network of the Syrdarya province is represented by the section of the Syrdarya river, which neighbors Tashkent Province from Bekabad up to the site below the inflow of the Main Flood Collector (MFC), irrigation canals and collectors. Inflow of transboundary river waters to Syrdarya is equal to 240 cub.m/s and outflow to Kazakhstan area - 225 cub.m/s. Main water supplies to the territory of the region are accomplished by canals springing from the Farkhad Dam, South Golodnosteppe canal and Dustlik canal (named after Kirov). Via main Dustlik canal, water is delivered to supply Syrdarya province and it partially flows to Kazakhstan. General water consumption of Syrdarya province consists of 2,700 – 3,800 mln. cub.m/year.

237. In flat areas of Syrdarya province, the groundwater are at a depth of 0.5 – 1.0 m to 3-4 m. In the foothills the depth of ground waters bedding varies from 2 to 5 m. In spring, ground waters are very close to the surface, sometimes they rise. Most are at a deeper level in autumn and winter. Ground waters are strongly mineralized and they rise up causing soil salinization. Regarding underground waters, the main volume of fresh waters is concentrated in the northern and eastern site of the region in the Syrdarya river valley. Underground waters are confined to quaternary and upper-pliocene sediments. Reserves of five deposits of fresh underground waters are established in the province: Syrdarya, Central-Gulistan, Upper-Pliocene, Khavast and Dustlik.

Soils

238. Light grey desert soils and in some areas brackish ones prevail in the Tashkent-Golodnosteppe depression. Typical grey soils are widespread by the periphery part of the depression. Meadow and meadow-swampy soils are developed in the bottom of the Syrdarya

river. Typical dark grey soils prevail within the foothill plains and low-hill terrains of Western Tien-Shan, and light and typical grey soils – within the foothills of Turkestan ridge. Loamy light grey soils of plains are irrigated and used for farming. Gristly eroded light grey soils, clayey and loamy, are formed on loess, mostly irrigated or can be used for irrigation, their less part is used for dry-farming land and pasture. Meadow soils are used for farming since long ago.

Biodiversity, ecological and cultural heritage

239. The most part of Syrdarya province is occupied by agricultural land. Arable lands occupy 256,061 ha, technical cultures crops (mainly cotton), grain and legumes – 75,360 ha and 66,988 ha accordingly. Forest zone consists of field-protective plantings along the roads and between the fields, plantings in parks and populated areas: Lombardy poplar (Populus nigra) – the most wide-spread species in forest shelter belts. Planted trees and bushes in parks and dwelling settlements differ by their diversity and include among others the following: (Acer), plane tree (Ulmus) willows (Salix), elms (Acer), plane trees (Ulmus), willows (Salix), mulberry plantations, gardens and vineyards.

240. At the distance of 500 and over meters from the left bank of the Syrdarya river the following trees and bushes are growing: bluish poplar, oleaster, Californian poplar, Bolle's poplar, southern willow, grey poplar, white poplar, ashtree, elm, arbor vitae, juniper, pine, weeping willow, planetree; bushes: wild tamarisk, wild horn-head, dog rose of medicinal plant kind, cane, Great Club-rush, gisha, licorice medicinal, mint, caper, wormwood. Tamarisk bushes of the collector-drainage network are the places of cuckoo nesting, on slopes of drainages and on edges of developed sites, where bushes of carelinia and tamarisk are kept, scrub robin and many other species are nesting: black-headed gull, morwennol and slenderbilled gull.

241. On left-bank of the Syrdarya river the following species of animals and birds are inhabiting: small glassy ibis, white stork, white heron, rare species, yellow heron rare species, small golden eagle, sparrow hawk, pheasant, 9 species of duck, 2 species of teal, little owl, raven 2 species, coot, doves 3 species, viper, water snake 4 species, lizard, reed bunting, quail, wild boar, turtle, muskrat, jackal, vixen, hare, badger, nutria, mouse, hedgehog, bat, snowcock, 2 species of geese, 4 species of cormorants, hoopoe, my-lady's-belt, skylark, blue tit. The following species of fish are also found in the Syrdarya river and off-takes: carp, crucian carp, soma, mudfish, carp, zander, barbel, asp, redeye, Caspian roach, grass carp, pike, sabrefish, bream, Turkestan barbel.

Socio-economic conditions

242. The date of the foundation of Syrdarya province is February 16, 1963. The administrative center is Gulistan city. Syrdarya province is divided into 9 administrative districts: Akaltyn, Bayaut, Gulistan, Khavast, Mekhnatabad, Mirzaabad, Saikhunabad, Sharof Rashidov, and Syrdarya. The administrative division of Syrdarya province is presented below.

Figure 31: Administrative map of Syrdarya province

243. The main socio-economic indicators of Syrdarya province are provided in Table 22.

Table 22: Socio-economic indicators of Syrdarya province

Name		Indicators
Territory, km²		4 280
Population		
Population density, per/km²		193,9
Total number of people		829 900
Women, per		413 200
Men, per		416 700
Urban population, per		354 800
Rural population, per		475 100
Educational institutions		
Primary schools		298
Secondary professional (colleges)		49
Academic lyceums		3
Higher education institutions		1
Medical institutions		
Hospitals		33
State clinics		144
Infrastructure, km		
Transport	Car roads	161,5
	Railways	1 447
	Airport	
Social (was commissioned)	Gas pipelines, km	0,9
	Water supply networks, km	67,7

244. The main sectors of agriculture are cotton growing, grain growing, meat and dairy farming, melon-growing, and sericulture. The main industries are electric power, light and food industry, flour and cereal processing.

4.8 Tashkent Province

Geography and topography

245. Tashkent province is located in the north-east of the Republic of Uzbekistan. It borders in the north with the Republic of Kazakhstan, in the northeast with Kyrgyzstan and the Namangan region, in the south with Tajikistan, and in the west with the Syrdarya region. The territory of the region is 15,300 km^2. The Chatkalsky, Kuraminsky, Pskemsky and Ugamsky mountain ranges occupy the north-eastern and eastern part of the region. Most of the territory is a foothill plain, gradually decreasing south and southwest to the Syr Darya River. In the mountains up to a height of 1,200-1,400 meters there are mountain "steppes", their juniper forests are higher, and at an altitude of 2,000 meters there are subalpine and alpine pastures.

Climate

246. Tashkent province is defined with an extreme continental climate with long hot summers (with temperature up to +35,77°C) and short winters with little snow (minimum temperature –2,18°C). The average annual air temperature is equal to 15.26°C, the average temperature of the hottest month of July is + 27.67°C, and the average temperature in January, the coldest month, is - 2.65°C. The sharpest rise in temperature is observed in April, and starting in August, there is a sharp decrease. The depth of seasonal frost penetration is up to 0,7 m.

247. The wind conditions analysis shows that on reviewed area during whole year, both eastern (E, NE, SE – 50,4 %) and western (W, NW, SW – 33,3 %) winds prevail. The average annual relative humidity is 58%. The average annual atmospheric pressure is 720.6 mm Hg (96.05 hPa). In the average annually, it is marked one day with ice-covered ground and 2 - 11 days with rime. The earliest frost in some years are being observing in the middle of October, the latest – at the beginning of April. The duration of frost-free season is 210 days.

248. This area is characterized by small rates of wind speeds from 1.2 to 5 m / sec. Winds with a few higher speeds is a cleansing factor. Average annual repeatability wind with a speed in 1.2 m/sec is 80.45%. The annual amount of precipitation for the period 2001-2013 was 557,3 mm. The largest amount of precipitation is in April and December (97,2 mm and 84,2 mm respectively). Precipitation occurs rather consistently from January to May, and again from October to December, and are almost negligible between June to September.

Surface water and ground water resources

249. The main water course in the province is the Chirchik river, which is formed due to the confluence of the Chatkal and Pskem rivers. The flow of the Chirchik river is regulated by the Charvak water reservoir, with a usable capacity of 2 billion m^3. Along its route, the river receives only two comparatively big inflows: on the right side, the Ugam river, and on the left side, the Aksakata river. Other tributaries have the character of small inflows, including the largest ones such as on the right- Aktash, Shurabsay, Tavaksay, Azatbash, on the left – Chalibsay, Parkentsay and Bashkizilsay.

250. The Chirchik river is heavily diverted for irrigation by channel networks. Most major channels are the Zakh, Boz-Suv channels (right) and the Northern Tashkent channel (in the upper part it is called Left Bank Kora-Suv). Channels are characterized by high flow capacity and they have a view of real rivers. Waters of the Chirchik river are taken for irrigation and are used for hydropower needs (diversion channel of Chirchik Hydropower Plant drops some of its water through the Boz-Suv channel directly into the Syrdarya river). The Chirchik river gradually reduces its flow and goes to Syrdarya river. The length of the Chirchik river is 174

km, the basin area is 14 240 km^2.

Soils

251. Soil-forming rocks of the Tashkent region are soils of the ephemeral-steppe gray-earth type. These include gray earth meadow, meadow gray earth and meadow. Many features and properties of gray earths are predetermined by the parent rock — loesses. By cultivation, all of these soil types are irrigated. The main parent rocks were alluvial and alluvial proluvial deposits. The soil cover was formed in dry and contrasting desert conditions, so the soil does not have a high level of potential fertility.

Biodiversity, ecological and cultural heritage

252. The list of representatives of fauna is limited those type of animals, who could adapt to the life in anthropogenic conditions. Big mammals are fully absent, typical for unpopulated districts. Representatives of rodents are frequently found here: myagrum, house mouse, common rat, sometimes could be found the eared hedgehog. Typical village representatives inhabit here from the birds' family. They are rook, jackdaw, hooded crow, starling, and different species of sparrows, my-lady's-belt, pigeons and others. The main protected natural areas and IBA zones is presented in the table below:

Table 23: Main Protected Natural Areas and IBA Zones in Tashkent Province

SPNA name, organization year	Location		Area, km^2	IUCN Category
	Administrative conformity	Geographical location		
Reserves				
Chatkal mountain forest biosphere reserve (1947)	Tashkent province (Parkent and Akhangaran districts)	Western Tien Shan, western spurs of Chatkal ridge	357,24	I
National parks				
Ugam Chatkal National Park (1990)	Tashkent province (Bostanlik, Parkent and Akhangaran districts)	Western Tien Shan, Pskem river basin, western and northern slopes of Chatkal ridge	5745,9	II
Important Bird Areas (IBM)				
Oygaing River Valley	Tashkent province (Bostanlik district)	in the northeastern part of Uzbekistan in Pskem river basin	73,30	
The central part of Kuramin ridge	Tashkent province (Akhangaran district)	in the north-eastern part of Uzbekistan	346,93	
Tereklisay tract, Chatkal Nature Reserve	Tashkent province (Bostanlik district)	The Maidantal section of the Chatkal State Biosphere Reserve is located in the spurs of the Western Tien Shan, 100 km east of Tashkent	52,94	
Tract Pulatkhan	Tashkent province (Parkent district)	in the spurs of the Western Tien Shan	23,23	
Bashkyzylsay site of Chatkal Biosphere Reserve	Tashkent province (Parkent district)	in the southwestern spurs of the Chatkal ridge in the upper reaches of the Kyzylsay river	114,31	

SPNA name, organization year	Location		Area, km²	IUCN Category
	Administrative conformity	Geographical location		
		basin, a tributary of the Akhangaransay		
Fish farm "Balykchi"	Tashkent province (Lower Chirchik district)	5 km south of the city of Chinaz in the plain right-bank part of the middle course of the Syrdarya river	44,46	
Tuyabuguz Reservoir	Tashkent province (Pskem district)	35 km south of Tashkent in the lower reaches of the Akhangaran River	14,50	

Socio-economic conditions

253. The date of the foundation of Tashkent province is January 15, 1938. The administrative center is Nurafshon city. The province is divided into 14 administrative districts: Akkurgan, Bekabad, Bostanlik, Buka, Chinaz, Kibray, Parkent, Piskent, Kuyi Chirchik, Orta Chirchik, Yangiyol, Yukori Chirchik, and Zangiata. The administrative division of Tashkent province is presented below.

Figure 32: Administrative map of Tashkent province

254. The main socio-economic indicators of Tashkent province are provided in Table 24.

Table 24: Socio-economic indicators of Tashkent province

Name	Indicators
Territory, km²	15 250
Population	
Population density, per/km²	190,1
Total number of people	2 898 500
Women, per	1 447 000

Name		Indicators
Men, per		1 451 500
Urban population, per		1 427 500
Rural population, per		1 471 000
Educational institutions		
Primary schools		870
Secondary professional (colleges)		120
Academic lyceums		6
Higher education institutions		2
Medical institutions		
Hospitals		81
State clinics		9,9
Infrastructure, km		
Transport	Car roads	3 964
	Railways	391
	Airport	
Social (was commissioned)	Gas pipelines, km	0,3
	Water supply networks, km	161

255. The main sectors of agriculture include cotton growing, grain growing, meat and dairy farming, horticulture and viticulture, poultry farming and sericulture. The main industries are electric power, non-ferrous metallurgy, machine building, metalworking, fuel (oil and gas), chemical and gas chemical, building materials, and light and food industry.

4.9 Surkhandarya Province

Geography and topography

256. Surkhandarya province is located in the south of the nation, in the Surkhan-Sherabad valley. It borders in the south along the Amudarya river with Afghanistan, in the northeast with Tajikistan, in the southwest with Turkmenistan, and in the northwest with Kashkadarya province. The territory of the province is 20,100 km^2. It is stretched mainly from the north to the south for almost 200 kilometers, and from west to east for 140 kilometers. The central and southern parts are the plain bordered in the north by the Gissar ridge, in the west and north-west by its spurs – the Baysuntau and Kugitangtau, in the east - by the Babatag ridge, in the south - by the Amudarya valley.

Climate

257. The climate prevailing in Surkhandarya province is continental. Summer is hot and dry, maximum air temperatures in the summer months (July-August) reach +48-50 °C, and on the soil surface 60-70°C. The province is characterized by mild and short winters. Average monthly temperatures in January, the coolest month, range from 2.1 to 3.3°C. Average absolute minimum recorded temperature in the province is between -23 and -25°C. The duration of the frost-free period is 240-270 days (sometimes 300-320 days). Total annual precipitation is low (350-400 mm). Due to high temperature and low humidity, evaporation exceeds precipitation more than ten times at some locations.

Surface water and ground water resources

258. The landscape of the province is diverse; there are a lot of river valleys, foothills, mountains and rivers. The main rivers are the Surkhandarya, Sherobod, Tupalang, Sangardak rivers. Termez city lies on the right bank of the Amudarya river, which is the main surface water source. Annual run-off of this river varies from 3,050 m^3/sec to 1,410 m^3 /sec, reportedly. Water salinity level is 0.5-0.7 g/l. Turbidity (weighted particles load) is

approximately 5 g/l, of which 40% are sand particles (1.0 to 0.05 mm). Average sediment transport is 2 to 4 kg/m^3, with summer peaks up to 10 kg/m^3. The main hydro-geographical network consists of manmade irrigation and drainage canals. All irrigated croplands in the province are served by this irrigation system, which is fed from the Amudarya river. Underground water of the South Surkhandarya groundwater deposit is used for the water supply of Termez district. The water salinity is 0.4 g/l.

Soils

259. Surkhandarya province occupies the extreme southern position within Uzbekistan. The system of mountain ranges separates the region from the eastern and northern parts of Central Asia. The best contact of air flows occurs from the west and south. All this determines the specific climate of the region. At the same time, natural conditions are very diverse within the province. There are areas with a mountainous, semi-desert climate. According to the adopted soil-climatic zoning scheme, the zones of light brown high mountain soils, mountain-brown soils, gray soils (dark, typical, light) in the vertical zoning system and an arid zone in the latitudinal zoning system are distinguished within the boundaries of the Surkhandarya province.

Biodiversity, ecological and cultural heritage

260. The hot climate allows for cultivation of different kinds of plants in the province. Cotton is the most widely cultivated crop. Cotton plantations occupy almost 50 percent of the territory. There are districts where fruits and vegetables such as grapes, lemons and apricots are cultivated. The province is the only place in the country where sugarcane is cultivated. In the province, 125 species of plants and 64 species of animals listed in the Red Book of the Republic of Uzbekistan will grow. The main protected natural areas and IBA zones is presented in the table below:

Table 25: Main Protected Natural Areas and IBA Zones in Surkhandarya Province

SPNA name, organization year	Location		Area, km²	IUCN Category
	Administrative conformity	Geographical location		
Reserves				
Surkhan Mountain Forest Reserve (1987)	Surkhandarya province (Termez district)	Eastern slopes of the Kugitang range	245,54	I
Natural Park				
Oktepa (2006)	Surkhandarya province		More than 10 km²	
Important Bird Areas (IBM)				
The middle course of the Sherabad river	Surkhandarya province (Sherabad district)	in the south of Uzbekistan, 25 km north of the city of Sherabad	225,76	
Darasay Gorge	Surkhandarya province (Baysun district)	Limestone-gypsum gorge Darasai with flowing along it the mountain river of the same name is located in the Baysuntau ridge 25 km southeast of the city of Baysun	6,38	
South Surkhan Reservoir	Surkhandarya province (Kumkurgan district)	in the foothill hilly steppe in the channel of the Surkhandarya	12,08	

SPNA name, organization year	Location		Area, km²	IUCN Category
	Administrative conformity	Geographical location		
		River, it is located 2-3 km north of the city of Kumkurgan		
Aktepe Reservoir and Three Lakes	Surkhandarya province (Djarkurgan district)	Aktepe reservoir with adjacent three lakes is located in southern Uzbekistan, 25 km northeast of the city of Termez, in the Surkhandarya river valley on the border of a sandy desert and a developed zone.	29,87	
Amudarya floodplain near Termez	Surkhandarya province (Muzrabat district)	23 km north-west of Termez on the first floodplain terrace of the Amudarya river between the villages of Kaptarhona and Sholiker	106,93	

261. There are many cultural and archeological monuments in Surkhandarya province, such as: Fayaz-tepe, Karatepa Complexes; Sultan Saodat Memorial and Cultural Complex; Cockildor hanaka; Airibaba; Dzharkurgan minaret; Kirk-Kyz Fortress; Mausoleum of Hakim at-Termezi; Buddhist stupa Zurmala and others.

Socio-economic conditions

262. Surkhandarya province was founded on March 6, 1941. The administrative center is Termez city. Surkhandarya province is divided into 13 administrative districts: Angor, Denov, Jarkurgan, Kizirik, Kumkurghon, Muzrabot, Oltinsoy, Sariosiyo, Sherobod, Shurchi, Termez, and Uzun. The administrative division of Surkhandarya province is presented below.

Figure 33: Administrative map of Surkhandarya province

263. The main socio-economic indicators of Surkhandarya province are provided in Table 26.

Table 26: Socio-economic indicators of Surkhandarya province

Name		Indicators
Territory, km²		20 100
Population		
Population density, per/km²		127,9
Total number of people		2 569 900
Women, per		1 271 800
Men, per		1 298 100
Urban population, per		910 600
Rural population, per		1 659 300
Educational institutions		
Primary schools		855
Secondary professional (colleges)		116
Academic lyceums		4
Higher education institutions		
Medical institutions		
Hospitals		57
State clinics		268
Infrastructure, km		
Transport	Car roads	2 827
	Railways	368,7
	Airport	International Airport Termez

Name		Indicators
Social (was commissioned)	Gas pipelines, km	
	Water supply networks, km	235,6

264. The main sectors of agriculture include cotton growing, grain growing, horticulture and viticulture, sheep breeding, and sericulture. The main industries include electric power, fuel (oil and gas), light and food industry.

Cultural heritages

265. There are two historical places located within 1,000 meters radius to the project site: (i) the Buddhist temple complex Fayaztepa, and (ii) the Mausoleum of Hakim at-Termezi.

Figure 34: View of Buddhist temple complex Fayaztepa

266. ***Fayaztepa*** is a Buddhist temple-monastery complex, discovered by the Tashkent archaeologist L.I. Albaum in 1963. It is located one kilometer to the northwest from the settlement of Old Termez, and more than 500 meters from the project site. Excavations by archaeologists have discovered the evolution of Buddha images, from primitive to detailed ones. These images are considered to be some of the oldest in the world.

Figure 35: View of Buddhist temple complex Fayaztepa

267. On the elevated coast of the Amu Darya, in the south-west of the Old Termez settlement, there is an architectural monument which is the mausoleum of the "sage from Termez" - ***Hakim at-Termezi.*** To celebrate the 2,500th anniversary of the city in 2001, the appearance of the mausoleum was almost completely restored, which symbolizes the revival of Islamic values. Hakim at-Termezi is now considered the patron saint of this city, and its mausoleum has become a place of worship for Muslims around the world. The distance between this historical complex and project site is more than 1,000 m.

4.10 Khorezm Province

Geography and topography

268. Khorezm province is located in the northwest of Uzbekistan in the lower reaches of the Amudarya river. The total area is 6,100 thousand km^2, occupying 1,4 percent of the territory of Uzbekistan. In the north, Khorezm province borders with the Republic of Karakalpakstan, in the south with Turkmenistan, and in the northeast with Bukhara province. The province's geographical position is between 40º - 42º north latitude and 60º - 62º east longitude. The territory stretches from northwest to southeast for 280 km in those latitudes where the city of Urgench is located, from west to east - 80 km, the northernmost part of the region falls on the tugai of Nuronbobo, which is near the village of Olchin in the Gurlensky district. The southernmost point is located slightly south of the Tuprakkalinsky massif.

Climate

269. Khorezm's climate is classified as continental, with hot summers and cool winters. Summer temperatures often surpass 40 °C; winter temperatures average about −2°C, but may fall as low as −40°C. The coldest month is January - with minimum temperatures of -27˚C. The hottest month - July has a maximum temperature of 42°C. The province is quite arid, with average annual rainfall amounting to between 60 and 120 millimeters, and occurring mostly in winter and spring. Between July and September, little precipitation falls, essentially stopping the growth of vegetation during that period. The wind direction is mostly north-east and north.

Surface water and ground water resources

270. The main waterway of Khoresm province is the Amudarya river. There are such irrigation channels as: Levoberejny, Tashsakay, Shavat, Palvan, Gazavat, and drainage channels are Ozerny, Daryalyk, Chekkakul, Divankulsky. The province has such water reservoirs as: Sultansanzhar, Koshbulak and Kaparas. The reservoirs have a total storage capacity of 7.36 billion m^3 and available water is 5.2 billion m^3. Ground water is very shallow, ranging from 0.7 to 2.5 meters, in some areas up to 5 m. Groundwater recharge occurs at the expense of the underground flow from the Amudarya and channels, as well as due to infiltration of irrigation water and rainfall. The groundwater mineral content varies significantly from 1.5 to 50 g / l, with high salt and corrosive potential in relation to concrete. Underground water can be used for drinking water only when using desalination plants.

Soils

271. The topography in Khorezm is flat, with elevation points ranging between 112 and 138 meter above the sea level. The geomorphological structure of the soils are loess-like loams interbedded with lenses of sand and gravel ranging from 2 to 40 m. Soil texture is dominated by silt loam layers together with sandy loams and loams that constitute almost 80% of all soil layers. Organic matter in irrigated soils is low, constituting on average 7.5 g kg−1 (0.75%) in the topsoil layers and decreasing in the deeper layers. Most subsoils in

Khorezm are slightly- to medium-saline, whereas the majority of topsoils above 60 cm are strongly saline.

Biodiversity, ecological and cultural heritage

272. Natural vegetation is preserved in the floodplain of the Amu Darya and sands. In the floodplain riparian forests on alluvial soils with shallow groundwater are common- turanga, olive, tamarisk, halimodendron, krugloplodnik, cane, kermek, etc. On sandy tracts are distributed associations of crowfoot, narrow-leaved and leafless shrubs, including kanda, sand acacia, garnal, bindweed, parnolistnik, wormwood, euphorbia, adzhryk, kolyuchelistnik, yantak, epilazna, Astragalus, and Salsola. The fauna of this region is typical for arid lands and represented by rodents, reptiles, insects, arachnids and many species of birds that live in the floodplains of rivers and lakes. From the animal world there are hares, jackals, foxes, gazelles, inreeds - susliks, ducks, hawks, larks, sparrows, starlings, golden oriole, from reptiles - geckos, turtles, zheltopuziki, lizards, from rodents - moles, jerboa, field mice, hedgehogs and rats. The main protected natural areas and IBA zones is presented in the table below:

Table 27: Main Protected Natural Areas and IBA Zones in Khorezm Province

SPNA name, organization year	Location		Area, km²	IUCN Category
	Administrative conformity	Geographical location		
Reserves				
Kyzylkum State Tugay-Sand Reserve (1971)	Bukhara province (Romitan district); Khoresm province (Drujba district)	The right bank of the middle course of the Amudarya river	103,11	I
Natural Park				
Yangibazar (2003)	Khoresm province		4,9	
Important Bird Areas (IBM)				
Khorezm fish farm and adjacent lakes	Khoresm province (Bagat and Yangiarik districts)	in the left-bank part of the lower reaches of the Amudarya river, 5 km southeast of Khiva city, on the border of the cultural zone and the Karakum desert. The territory stretches along the border with Turkmenistan, in the north it covers the Khorezm fish farm with a total area of 1,500 hectares	220,60	

273. There are many cultural and archeological monuments in Khoresm province, such as: Ak, Bogbonla, Dzhuma, All-Kuli-khan Mosques; Amir Temur, Arab-khanai Mukhammad-Amin-inaka, Kutlug-Murad-inakai Abdulla-khan, Kazy-Kalyan, Matpana-baya, Matniyaz-Divan-begi, Mukhammad Amin-khan, Mukhammad Rakhim-khan, Khurdzhum and Alla-Kuli-khan, Shirgazi-khan, Islam Khodzha Madrassas; Seyid Allauddin, Uch-Ovliya Mausoleums; Palvan-Kari, Seyid-biya Minarets and many others.

Socio-economic conditions

274. Khorezm province was founded on January 15, 1938. The administrative center is

Urgench city. Khorezm province is divided into 10 administrative districts: Bogot, Gurlen, Khiva, Qoshkopir, Shovot, Urganch, Khonqa, Hazorasp, Yaniariq, Yangibozor. The administrative division of Khoresm province is presented below.

Figure 36: Administrative map of Khorezm province

275. The main socio-economic indicators of Khorezm province are provided in Table 28.

Table 28: Socio-economic indicators of Khorezm province

Name		Indicators
Territory, km²		60 500
Population		
Population density, per/km²		303 400
Total number of people		1 835 700
Women, per		963 000
Men, per		917 000
Urban population, per		610 100
Rural population, per		1 225 600
Educational institutions		
Primary schools		525
Secondary professional (colleges)		88
Academic lyceums		5
Higher education institutions		1
Medical institutions		
Hospitals		41
State clinics		271
Infrastructure, km		
Transport	Car roads	2165
	Railways	174,7
	Airport	International Airport Urgench
Social (was commissioned)	Gas pipelines, km	21,1
	Water supply networks, km	262,4

276. The economy of Khorezm province is primarily based on cotton. Other main sectors

of agriculture include melon-growing, rice-growing, meat and dairy farming, and sericulture. The main industries include electric power, machine building and metalworking, building materials, light, food, flour and the cereal industry.

4.11 Karakalpakstan

Geography and topography

277. The Republic of Karakalpakstan is located in the north-west of Uzbekistan, in the lower reaches of the Amudarya river, along the south-west coast of the Aral Sea. Most of the territory is occupied by plains, passing into the Ustyurt plateau, in the southwest into the hilly chain of Karakum, and in the east into the Kyzylkum desert. In the southeast, the Sultan-Uvais mountains rise. It borders on the Republic of Kazakhstan in the north, northeast and west; in the south and southeast with the Republic of Turkmenistan; and in the east and southeast with Navoi and Khorezm provinces.

Climate

278. The climate in Karakalpakstan is sharply continental with hot and dry summers as well as cold winters with some slight precipitation. The average temperature in January is from –5 to –8 C. The minimum temperature in winter is –38 C. The average temperature in June reaches +26 to +28 C, and in July and August –50 C. The average rainfall is 100 mm per year.

Surface water and ground water resources

279. The major transit river in Karakalpakstan is the Amudarya. The Amudarya is partially a regulated river. In the upstream there is the Nurek dam on the Vaksh River, which is currently run mainly for all-the-year-round production of hydroelectric power. The Tuyamuyun dam in the upper delta of the Amudarya provides for the inter-seasonal storage of water, and the Takhiatash dam located to the north provides gravity distribution of water for irrigation of lands bordering the Sub-Aral area. The flow of the Amudarya is regularized by means of a complex of reservoirs (Channel, Tuyamuyun, Kaparas, Sutansanjar and Koshbulak reservoirs) impounded with four main dams completed between 1981 in 1983 in Tuyamuyun, some 300 km upstream of the former geographical boundaries of the Aral Sea and extending over the territories of Uzbekistan and Turkmenistan. Based on planning, the reservoir complex is used to regularize the flow of the Amudarya mainly for agriculture (98%), and partly for industry and drinking water supply (up to 2%).

280. Nowadays the flow of the Amudarya reaches the village Porlitau, in the Muynak district, some 40 km Southeast of Muynak city, where the river is impounded and the flow diverted into a lagoon extending south of the road connecting Shagilik to Porlitau. Based on a 10-year record period (2006-2015), the flow of the Amudarya at the gauging station Kiziljar, near Porlitau averages a still non-negligible 167 m3/s. However, the discharge of the lower Amudarya varies significantly from year to year, and can decrease to alarmingly low values. In 2011, the flow or the Amudarya at Kiziljar has averaged a low 15 m3/s. There are four recognized groundwater aquifers in Karakalpakstan: (i) the lower Amudarya aquifer, extending in both right and left bank of the Amudarya; (ii) the Karakalpak aquifer in the left bank of the river; (iii) the Khorezm aquifer; and (iv) the Turtkul aquifer.

281. Generally, groundwater in Karakalpakstan is salinized due to the high salinization of the groundwater bearing sediments. Shallow aquifers of generally limited extension are found within old alluvial river channels, constituted by alluvial sediments and recharged mainly by water seepages from irrigation canals. Due to the recharge of surface water from canals, which generally exhibits moderate mineralization content, these lenses of

groundwater can be exploited for local water supplies. The exploitable reserves of these aquifers are limited in quantity due to the limited and variable recharge and also in time due to the upcoming invasion of salinized groundwater from the peripheral zones of the lenses of fresh groundwater. These groundwater lenses are generally exploited by means of small discharge wells for the supply of remote settlements, and in amounts carefully planned in order to relent as much as possible the diffusion of the surrounding salinized groundwater.

Soils

282. The Republic of Karakalpakstan is located in the northwestern part of Uzbekistan, its area being estimated at 167,100 square kilometres or over 37 percent of Uzbekistan's entire territory. The territory of Karakalpakstan can be conditionally divided into four geographical districts: Karakalpak part of the Ustyurt, Karakalpak part of the Kyzyl Kum, lower reaches of Amudarya, and relatively newly emerged solonchak sands of the Aral Sea. Karakalpakstan has a wide range of soils, from sandy soils of the deserts with hummocky and barkhan sands to marshy soils of the floodplain forests in the Amudarya mouth. Karakalpakstan's soils are characterized by different salinity degrees and are subdivided into non-saline, weakly saline and highly saline (salt content of more than 0.5 g per 100 cm^3 of soil).

283. Boggy floodplain-and-alluvial soils occupy narrow bands around the lakes and in the topographic lows with meadow-and-bog vegetation. Most of the year, these soils are water-logged. By the texture, there are various soils: sandy, clayey, loamy, ever-stratified. Meadow soils are most widespread in the territory of Karakalpakstan. Depending on the water regime, they can be divided into two types: meadow floodplain-and-alluvial and meadow residual-and-marshy. The drying out part of the floodplain is predominated by the humus-rich mildly saline option. Sulphates predominate in the salt's composition. In addition to the above, clean sandy soils, i.e. sands, also occur in Karakalpakstan's territory. The sands of the Northwestern Kyzyl Kum emerged as a result of Aeolian reprocessing of alluvium, and those in the region of Sultan Wa'is Taui upland and southeastern Aral seaboard – as a result of bedrock weathering.

Biodiversity, ecological and cultural heritage

284. Individual peculiarity of the nature of Karakalpakstan located in a desert zone of the Central Asian region is defined by an extremely continental, desert climate with small amounts of precipitation given such a large evaporation rate. A large part of the territory is occupied by the deserts of the Ustyurt plateau and Kyzyl Kum. The drying Aral Sea and Amudarya river delta intervene between them and are, in their turn, divided by another (new) desert named Aral Kum. The flora and fauna of the deserts reveal their adaptation to rather unfavourable ambient conditions. The deserts' vegetative cover sharply changes depending on the substrate: psammophytic vegetation commands the sands, gypsophyte vegetation – the rocky substratum, halophytic vegetation – the solochak soils, and sagebrush and sagebrush-and saltwort and ephemeral vegetation – the loamy soils. The desert's animals also adjust to excessive heat and moisture shortage in a number of ways. Some of them shift to a nocturnal way of life and escape from the day's heat hiding in holes or burrowing in the sand or sitting out on the bush branches. What water shortage in the desert has led to is that some desert animals do not drink water at all and do not even know how to drink (yellow ground squirrel).

285. They obtain the necessary moisture from plants, and predators – from their preys' blood. The animals of ephemeral deserts that lead to a strenuous life in the spring go into aestivation during the hot summer period. The Republic of Karakalpakstan records 498 vertebrate species spread over its territory, including 68 mammals, 307 birds (of which, 141 breeding, 20 wintering, and 14 migratory birds), 33 reptiles, 2 amphibians, and 49 fish species. There is roughly 7 times as many invertebrate animals, but they have been very

poorly studied. Insects are the most diverse – 1,392 species that fall into 23 orders. Other invertebrates – the parasites of fish, birds, crustaceans, and shellfish are the most fully investigated. Thus, the fish are known to have 436 parasite species, the birds – 133 helminth species alone. 45 flea species and 16 mite species have been found on rodents. The tugai biocoenosis records 420 invertebrate species, 264 – in gypsum desert, and 180 – in sandy desert.

286. The main protected natural areas and IBA zones is presented in the table below:

Table 29: Main Protected Natural Areas and IBA Zones in Karakalpakstan

SPNA name, organization year	Location		Area, km²	IUCN Category
	Administrative conformity	Geographical location		
Reserves				
Baday-Tugay Plain-Tugay Reserve (1971)	Karakalpakstan (Beruniy district)	right bank of the lower reaches of the Amudarya river	66,42	I
Preserves				
Saygachiy (1991)	Karakalpakstan	Ustyurt Plateau	10000,0	IV
Sudoch'ye (1991)	Karakalpakstan	left bank of the lower reaches of the Amudarya river	500,0	IV
Important Bird Areas (IBM)				
Saigachiy Nature Reserve	Karakalpakstan (Jaslik district)	30-40 km east of the Churuk well and is a Pliocene-ancient Quaternary plateau Ustyurt, located between the Caspian and Aral seas	5110,28	
Northern part of Assake Audan depression	Karakalpakstan (Kungrad district)	in the south of the Karakalpak part of the Ustyurt plateau, in the northern part of the Assake-audan basin, 5 km south of the village of geologists of Shakhpakhty	52,88	
Sudochye Lake	Karakalpakstan (Kungrad district)	220 km northwest of the city of Nukus	46467	
Joldirbaz Lake	Karakalpakstan (Muynak district)	15 km north-east of the village of Kazakhdarya and 150 km north of the city of Nukus	297,23	
Akpetka lakes system and adjacent Aralkum desert	Karakalpakstan		391,46	
Lake Sarykamysh and the adjacent plateau Ustyurt	Karakalpakstan		959,74	

287. There are cultural and archeological monuments in Karakalpakstan. These include: Ayaz kala, Toprak Kala, Kyzyl-Kala, Janbas kala, Janpyk Kala, Koykrylgan-kala, Gyaur-Kala, Dahma Chilpik; Greater Guldursun; Mizdahkan; Mausoleum of Mazlumkhan Sulu; Alan, Akshakhan kala, Bazar-kala, Assakeaudan-kala Hillforts; Mulla-prim, Kirk Dzhigitten, Kurgashin-kala Fortresses and others.

Socio-economic conditions

288. The Republic of Karakalpakstan was founded on February 16, 1925.The capital of Republic is Nukus city. It is divided into 14 administrative districts: Amudarya, Beruniy, Shimbay, Ellikkala, Kegeyli, Mo'ynak, Nukus, Konlikol, Kongirat, Karaozak, Shumanay, Taxtakopir, Tortkul, and Xojeyli. The administrative division of Karakalpakstan is presented below.

Figure 37: Administrative map of Karakalpakstan

289. The main socio-economic indicators of Karakalpakstan are provided in Table 30.

Table 30: Socio-economic indicators of Karakalpakstan

Name		Indicators
Territory, km²		166 590
Population		
Population density, per/km²		11,2
Total number of people		1 869 800
Women, per		931 400
Men, per		938 400
Urban population, per		917 700
Rural population, per		952 100
Educational institutions		
Primary schools		707
Secondary professional (colleges)		95
Academic lyceums		9
Higher education institutions		2
Medical institutions		
Hospitals		41
State clinics		265
Infrastructure, km		
Transport	Car roads	4 187
	Railways	921

	Airport	International Airport Nukus
Social (was commissioned)	Gas pipelines, km	64
	Water supply networks, km	148,3

290. The main sectors of agriculture are cotton growing, melon farming, rice growing, and sheep breeding. The main industries include: electric power, chemical and gas chemical, building materials, flour and cereal, light and food industry.

5. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

291. As requested by government, the project provides assistance to specifically improve and expand MSW collection and transfer systems, while the government continues to improve the nation's MSW disposal sites. Government's disposal initiatives currently include (i) closure of unregistered open dumpsites, (ii) closure of over half of the existing 221 registered dumpsites, (ii) rehabilitation of approximately 100 dumpsites to upgrade them to controlled dumpsites, and (iv) commencement of a program to develop sanitary landfills nationwide through the assistance of the ADB, AFD, EBRD and other resources.

292. The project will result in an additional 2,500 tons per day of MSW being collected from small urban areas, peri-urban and rural areas nationwide, to be transferred to existing disposal sites for disposal. Without the project, 2,500 tons of MSW per day would therefore continue to be dumped, burned or buried throughout communities across the nation.

293. Anticipated environmental impacts from the project were reviewed at the three stages – pre-construction, construction and operation stages.

5.1 Pre-construction stage

Impact

294. During the pre-construction stage, the following aspects may impact on the effectiveness of implementation of environmental safeguards during the whole project cycle and may lead to non-compliance with requirements: (i) non-efficient sanitarian-protection zone (buffer zone) for service centers, (ii) non-inclusion of environmental requirements into the bidding documents and contracts, (iii) non-compliance on receiving all required permissions, (iv) purchase of goods, techniques and machinery which do not comply with ADB Prohibited Investment Activities List set forth in Appendix 5 of the Safeguard Policy Statement (2009) and national standards on exhausted gases.

Sanitarian-Protection Zone

295. The location of all service centers was selected in accordance with several conditions: environmental, resettlement and technological. National legislation[16] identifies activities on repairing of special techniques (trucks, bulldozer and etc.) as belonged to 3rd class of hazard (1 is highest and 5 is lowest). In case of implementation of advanced technologies (conduction maintenance works inside of the building with modern techniques) service centers are classified as class 4. For this class buffer zone is 100 meters. However, if maintenance works implemented in service center does not include tin-painting works, the buffer zone can be decreased up to twice - 50 m.

296. The extent of the buffer zone was discussed with the Republican Center of State Sanitarian Epidemiological Surveillance under the Ministry of Health. As per an official letter submitted to the Implementation Agency – State Committee on Ecology and Environment Protection #09-/5336 dated from August 21, 2019 (Attachment 1), service centers designed for the provision of the maintenance for trucks without welding and painting works, the buffer zone is defined as 50 meters. Therefore, all sites were selected with the condition to keep 50 meters between the workshop area and the closest living houses. Moreover, during site selection, attention was paid to the presence of such sensitive receptors as schools, hospitals and historical places.

297. If during the detailed design stage, or implementation stage, the locations of service

[16] Sanitarian Norms and Rules (SanR&N) 0350-17 "Protection of air in settlement area in Uzbekistan", 2017

centers will change, the buffer zone requirements have to be reassessed. The following activities are proposing to mitigate impacts identified at the pre-construction stage.

Mitigation measures

- Final layouts of service centers have to comply with buffer zone requirements – 50 meters from workshop area until the closest living house;
- Ensure that environmental provision along with EMP are included in the bidding documents and in contracts for Contractors;
- Bids evaluation need to be done with consideration of: the capacity of bidders to meet EMPs requirements, proposing adequate budgets for the efficient implementation of the EMP, and the existence of good practice in environmental performance within other similar projects;
- Within 30 days after contract award, and prior to commencing any physical works, Site-Specific Environmental Management Plans (SSEMPs) will be developed by the Contractors under the guidance of the Project Management Consultant (PMC), and be endorsed by the PMC before submission to the Project Management Unit (PIU) for approval;
- In addition to the SSEPMs, Topic Specific SEMPs need to be prepared by Contractors, endorsed by the PMC and approved by the PMU for the following activities: (i) traffic management plan for construction of distribution network within settlements, (ii) waste management plan for sites with demolishing works, (iii) hazardous wastes management plans as described in the next sub-sections, (iv) construction camps management plan and (v) occupational health and safety plan (OHS Plan);
- Goods procured for project implementation will be performed in compliance with ADB Prohibited Investment Activities List, as set forth in Appendix 5 of the Safeguard Policy Statement (2009);
- Environmental specifications have to be included in the bidding packages for the purchase trucks, techniques and mobile laboratories within the project. Particularly, the toxic level of machinery must meet "Euro 3" environmental requirements as defined by national regulations[17];
- If any changes in the project design will take place, the IEE has to be updated accordingly.

5.2 Construction stage

5.2.1 Physical resources

Impact on air quality

298. During the construction stage, pollutant emissions will be caused by earth works, construction/demolishing activities and exhaust gases from vehicles. It is expected that dust pollution will occur more frequently. Especially, the risk of dust pollution will increase during windy weather and due to the movement of trucks with higher speed inside settlements.

299. At the same time, equipment and vehicles with improper technical characteristics or in poor conditions may also lead to pollution by exhaust gases. Improper waste management, particularly the burning of construction and domestic wastes will lead to air pollution.

300. It is expected that on two project sites in Namangan and Tashkent provinces, demolition works will be done prior to construction. Old buildings on the project sites have

[17] Resolution of President of RUz "On measures for further development of production at the Samarkand automobile plant and renewal automobile park", dated from December 14, 2006

roofs that consisted of asbestos slates. During demolishing works, generated asbestos dust may therefore cause a serious risk for the health of site workers and people living in surrounded settlements. This impact is described in detail in the section "hazardous wastes management".

Figure 38: Namangan province. Old building which has to be demolishing with asbestos contained roof

Figure 39: Tashkent province. Old shelter with roof contained asbestos

301. The project sites are located in different areas: living areas surrounded by residential houses, offices and public places, and industrial zones surrounded by enterprises and production.

302. Some of the service center sites (in Namangan, Syrdarya, Tashkent) are located close to settlements (50-100 meters). For these settlements, dust level monitoring therefore needs to be conducted. In case of exceeding standards (level for this area (0.15 mg/m^3)[18] additional mitigation measures for dust control need to be undertaken: more often watering or installation of one or several dust screens.

Mitigation measures

303. During the construction period, regular mitigation measures shall be used in most cases:

- Water construction sites and roads inside settlements during the dry season;
- Cover transported bulk materials;
- Control vehicle speeds inside settlements: no more than 40 km/h;
- All vehicles and their specifications must comply with technical requirements and have to pass regular inspection as indicated in the national standards[19];
- Prohibit the open burning of solid waste generated, particularly from labor camps and construction activities;
- Clean wheels and the undercarriages of haul trucks prior to leaving construction sites;
- Restrict demolition activities during periods of the high winds or under more stable conditions when winds could nevertheless direct dust towards adjacent communities.

Noise and vibration

[18] SanR&N RUz No.0179-04 Hygienic norms. List of Maximum Allowable Concentrations (MACs) of pollutants in ambient air of communities in the Republic of Uzbekistan including Annex 1

[19] "O'zDSt 1057:2004 Vehicles. Safety requirements for technical conditions" and "O'zDSt 1058:2004 Vehicles. Technical inspection. Method of control".

Noise

304. To assess anticipated noise levels during these type of works, calculations have been completed based on existing information about the operation of various equipment. During construction works for the service centers, noise emissions could be generated from the following equipment:

a. Decommissioning equipment;
b. Construction equipment;
c. Earth moving activity;
d. Generators;
e. Vehicles used for material transport.

305. Level of noise generated by various equipment was used, based on existing standards. It is expected that the following equipment will be used for the construction of service centers.

Table 31: Noise level form various techniques (at the distance 15 meters)[20]

Noise source	Equivalent noise level, dBA
Excavator	81
Dozer (Bulldozer)	82
Track crane	83

306. As a rule, noise caused by moving equipment is reduced at some distance. Such reduction has logarithmic properties. In case of noise caused by construction activities, the noise spread pattern from the noise point is used, that can be determined as: Noise level1 - Noise level2 = 20 log r2/r1.

Table 32: Noise levels at the various distances

Distance	Equivalent noise level (maximum), dBA		
	Excavator (81)	Dozer (82)	Track crane (83)
20	79	80	81
40	70	71	72
60	69	70	71
80	66	67	68
100	65	66	67
120	63	64	65
130	61	62	63

307. Taken in account that due to fencing (at least 2 meters) which will be constructed first on the project sites, noise levels will decrease by 6 dB. In addition, noise levels will reduce by 1.5 dB due to non-asphalted soil absorption.

308. Based on results of noise propagation presented in Table 32, and taking into account reductions in noise level listed above, noise level at the distance 130 m from the fence site will comply with standards - 55 dB[21] for daytime in the area adjusted to the living houses. Baseline assessment showed that ambient noise level for the area adjusted to construction exceeds standards on 10 dB (Table 7) and it is equivalent to 65 dB. In accordance with IFC requirements when "noise impacts should not exceed the levels of presented in Table 1.7.1, or results in a maximum increase in background levels of 3 dB at the nearest receptor location

[20] Part Two – Construction noise impact assessment, Table 7-4
[21] SanN&R 0267-09, Acceptable noise levels for habitable areas Uzbekistan 0267-09 and IFC, EHS Guidelines, 2011

off-site"[22]. Therefore, noise level generated by construction equipment should not exceed 68 dB in front of houses faced to construction site.

309. Among the 13 projects sites, three sites are located close to settlements: Namangan, Tashkent and Syrdarya provinces. Therefore, for these sites anticipated noise impact was assessed.

310. Thus, for the service center in Syrdary province, the first row of houses from the west to the construction site are located a distance of approximately 40 meters, and from the north site houses are located a distance of 50 meters. They could therefore be considered as sensitive receptors due to the location of the impact zone (closer than 130 meters). The second and further rows of houses should not be impacted by noise from construction activities due to reduction of noise of walls and fences of first row houses.

Figure 40: Service center Syrdarya province

311. In Tashkent province, residential houses are located at a distance of 36 and 40 meters. It means that noise levels in these locations will exceed the norms of 55 dB. Therefore, implementation of mitigation measures are needed for this site as well.

[22] IFC, EHS General Guideline, 2007, chapter 1.7.

Figure 41: Service center in Tashkent province

312. There are two houses located in the impact zone (130 meters) of the service center in Namangan province. They are located at distances of 40 meters and 50 meters. Therefore, for this site, additional mitigation measures will also have to be applied.

Figure 42: Service center in Namangan province

313. In case of the project site in Kokand city (Ferghana province), living houses are located at the distance of more than 120 meters. Nevertheless, in case of receiving complaints from the population, noise measurements have to be undertaken. If results show that standards (55 dB) will be exceeded, noise mitigation measures have also have to be undertaken at this site.

314. The other sites are located in remote locations or within industrial zones, where standards of 70dB[23] will apply (Table 32). There are no sensitive receptors (hospital, schools etc.) in a radius of 500 meters of these selected sites.

Mitigation measures:

315. The following measures need to be implemented to avoid noise and vibration impacts on project sites located within settlements:

- Install acoustic barriers on construction sites from the side close to living houses in Syrdarya, Tashkent and Namangan provinces;
- For the site located in Kokand city (Ferghana province), conduct weekly measurements of noise in front of the closest houses to the construction site (2 meters from the window and 1 meter from the earth). In case of exceeding standards and receiving complaints from the population, install acoustic screens;
- In the settlement areas, construction works generating noise have to be undertaken only during period from 8.00 in the morning and until 8.00 in the evening;
- During the construction period establish speed limits for vehicles inside settlements (40 km/h);

[23] IFC, EHS General Guideline, 2007, chapter 1.7.

- Schedule construction so as to minimize the multiple use of the most noisy equipment near sensitive receptors (houses);
- Use of Personal Protective Equipment (PPE) by workers involved in demolishing and construction works in conditions of increased noise level is mandatory;
- Inform the population about anticipated works.

Vibration

Vibration impact

316. Vibration impacts during the construction stage could be caused by the same machinery. The level of vibration and its propagation within a distance was calculated in accordance with methodology indicated in Transportation and Construction Vibration Guidance Manual (2013). The Manual, with reference to Transit Noise and Vibration Impact Assessment (Federal Transit Administration 2006), provides information on vibration levels from different construction equipment (Table 33). The table does not provide data on mobile and assembled cranes since vibration level is not significant.

Table 33: Vibration Source Amplitudes for Construction Equipment

Equipment	Reference in PPV at 25 feet (in/sec)
Excavator (clam shovel drop)	0.202
Small bulldozer	0.003
Loaded trucks	0.076

Source: Federal Transit Administration 1995 (except Hanson 2001 for vibratory rollers)

317. Using these source levels, vibration from this equipment can be estimated by the following formula:

$$PPV_{eqp} = PPV_{Ref}(\frac{25}{D})^n$$

Where:

PPV_{Ref} = reference PPV at 25 ft. (Table 6);
D = distance from equipment to the receiver in ft;
n = 1.4 (the value related to the attenuation rate through ground).

318. Values of vibration level calculated in accordance with this formula are presented in Table 34.

Table 34: Calculation of vibration from equipment

Distance, m	Vibration from equipment,					
	Small bulldozer		Loaded trucks		Excavator	
	in PPV (in/sec)	dB	in PPV (in/sec)	dB	in PPV (in/sec)	dB
20	0.004	37	0.1	66	0.28	74
30	0.002	34	0.05	62	0.16	71
50	0.001	29	0.028	57	0.08	65

Source: PPTA's consultants, 2018

319. National standards for vibration level in residential houses are provided in the Sanitarian Norms and Rules (SNR) № 0146-04 "Design of the living houses in climatic conditions of Uzbekistan". For living houses, the standard is 67 dB for night time and 72 dB for daytime with a frequency of 37 and 61 Hz, and for night time is 67 dB.

Table 35: National standards for vibration

Period	Permanent vibration, dB
Day time	72
Night time	67

320. The standards are provided in the "Transportation and Construction Vibration Guidance Manual" (2013). The manual provides two types of limits for vibration level – for "frequent events" and "infrequent events". The manual defines that "Frequent events" (continuous) is defined as more than 70 events per day and "Infrequent events" (single event) is defined as fewer than 70.

321. As per consultation with the engineering team, the maximum amount of trucks which will move to and from site will not be more than 70. Therefore, for vibration assessment for construction and reconstruction activities, the lower threshold will be applied. For example, a threshold for residential buildings with plastered walls/... is 0.2 in/s for continuous vibration and for single event condition is 0.5 in/s.

322. Table 36 presents the maximum continuous vibration level for preventing damages for different type of buildings. This data can be used as thresholds for both phases – construction and operation for the structural integrity of buildings/houses.

Table 36: Maximum continuous vibration levels for preventing damage (mm/s)

Description of building type	AASHTO (1990)			SAS (1992)		
	mm/s	in/s	dB*	mm/s	in/s	dB*
Historic sites or other critical locations	2.5	0.09	94	2.5	0.09	94
Residential buildings with plastered walls / Building with foundation walls and floors in concrete, wooden ceilings and walls in masonry	5.1-7.6	0.2-0.29	100-104	5.1	0.2	100
Residential buildings in good repair/ Building with foundation walls and floors in concrete, walls in concrete or masonry	10.2-12.7	0.4-0.49	106-108	7.6	0.29	100
Engineered structures without plaster / Buildings in steel or reinforced concrete	25.4-38.1	0.99-1.4	114-118	12.7	0.49	108

AASHTO = American Association of State Highway and Transportation Officials, SAS = Swiss Association of Standardization
Source: California Department of Transportation (2013), US Transportation Research Board (2012)
* Converting into dB was done based on formula provided in para 57

323. As shown, the results of calculation of vibration level (Table 14), vibration from construction activities at this stage will not impact on people living in surrounded areas and for structures since it is below the standard of 72 dB for the daytime. Anticipated vibration levels at the closest distances of 30 meters (Syrdarya and Namangan sites) is below standard. It will not also impact on residential buildings as well, since the highest vibration level will not exceed 0.16 in/s or 71 dB. This level is below the standards for historical places as well – 94 dB. Therefore, there is no impact on the closest historical objects located at a distance of 500 meters away from the project site in Surkhandarya province.

324. Therefore, the above described impacts on air quality, noise and vibration will be temporary and can be mitigated by the implementation of the recommended measures.

Impact on water resources

325. Surface waters may be polluted due to the improper placement of excavated soil, poor management of construction camps, improper storage of construction materials, leakage of fuel and lubricates from construction machinery, and the washing of vehicles and equipment without proper treatment.

326. Among the selected sites only four sites are close to water resources (irrigation or drainage canals). These are the sites in Kokand (Ferghana province), Kashkadarya, Urgench and Tashkent provinces. For these sites, it will be prohibited to locate construction camps closer than 50 meters to these resources. In addition, the monitoring of water quality during the construction period has to be implemented.

Figure 43: Project site in Kokand (Ferghana province)

Figure 44: Project site in Kashkadarya province

Figure 45: Project site in Tashkent province

Figure 46: Project site in Khorezm province

327. Implementation of the mitigation measures and continuous monitoring of water quality in the points indicated in the Environmental Monitoring Table (Chapter 8) is necessary in order to avoid the deterioration of water quality.

Mitigation measures:

328. The following mitigation measures shall be implemented to minimize impacts on water resources:

- Construction and labor camps, including storage places for lubricants, fuels and other oils will be located at least 100 m away from water bodies;
- Conduction of refueling, oil replacement or repairing works will be prohibited within 50 m from water resources;
- Sanitary waters and solid waste will not be released directly into water resources;
- Topsoil stripped material shall not be stored where natural drainage will be disrupted;
- At the sites located next to water bodies (Ferghana, Kashkadarya, Urgench and Tashkent provinces) water quality analysis will be conducted before construction works and during implementation. The location of monitoring points, and frequency and monitoring of substances are presented in the Environmental Monitoring Plan (Chapter 8.2).

Impact on soil

329. The main anticipated impacts on soil during the construction stage will be disturbance or loss of top soil, its compaction and pollution. Surplus excavated soil will be generated during the construction of service centers. Even though surplus materials will be used as embankment fills as far as possible, a certain amount of earth will remain. The movement of equipment and the temporary storage of materials on the ground during the construction may lead to compaction of the soil. This compaction will take place in areas affected by the construction works, in its vicinity, and in the access areas.

Mitigation measures:

330. To minimize this impact on soil quality, the following measures shall be implemented:

- Topsoil of about 30 cm depth shall be removed and stored separately during excavation works, and after the construction, the same soil shall be replaced on the top, in unpaved areas;
- To minimize soil compaction, the movement of all types of vehicles and equipment will be allowed only through identified assess roads;
- Contractors will be required to use only authorized carriers, while obtaining all necessary permissions per respective national legislation.

331. The pollution of soil during the construction phase may be caused by the improper handling of fuel and oil during refueling and poor waste management which is reviewed in the next chapters.

Waste management

Hazardous construction wastes

332. During the construction phase, hazardous wastes will be generated from vehicle operation and maintenance, used boxing from fuel, painting, used batteries and other activities. The improper handling, storage and disposal of these waste materials will lead to pollution of soil, groundwater and surface water courses located close to the project site, as they are hazardous to human health.

333. It is also anticipated that asbestos containing wastes will also be generated at the Tashkent and Namangan project sites during the demolition of existing buildings with asbestos contained roofing slates (Figures 39 – 40). Asbestos dust generated during demolition represents a serious hazard for workers and people living in surrounded areas. Therefore, special procedures on the safe handling and disposal of such wastes have to be developed. There is a procedure on storage, handling and disposal such materials in Uzbekistan.[24] However, in order to bring the procedure in compliance with international standards, a template/example of an Asbestos Management and Disposal Plan (AMDP) has been developed. The template of ACMMP is provided in Appendix 2.

334. In addition to the Site Specific Environmental Management Plan (SSEMP) for these two sites, Contractors will have to develop and implement an AMDP.

Mitigation measures:

- A separate Site Specific Waste Management Plan (SSWMP) will be developed by the Contractor, endorsed by the PMC and approved by the PMU for all construction sites.

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For the sites in Tashkent and Namangan provinces, the SSWMP will be developed with consideration of the presence of wastes generating during demolition existing facilities and cleaning sites. The Plan has to include information about the type of generating wastes, and procedure for their collection and disposal. This plan will not cover asbestos containing wastes;

- Refueling vehicles and oil replacement have to be conducted in specially designated and properly equipped places. Such places have to be organized in the way to avoid releasing or leaking oils and other substances onto the ground or into water courses. Emergency facilities have to be at the place to mitigate oil spill accidents.
- Used oil from vehicles and machinery shall be collected into containers placed at the concreted sites and disposed to a national oil company designated for accepting and treating used oils[25];
- Used batteries have to be collected separately and transferred to the local branches of "Cvetmet" for further disposal.
- Used boxing from oils, paints and other hazardous wastes will be kept in specially designated places in order to prevent leakages into the soil. The used boxing will be disposed to a municipal landfill;
- For sites located in Tashkent and Namangan provinces, the Contractor will also develop a detailed "Asbestos Management and Disposal Plan" (AMDP) (an example of a plan is provided in Appendix 4).

Non-hazardous wastes

Municipal wastes

335. Municipal solid wastes and wastewater will be generated at the construction sites and campsites. Mainly this will be non-hazardous municipal solid waste, consisting of plastic or glass bottles, paper, plastic, waste food, etc. The improper waste handling and disposal of this waste may cause the spread of infectious diseases, and emergence of insects and parasites in construction camp sites. In addition, it may lead to a conflict with the local population.

Construction wastes

336. Construction wastes in significant amounts will also be generated during the demolition of existing buildings on construction sites in Tashkent and Namangan province. Storage of such wastes in areas close to settlements, and their untimely or improper disposal, may impact on air quality, dust generation and the disturbance of neighboring settlements. Besides these wastes, used welding rods, packing materials, and woods will be generated as well. As it was mentioned in the previous section, an SSWMP will be developed and this plan will manage construction wastes as well.

Mitigation measures

- Waste disposal needs to be done in accordance with an agreement concluded between the Contractor and the local agency 'Toza Hudud';
- Before disposal, wastes have to be segregated into recyclable and non-recyclable wastes;
- Recyclable wastes will be sold to relevant organizations and unrecyclable wastes will be disposed of in a timely way to the landfill, as determined by the Toza Hudud;

[25] Resolution of Cabinet Ministries of RUz # 258 "On collection, storage and further disposal of used technical oil" dated from 4 September 2012

- The burning of waste on any construction site will be forbidden with the exception of stub and small branches from felled trees and bushes, which is better to be burned in order to avoid pest dissemination.
- A hydro isolated septic tank is necessary for the collecting of wastewaters at the camp sites, and in addition, the utilization of bio toilets for workers at the construction sites and the timely disposal of wastewater to local wastewater treatment plants.

5.2.2 Biological resources

337. It is expected that during the construction works very limited impact on biological resources may occur. In most of the cases, the project sites are located in open areas, without trees or shrubs on the territory (**Figure 48**).

Bukhara province

Republic of Karakalpakstan

Syrdarya province

Andijan province

Navoi province

Kokand province

Samarqand province

Kashkadarya province

Jizzakh province

Surkhandarya province

Khorezm province

Figure 47: Territory of the proposed sites

338. It will be prohibited to burn grasses and bushes, or use chemicals for removing plantation and cleaning sites. A few trees and bushes are growing only on the territory of two sites in Tashkent and Namangan provinces. It is recommended to keep these trees as much as possible. Along with this, the creation of green zones as part of beatification inside service centers are included into the project design.

Figure 48: Trees on site in Tashkent province

Figure 49: Trees on the territory in Namangan province

339. There are no natural protected areas or sensitive environmental receptors close to project sites. Due to the relatively small area of sites, between 0.3 hectares and 1.0 hectares, and given their locations in urbanized areas within industrial areas or close to settlements, the sites are characterized with limited presence of wild animals, therefore the impact on fauna is considered as insignificant. The implementation of civil works close to canals or small water streams may impact of aqua fauna in these resources. However, taking in consideration that the canal is used for drainage or for irrigation with seasonal water availability, this impact is also assessed as insignificant.

Mitigation measures

340. To mitigate adverse impacts on vegetation and wildlife, and to comply with national requirements, the following measures are required:

1. Avoid cutting trees on construction sites as much as possible.
2. Do not use chemicals or burning to remove vegetation.

Impacts on land use

341. Under this project, impacts on land use are not anticipated. All sites were selected under the condition that the service centers will be constructed on land that belongs to the Toza Hudud, or will be allocated from khokimiyats' reserve lands which are not used for any other purposes. Each site was checked for compliance with this condition through visiting and the collection of necessary documents from relevant agencies.

5.2.3 Socio-economic resources

342. Project implementation should have positive effects and maybe some negative impacts on socio-economic resources during construction works. Personnel with different qualifications will be required for construction works, and local population could be hired for some of the activities, which means the creation of new jobs. Moreover, indirect services will be needed such as for housing, catering and petrol stations. This temporary, positive impact will contribute to an overall project positive impact. Increasing traffic during construction works may however lead to inconveniences for the local population living in the area close to the construction sites and may create safety risks.

Mitigation measures

343. The following measures need to be undertaken to minimize or compensate this impact:

- Contractors and the PMC will inform the population about the anticipated works in the settlement in advance;
- For project sites located close to the settlements (Tashkent, Syrdarya and Namangan), Contractors will be required to develop traffic management plans that clearly indicate the routes of vehicle movements, the placement special signs, the speeds allowed inside of the settlements, and the schedule of transportation activities to avoid peak traffic periods;
- The traffic management plans will be approved by the Traffic Police and disclosed to local communities prior to the commencement of construction works at sites;
- Clear signs will be placed at construction sites in view of the public, warning people of potential dangers such as moving vehicles, hazardous materials and excavations, and raising awareness on safety issues.
- All construction sites will be properly lightened and fenced;
- For construction sites located close to settlements, the development of Site Specific Plans for campsites will be required in the case of creating of construction camps;
- After completion of the works, all roads shall be rehabilitated at least up to the condition of the pre-construction stage;
- Carry out regular awareness campaigns among work staff, including specific hazards associated with the spread of HIV/AIDS.

344. Due to the limited scope of civil works, it is more likely that workers involved in the construction activities will be accommodated inside of settlements located close to construction sites. At the same time, the accommodation of workers in the construction camps will be also possible.

345. Construction sites and areas used for construction camps without proper cleaning and reinstatement works will cause damage and inconvenience to local communities due to debris, spoils, and excess construction materials. In cases when workers camps will have to be established a Site Specific Construction Camp Management Plan has to be developed by the Contractor and approved by the PMC and the PMU.

346. As minimum requirements for SSCCMP, the document should cover the following topics:

- After completion of construction, the Contractor shall provide full reinstatement of the construction and camp sites by bringing them to their primary condition;
- Remove all rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required;
- All disrupted utilities need to be restored, and all affected structures rehabilitated and compensated;
- The area that previously housed the construction camp is to be checked for spills of substances such as oil and paint. and these shall be properly cleaned up;
- All hardened surfaces within the construction camp area shall be ripped, all imported materials removed;
- The PMC will conduct a post-construction audit during the defect liability period in order to ensure that construction sites and camps are properly cleaned and restored to pre-project conditions before the acceptance of the works and hand-over to the Toza Hudud.

For workers

347. During project implementation, special attention should be paid to compliance with Occupational Health and Safety requirements and the accommodation of labor camps if they will be organized for the construction of service centers. Labor camps have to provide safe and adequate living conditions for workers, such as dining rooms, toilets, shower rooms and emergency medical kits and other measures for firefighting and fro example, the prevention of electric shocks. In addition, Contractors shall instruct all workers to act in a responsible manner. At the completion of civil works at a particular site, the Contractor will remove all equipment and structures, clean up the territory, dispose of all waste materials, and rehabilitate all construction sites and work areas so that these can be returned as soon as possible to their previous use.

348. Occupational Health and Safety non-compliance may create a risk for construction workers. The Contractors will be required to develop Occupation Safety and Health Plans, which will cover among others the following topics: (i) usage of PPE, (ii) working procedures with hazardous materials (such as asbestos materials, paints and solvents and etc.), (iii) training activities and (iv) other requirements. For the sites with demolition activities (Namangan and Tashkent), Asbestos Management and Disposal Plan (AMDP) will also be developed by the Contractors with assistance by the PMC based on the template provided in Appendix 4.

Mitigation measures

349. The following measures need to be undertaken:

- Comply with the requirements of the Labor Code of Uzbekistan (1998) and standards on work and health safety[26];
- Ensure that all site personnel have a regular environmental and OHS training on EMP implementation;
- Ensure all workers are provided with and use PPE;
- Logbooks on conducted OHS and Environmental training will be kept on all construction sites. Moreover, all construction sites will have a logbook recording any accidents and emergency situations;
- For the Tashkent and Namangan sites an AMCMP will be developed by Contractors and implemented by the workers.

5.2.4 Cultural heritage

350. There is one historical heritage site located close to the construction site in Surkhandarya province, a Buda temple. It is located around 500 meters to the north-west from the planned construction site. Due to the type of construction works which will not generate noticeable vibration and given the long distance between the temple and the site, no impact on the temple will occur during the construction stage.

351. Due to the relatively small sizes of the project sites (mostly 0.3 hectares to 1.0 hectares) the chance of finding archeological artifacts is small. Nevertheless, the Contractors need to be aware of any chances of finding heritages during excavation works, including the excavation of building basements. For these cases, mitigation measures will be undertaken in accordance with the procedure indicated in the Law of Uzbekistan "On Protection and Use of Objectives of the Archeological Heritages" (2009). A procedure on chance finds of

[26] Construction Norms and Rules # 3.01.01-03. Organization of Construction works. 2003

archeological heritages is presented in Appendix 3.

Mitigation measures

352. The following measures need to be undertaken in case of the possibility of finding heritage artifacts:

1. All workers have to be instructed about chance finding procedures;
2. In case of finding objects, which could be considered as possible heritage, a chance finding procedure has to be applied in accordance with Appendix 3.

5.3 Operational stage

353. It is anticipated that the project overall will have significant positive impacts. Current coverage of rural settlements with SWM collection service is around 40-50% and 0% in remote villages[27]. After project implementation, around an additional 2,500 t/year of MSW will be collected and disposed of at the operating disposal facilities. It means that 20% of the population will be provided with improved services.

354. According to information provided by Toza Hudud specialists, the capacity of the existing disposal sites is able to accommodate all wastes anticipated from the population. Sanitarian-epidemiological and environmental conditions of areas which currently are not covered by waste collection services will significantly improve.

355. Moreover, according to the Strategy, the amount of disposed MSW may actually decrease during the 2022-2028. It will be reached due to an increasing level of waste segregation and expanding types of recycled wastes.

356. Due to the type of provided service in the service centers, the major impacts during the operation phase will be related to noise levels and air quality impacts, the generation of waste, and increasing traffic. The service centers will not provide services on welding, painting or the washing of trucks.

Impact on the air

357. No permanent impacts on air are expected during the operation phase. Air pollution may occur due to the emission of exhaust gases during the idling of trucks or working techniques. To minimize these impacts, the following measures are recommended. Disturbance of the population from increasing noise levels may take place in the service centers located close to settlements (Tashkent province, Syrdarya and Namangan).

358. For the wintertime, gas-based heating systems will operate. At the design stage, detailed designs of heating systems will be developed in accordance with national regulations for the design of production and administrative buildings[28].

Mitigation measures

- Watering of territory of service centers during windy weather;
- Immediately replacing defective equipment and removing it from the work site;

[27] Resolution of President of RUz # 4291 dated from 2019 "About Approval of Strategy of Solid Waste Management in Republic of Uzbekistan for period 2019-2028", Chapter 3, para 28

[28] Construction Norms and Rules # 4.02.18 dated from 2007, Heating – internal design. Construction norms and rules #87 dated from 1997, Building heat engineering

- Prohibiting trucks and machinery idling more than 5 minutes;
- For service centers located close to settlements, working hours will be limited from 8 am until 8 pm;
- Ensure that installed heating systems are operated in accordance with producer's guidance.

Impact on water

359. In accordance with the conceptual design, all service centers will use water from drinking water pipes or ground water wells. Used water will be collected in septic tanks or discharged into sewarage networks. All service centers will be equipped with water meters. The center will not have facilities for washing trucks.

Mitigation measures

- Prohibit the discharge of any sewage or wastes in drainage features and canals located close to service centers (Tashkent, Karshi, Urgench sites);
- Ensure proper maintenance of the septic tanks and timely removal sludge from tanks;
- Prohibit washing vehicles on the territory of the service centers.

Soil quality

360. The impact on soil will be minimal, and could occur due to the improper storage and handling of fuel, lubricants and oil materials. Service centers are not designed to provide the re-fueling of trucks and machinery.

Mitigation measures

1. During maintenance servicing, all used oil has to be stored in the specially designated and equipped places and disposed to relevant agencies (local oil treatment facilities);
2. Each service center has to be equipped with oil spill kits.

Health Safety

361. The operation of service centers may create certain risks for worker's health in term of Operational Health and Safety (OHS). The risks could be related for example to working with equipment, or the movement of trucks inside of service centers.

Mitigation measures

1. All requirements of national OHS procedures have to be fully implemented in service centers;
2. All workers and staff have to be trained on OHS.

362. During the project operation stage, negative impacts and risks may therefore take place. However, all of them can be mitigated by the implementation of proposed measures described in the EMP, and required by national legislation. Along with this, the positive impact of the project is obvious, and it is well described in the section relating to the project goals and expected outcomes. Detailed information about impacts, recommended mitigation measures, responsible personnel for EMP implementation, and monitoring with cost estimates for these activities are presented in Chapter 9.

6. INFORMATION DISCLOSURE, CONSULTATION, AND PARTICIPATION

363. One of the main goals of the IEE is to facilitate the participation of all stakeholders and local communities at all stages of the project cycle: from the pre-construction phase and construction activities to its operation. In these regards, public consultations were held in all 13 project districts to capture the stakeholders' opinions about the project, and agree on the project activities.

364. In compliance with ADB requirements with the aim of informing the communities in the project area about the upcoming consultations, the announcements on planning consultation were submitted to the Toza Hududs for each province and the Republic of Karakalpakstan the official letters under the State Committee on Ecology and Environmental Protection. In addition, all directors of Toza Hududs involved to the project, were informed about planning activities (Appendix 4).

365. Among consulted stakeholders were specialists of district level Toza Hudud, provincial branches of State Committee on Ecology and Environment Protection, specialists from provincial and district level of khokimiyats, representatives of makhallas where construction works will be implemented.

366. Issues on buffer zones for service centers was discussed with specialists from Tashkent city's branch and national level of Sanitarian and Epidemiological Service. Existing status of environmental monitoring of landfills, operating equipment and demands in further improvement of environmental base of State Committee on Ecology and Environment Protection (SCEEP) was discussed with Center of Analytical Control of SCEEP, Central Department of Environmental Monitoring under SCEEP and representatives of SCEEP on provincial level.

367. During public consultations on the project sites PPTA's consultants presented information about the project, planning activities under the project, anticipated environmental impacts and grievance redress mechanism. The PPT presentations were followed by discussions with meetings' participants, questions and answers sessions.

368. Brief information on questions raised by participants during the public consultations is presented in Table 37.

Table 37: Brief Summary of Public Consultations

Issues raised	Addressed in IEE
Syrdarya Province, administrative building of Ulugobod RCA, August 8, 2019	
The Toza Hudud needs more technical support (transports) – Recommendation	Recommendations
Is it possible to build a hotel for the staff? Because some workers (drivers) could not come back without cars and technics	No service center design does not include facility for overnight staying.
Will a design of service center include workshops or only administration buildings?	Yes, the design will include workshops to provide maintenance for purchased under the project trucks
Will the project include special technics or not?	Yes, the project will include purchase of special techniques: 13 excavators, 13 flatbed trucks, and 13 mobile service vehicles

To provide efficient service Toza Hudud needs more containers	Under the project purchase of 6,000 bins are planned. These bins will be equivalently distributed among regional Branches of Toza Hudud
Jizzakh province, administrative building of Bogishamol MFY on August 8, 2019	
When the project will start?	It is planning that project will start in first quarter 2020
Service centers' design and construction works should be done in accordance with international standards (recommendation)	Conceptual design was prepared with consideration international standards. For civil works ADB procurement requirements will be applied
Will it be possible for local Contractors to participate in this bidding?	Yes, if local company meet requirements indicated in the bidding documents they could participate.
Samarqand province, Central office of Samarkand State Committee on Ecology and Environmental Protection on August 9, 2019	
Will your project implement waste segregation technologies?	As part of capacity building program the project will develop program on improvement of wastes segregation approaches in the country. However, the project will not finance waste segregation production
How the design of service centers will be developed and will it meet international standards?	Currently PPTA consultants are working on the development conceptual design of service centers. In parallel national Feasibility study will be prepared based on international design
Will project cover all constructions work for makhalla (construction of collection points)?	No, under this program collection points will not be constructed. Representative of regional Toza Hudud replied that construction of such points is included in government program
We live in historical city and we need more containers (bins) for the Samarkand City	Under the project purchase of 6,000 bins are planned. These bins will be equivalently distributed among regional Branches of Toza Hudud
Toza Hudud needs more techniques, transports for effective organization of works	the project will include purchase of special techniques: 13 excavators, 13 flatbed trucks, and 13 mobile service vehicles
Tashkent Province, makhalla administrative office (project site) on August 13, 2019	
What is a design of a service center include?	The service center will consist of administrative building, workshop, auxiliary facilities and garage for 5-6 cars.
Could it be possible that Toza Hudud will hire staff from the local communities?	Yes, it will be recommended that for civil works not requiring specific skills local population should be hired
What during operation – will local people get any benefit from this service center	The main target of construction of this centers will be providing proper maintenance for trucks purchased under the project. Truck will work for Toza Hudud which means wastes collection and their disposal will improve. Moreover, local people may get job on this creating center.

Is it possible to construct a noise shield in makhalla?	Yes, as part of EMP for sites where population lives close to the project site (Namangan and Tashkent) installation of acoustic barrier will be required. Moreover, it is recommended that Contractor will have undertake monitoring of noise level on weekly base. And in case of exceeding additional measures will be undertaken. If noise from construction activity will bother you can apply to GRM and Contractor will react as well.
Who will be contractor? International or national companies? Which standards will be priority - international or national?	As a contractor – both national and international companies could participate in the bidding. The conceptual design of service centers considers both – national and international requirements.
Andijan province administrative building of Khokimiyat on August 20, 2019	
What kind of equipment and technics?	It will be typical equipment for service centers.
Is it possible to create sorting line (waste segregation production)?	No, because the project will cover only the construction work of the service center
When will the project start?	The construction works will start in 2020
Andijan province, administrative building of Khokimiyat on August 20, 2019	
Who will be implementation agency?	Implementation agency will be Toza Hudud
Which standards will be priority during construction works?	Construction works will be implemented in accordance with national standards described in KMK (Construction Rules and Materials, ChNK). In most of the cases these standards meet international standards.
What kind of equipment will cover the project? Is it possible to change a list of equipment?	the project will include purchase of special techniques: 13 excavators, 13 flatbed trucks, and 13 mobile service vehicles
Surkhandarya Province, administrative building of Toza Hudud in Termez, August 22, 2019	
Who will be responsible for implementation the sanitary standards during the construction works?	Contractor will be responsible for implementation environmental and H&S standards. PMU and PMC will monitor its proper implementation
Who will select contractor?	Contractors will be selected by tender committee
Could local Contractors participate in the bidding?	Yes, local contractor can participate if they meet requirements indicated in tender document
Kashkadarya Province, administrative building of Toza Hudud, Karshi August 22, 2019	
Will be Sanitarian and Epidemiological Service (SES) eligible to conduct environmental monitoring?	Environmental monitoring of construction activity and further monitoring of service center operation will be implemented on accordance with national standards and requirements of IEE. SES can participate in the monitoring within established framework of their duties.
You have explained about monitoring of the project, how we can check a contractor?	EMP will be developed for this project as part of IEE. This document will be published on Toza Hudud's website. From that document you will find what Contractors have to do regarding environmental compliances. PMC will be hired for this project and together with PMU's safeguards specialist they will conduct monitoring of environmental compliance.

Will local contractors can participate in tender?	Yes, local contractor can participate if they meet requirements indicated in tender document
Bukhara Province administrative building of Kogon district Khokimiyat on August 23, 2019	
Will the service center include factory of sorting (segregation) wastes or only for service of transports?	Among 4 outputs for this project, construction of service centers is included in the project
Will Toza Hudud hire people from the local community?	Yes, for works which are not required specific skills Contractors will be recommended to hire local workers
Will project help to improve conditions of existing landfill?	No project will not work with landfills.
Navoi Province administrative building of College on August 23, 2019	
How much funds will be allocated from the Project for the Navoi branch?	At this stage we could not say exactly how much funds will be allocated.
Will project buy equipment and garbage trucks?	13 excavators, 13 flatbed trucks 13 mobile service vehicles and 6,000 bins. All purchases will equivalently distributed among 12 provinces and Republic of Karakalpakstan
When will the project start?	According to plan, the project will start in the first half 2020
Who will be a contractor?	The contractors will be selected on the base of tenders which will be conducted by Tender Committee
What is a design of a layout?	Consultant showed designed one more time from PPT
Will be gas station (petrol) on the site?	No, the service centers design does not include petrol station
Will the project include trainings, workshops for staff?	Yes, the project includes capacity building program for Toza Hudud staff, Environmental Laboratory and
Is it possible to take scholarships to study in EU or USA for the staff of the Toza Hudud?	No, under this project scholarships to USA and EU are not considered. It is possible that Capacity building programs for Toza Hudud staff may include study tours
Tender documents should include new technologies of dedusting	Yes, it will include
Republic of Karakalpakstan in administrative building of Goskompriroda on August 26, 2019	
Who will be response for the implementation? And Financing procedure?	The implementation agency will be Toza Hudud. The financing will be through Loan provided by ADB.
Who will be a contractor?	Contractor will be a company awarded contract be tender commission
Khorezm Province, administrative building of Toza Hudud on August 26, 2019	
What is the prognose of the project, will it be successfully implemented?	Prognose is positive, we hope that the project will be successfully implemented and bring benefits to population
And who will be implementation agency?	The implementation agency will be Toza Hudud.

What is the project implementation period?	The project implementation period is 5 years – 2020-2025
What is the interest of this loan?	It will be decided between Government of Uzbekistan and ADB

369. Scanned versions of list PC's participants, photos from sites are presented in Appendix 4.

370. Final version of IEE will be disclosed on ADB website in English and Russian version of the document will be published on Toza Hudud website.

7. GRIEVANCE REDRESS MECHANISM

371. In accordance with ADB SPS (2009), a Grievance Redress Mechanism (GRM) will be established after project effectivity. The main goals of the GRM are to ensure the free submission and timely redress of grievances and remarks submitted by aggrieved project persons, resolve complaints at the project level, and prevent escalation to the national courts or to the ADB Accountability Mechanism. Along with the ADB requirements on development and approval of the GRM for investment projects, grievance redress procedure in Uzbekistan is also regulated by the national legislation of Republic of Uzbekistan, in particular by the law "On Citizens' Applications" and the law "On the order of submission of appeals of physical and legal entities" (2014). The submission procedure for grievances and citizens' applications has been discussed during the public consultations in the project districts.

372. The GRM for the project takes into account the national legislation, the specificity of the project sites, and the results of public consultations.

373. The Toza Hudud will be responsible for the establishment of their respective GRM after the project effectivity, and act as the GRM secretary to ensure that the GRM is operational to effectively handle environmental and social concerns of project affected persons. The proposed GRM was presented during the public consultations to affected people, and discussed with representatives of the 13 regions of Toza Hudud.

374. In addition, the GRM was discussed with social experts and updated into the format applicable for both aspects: environmental and social in terms of land acquisition and resettlement.

375. After discussions with all parties, the following GRM is proposed which consists of several levels:

- **Level 1.** The aggrieved person applies to district subdivisions of the Toza Hudud. After the registration receives the complaints, the district Toza Hudud will review the nature/specificity of the complaint and will forward it to the relevant party to be resolved. In parallel, the district Toza Hudud will inform the Association about the received complaint. Depending on the nature of the complaint, it may go to the Contractor, Makhalla or the district branch of SCEEP. For example, complaints related to environmental issues will be forwarded to the Contractor or district SCEEP. In GRM implementation, district Toza Hudud will be assisted by the PMU's Safeguards specialist. At this level, a complaint should be resolved within 2 weeks. The district subdivision of the Toza Hudud will inform the aggrieved person and the Association about the measures undertaken.
- **Level 2.** In case the grievance is not redressed in the first stage or the applicant is not satisfied with the decision made/solution, s/he can then submit the grievance directly to the PMU in Tashkent. Thereafter, the received grievance will be reviewed by the PMU in assistance with specialists and representatives of Toza Hudud. In case the grievance is not related directly to the project, the further instance will be recommended to the applicant where s/he should apply for the decision-making.
- **Level 3.** If the issue is not solved, or the applicant is still dissatisfied with the decision/resolution, the aggrieved person may submit the grievance to the Economic Court where the decision will be made in accordance with relevant national legislation.

376. The aggrieved persons can also use the ADB Accountability Mechanism (AM) through the direct citizens' application to the Manila headquarters, particularly to the Complaints Receiving Officer, Accountability Mechanism, Asian Development Bank Headquarters, 6 ADB Avenue, Mandaluyong City 1550, Philippines Email: amcro@adb.org.

Fax +63-2-636-2086.

377. The AM is the last resort, and ADB has its availability as a recourse in case other mechanisms for dealing with harmful project effects are not successful. The GRM is required by the SPS, and the use of the project level GRM should be encouraged first.

378. Most grievances regarding environmental issues are redressed at 1-2 levels. All grievances received from the population will be registered in a logbook, which should be available at all levels: (i) at the site office of the Contractor, (ii) in each subdivision of the Toza Hudud, and (iii) at the provincial Toza Hudud office. Even so, all information received by Contractors regarding grievances, applications from the aggregated persons, and mitigation measures completed should be submitted to the district subdivisions of Toza Hudud for the proper accounting of all grievances. Consequently, the information on all received grievances will be collated at the provincial Toza Hudud.

379. The Contractor should include all information regarding grievances in the monthly progress reports that are to be submitted to the province subdivision of Toza Hudud. The provincial Toza Hudud will then in turn include the aggregated information in the semi-annual reports on environmental monitoring submitted to ADB.

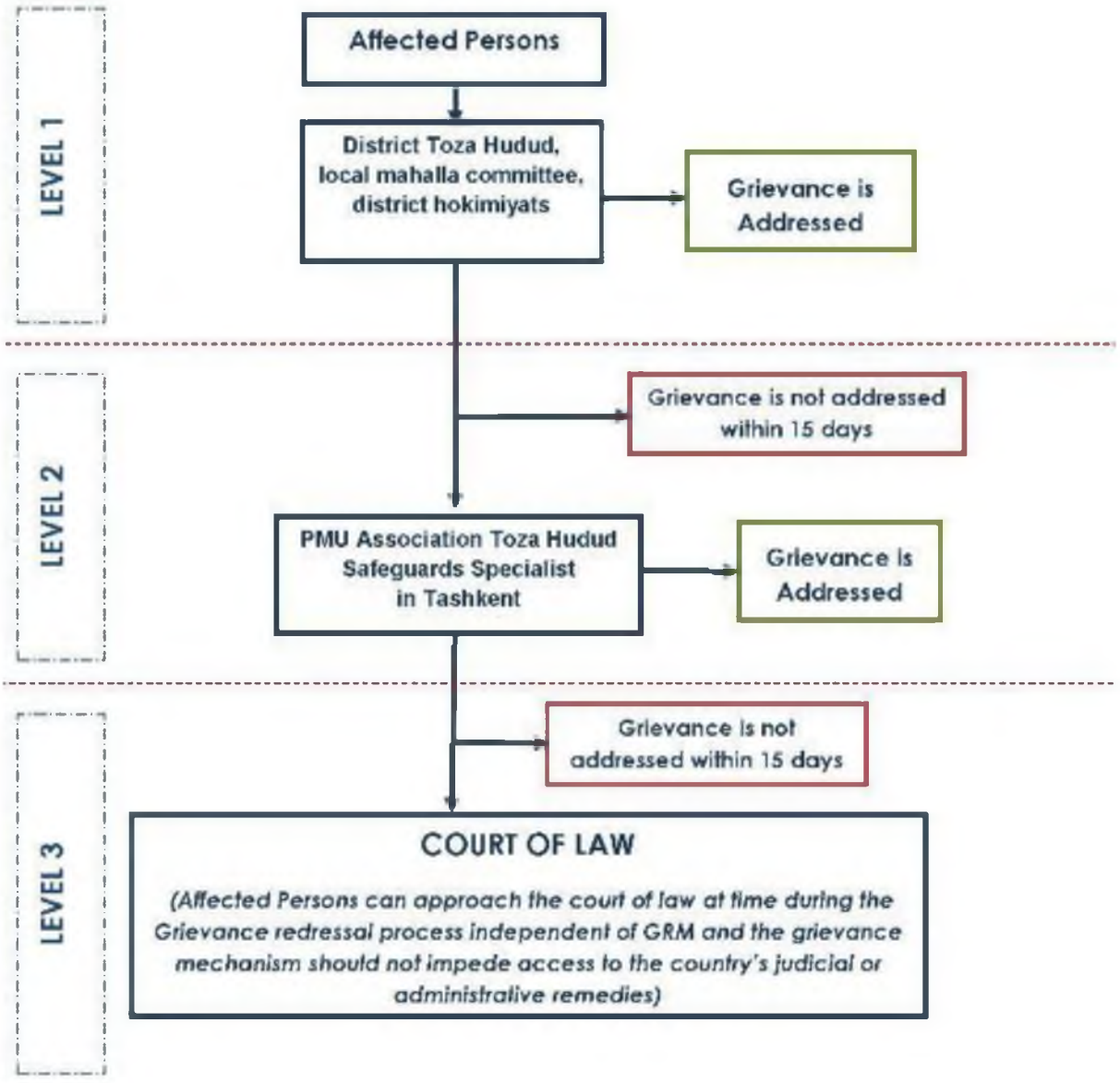

Figure 50: Grievance Redress Process

8. ENVIRONMENTAL MANAGEMENT PLAN

380. The EMP provides a summary of identified impacts; the actions required to mitigate those impacts in accordance with the laws of Uzbekistan and ADB's safeguard policy; and the monitoring activities that are to be undertaken as part of the project in order to confirm that mitigation measures have been effective in reaching their objectives.

381. The EMP also details the institutional arrangements and capacities that currently exist, or that will be established during project implementation, to ensure that the IEE (including the EMP) has (i) comprehensively considered both Uzbekistan and ADB requirements for environmental protection, (ii) identified likely environmental impacts, (iii) proposed appropriate mitigation measures, and (iv) put in place a system to ensure environmental monitoring and control of project impacts, and to verify that mitigation measures are implemented throughout the life of the project.

8.1. Environmental Mitigation measures

382. Mitigation measures required to address the impacts identified by this IEE have been consolidated in the following EMP (Table 38). The table provides information on (i) anticipated impacts during the pre-construction, construction and operation phases of the project, (ii) the proposed mitigation measures, and (iii) the party responsible for their implementation. A Safeguards Specialist from the PMU, an Environmental Specialist from the PMC, and an Environmental Specialist or designated staff of the various Contractors will be responsible for EMP implementation.

Table 38: Environmental Management Plan

Impact	Mitigation measure	Responsibility	Cost
Pre-construction stage			
Project design	• During the detailed design stage, the service center designs will consider compliance with sanitary buffer zones and the minimization of impacts on the environment and nearby human receptors during construction and operation phases.	Design engineer develops detail design PMU and PMC monitor compliance	Included in the project cost
Lack of proper environmental requirements	• Ensure that the EMP is included in bidding documents. • Ensure that environmental covenants, tools for resolving issues with Contractors, and non-compliance with established requirements are included in the bidding documents (such as penalties for environmental violations etc.) and further in contracts.	PMC, PMU's Safeguards Specialist	Included in the project cost
Improper assessment of bidders' environmental capacity	• The IA, with the assistance of the PMC's environmental specialist, will ensure inclusion of environmental provisions along with the EMP in all bidding documents and contracts for Contractors; • Bid evaluations need to be done with consideration of: (i) capacity of bidders to meet EMPs requirements, (ii) ensuring bidders propose adequate budget for efficient EMP implementation, (iii) existence of good practice in environmental performance within other similar projects.	Association of Toza Hudud, PMU	No cost required
Changes in anticipated potential environmental impacts due to changes in design, layout	• If any changes in the project design will take place, the IEE has to be updated accordingly.	District Toza Hudud, PMU, assisted by the PMC	Included in PMU and PMC contracts
Non-compliance with national and international requirements during conduction of bidding for purchase of machinery and mechanisms	• Goods procured for project implementation will be done in compliance with ADB Prohibited Investment Activities List set forth at Appendix 5 of the Safeguard Policy Statement (2009); • Environmental specifications have to be included in bidding packages for the purchase of machinery within the project. Particularly, toxic level of machinery must meet "Euro 3" environmental requirements as defined by national regulations[29];	Association of Toza Hudud, PMU	No cost required
Improper SEMP and SSEMP development	• Within 30 days after contract award and prior to commencing any physical works, Site-specific Environmental Management plans (SSEMPs) will be developed by the Contractors under the guidance of	Contractors develop SEMPs	Included in the Contractors budget

[29] Resolution of President of RUz "On measures for further development of production at the Samarkand automobile plant and renewal automobile park", dated from December 14, 2006

Impact	Mitigation measure	Responsibility	Cost

	the PMC, and be endorsed by PMC before submission to PMU for approval;
	• In addition to SSEPMs, Topic Specific SEMPs need to be prepared by Contractors, endorsed by the PMC and approved by the PMU for the following activities:
	  • Traffic Management Plan for construction of distribution network within settlements;
	  • Waste Management Plan for sites with demolishing works;
	  • Hazardous Wastes Management Plans as described in the next sub-sections;
	  • Construction Camps Management Plan; and
	  • Occupational Health and Safety Plan (OHS Plan).
		PMC review and endorses
		PMU approves	

Construction stage			
Air pollution	• Apply watering of construction sites and roads inside settlements during dry season; • Cover transported bulk materials; • Control speed limitation for vehicles during movement inside of settlements - no more than 40 km/h; • All vehicles and equipment must comply with technical requirements and have to pass regular inspection as indicated into the national standards[30]; • Prohibit open burning of solid wastes generated particularly from labor camps and construction activities; • Clean wheels and undercarriages of haul trucks prior to leaving construction site; • Restrict demolition activities during periods of high winds or under more stabile conditions when winds could nevertheless direct dust towards adjacent communities; • If earth works will be implemented during the dry season dust protection screens have to be installed at the Namangan and Tashkent sites; • Conduct monitoring of dust levels in front of houses located close to the project site in Syrdarya, Tashkent and Namangan. In case of exceeding	Contractors implement PMU and PMC monitor implementation	Included in the Contractors budget 4,000 USD for installation of noise and dust protection screens

[30] "O'z DSt 1057:2004 Vehicles. Safety requirements for technical conditions" and "O'z DSt 1058:2004 Vehicles. Technical inspection. Method of control".

Impact	Mitigation measure	Responsibility	Cost
	standards for dust level for this area (0.15 mg/m^3),[31] additional mitigation measures for dust control need to be undertaken – more often watering or installation of dust screens for Namangan.		
Noise and vibration	• Install acoustic barrier on construction site from the side close to living houses in Syrdarya, Tashkent and Namangan provinces; • For the sites located in Kokand city (Ferghana province), conduct weekly measurements of noise in front of closest to construction site houses (2 meters from window and 1 meter from earth). In case of exceeding standards and complaints from population, install acoustic screens; • In the settlement areas construction works generating noise have to be undertaken during period from 8.00 am in the morning and until 8.00 pm in the evening; • During the construction period, establish limits on speed for vehicles inside settlements (40 km/h); • Schedule construction so as to minimize the multiple use of the most noisy equipment near sensitive receptors (houses); • Use of Personal Protective Equipment (PPE) by workers involved in demolition and construction works in conditions of increased noise level is mandatory; • Inform population about anticipated works.	Contractors implement PMU and PMC monitor implementation	Included in the Contractors budget
Pollution of surface and ground water	• Construction and labor camps, including storage places for lubricants, fuel and other oils will be located 100 m away from water bodies; • Conduction of refueling, oil replacement or repairing works will be prohibited within 50 m of water resources; • Sanitary water and solid wastes will not be released directly into water streams; • Topsoil stripped material shall not be stored where natural drainage will be disrupted; • At the sites located next to water bodies (Ferghana, Kashkadarya, Urgench and Tashkent provinces) conduct water quality analysis before construction works and during implementation. Location of monitoring points, frequency and monitoring substances are presented in Environmental Monitoring Plan	Contractors implement PMU and PMC monitor implementation	Included in the Contractors budget

[31] SanR&N RUz No.0179-04 Hygienic norms. List of Maximum Allowable Concentrations (MACs) of pollutants in ambient air of communities in the Republic of Uzbekistan including Annex 1

Impact	Mitigation measure	Responsibility	Cost
Soil contamination	• The top soil of about 30 cm depth shall be removed and stored separately during excavation work, and after the construction of the main trunk the same soil shall be replaced on the top, in unpaved areas; • To minimize soil compaction, movement of all type techniques will be allowed only through identified assess roads; • Contractors will be required to use only authorized carriers with getting all necessary permissions per respective national legislation.	Contractors implement PMU and PMC monitor implementation	Included in the Contractors budget
Waste management	A separate Site-Specific Waste Management Plan (SSWMP) will be developed by the Contractor, endorsed by the PMC and approved by the PMU for all construction sites. For sites in Tashkent and Namangan provinces, the SSWMP will be developed with consideration of the presence of wastes generated during the demolition of existing facilities and cleaning sites. Each plan will include information about the type of generated wastes, and procedures of their recycling or disposal as appropriate.	Contractors implement PMU and PMC monitor implementation	
Hazardous waste	• Refueling vehicles and oil replacement have to be conducted in special designated and properly equipped places. Such places have to be organized in the way to avoid releasing or leaking oil on the ground surface or within water courses. It could be reached by putting oil containers only on covered surfaces with simple drainage/collector system. Emergency facilities have to be at the place for the mitigation of oil spills (sand or other absorbers); • Used oil from vehicles and machinery shall be collected into containers placed at the concreted sites and disposed to a national oil company designated for accepting and treating used oils[32]; • Used batteries have to be collected separately and transferred to the local branches "Cvetmet"[33] for further disposal. • Used boxing from oil, painting and other hazardous wastes will be kept in specially designated places in order to prevent leakages into soil. The used boxing will be disposed of at the municipal sanitary landfill; • Refueling vehicles and replacement oils also have to be conducted in special designated and properly equipped places. Emergency facilities (spills removing kits) have to be at the place for the elimination of accident of oil spills.	Contractors implement PMU and PMC monitor implementation	Cost for asbestos management plan implementation – 2,000 USD is included in Contractor budget

[32] According to Resolution of Cabinet Ministries of RUz # 258 "On collection, storage and further disposal of used technical oil" dated from 4 September 2012, special oil treatment facilities are organized in each province and they accept used oil for treatment

[33] "Cvetmet" - National company responsible for accepting and processing used battery and used non-ferrous metals. The company has branches in all provinces of Uzbekistan

Impact	Mitigation measure	Responsibility	Cost
	• For sites located in Tashkent and Namangan provinces, the Contractor will develop a detailed "Asbestos Management and Disposal Plan" (Example of plan is provided in Appendix 2).		
Non-hazardous waste	• Solid waste disposal to be performed in accordance with agreements between the Contractor and the local agency "Toza Hudud"; • All solid waste to be identified and documented: municipal solid waste (MSW), construction waste, green waste, hazardous waste, (such as oil container wastes and asbestos); • Procedures to be implemented to maximize the reduction, reuse and recycling of MSW, construction waste and green waste, together with arrangements to offload recyclable waste to external recyclers. • Procedures and facilities to be in place for the temporary on-site storage of waste during the construction and operation of O&M centers, with specific requirements for certain wastes, such as oil and lubricant barrels to be stored in enclosed facilities, on compacted ground and with ground protection to contain any spill and run off; • Procedures and arrangements to be in place for the municipal collection of MSW from the site, and to the designated disposal facilities of the municipal system; • Procedures and arrangements to be in place for the collection and potential reuse or disposal of construction waste. • The burning of waste on any construction site to be prohibited with the exception of stubs and small branches from felled trees and bushes, which are better burned in order to avoid pest dissemination. • The provision of hydro isolated septic tanks for collecting wastewaters at the camp sites, and bio toilets for workers at the construction sites and timely disposal of wastewater to the local wastewater treatment plants.	Contractors implement PMU and PMC monitor implementation	Included in the Contractors budget
Losses of trees and plants	• Try to avoid cutting trees on construction sites as much as possible. • Don not use chemical and burning for removing vegetation; • Greening of territory of service centers as part of the project design;	Contractors implement PMU and PMC monitor implementation	Included in the Contractors budget
Health and safety issues For Community	• Contractor and PMC will inform the population about anticipated works in the settlement in advance; • For project sites located close to the settlements (Tashkent, Syrdarya and Namangan), Contractors will require to develop a Traffic Management Plans with clear indication of routes of vehicles' movements, placement of special signs, speeding allowance inside of the settlements, and	Contractors implement PMU and PMC monitor implementation	Included in the Contractors budget

Impact	Mitigation measure	Responsibility	Cost
	schedule of transportation activities by avoiding peak traffic periods. Tentative template of Site-Specific Construction Traffic Management Plan is presented in Appendix 5; • The Traffic Management Plans will be approved by the Traffic Police and disclosed to local communities prior to commencement of construction works on respective sites; • Clear signs will be placed at construction sites in view of the public, warning people of potential dangers such as moving vehicles, hazardous materials, excavations etc. and raising awareness on safety issues. • All construction sites will be properly lighted and fenced; • For construction sites located close to settlements (Tashkent and Navoi) development of Site Specific Plans for campsites will be required in case of creating construction camps; • After completion of works all roads shall be rehabilitated at least up to the condition of pre-construction stage; • Carry out regular awareness campaigns among work staff, including specific hazards associated with the spread of HIV/AIDS		
Construction and working camps	• After completion of the main construction, the Contractor shall provide full reinstatement of the construction and camp sites by bringing them to their primary condition; • Remove all rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; • All disrupted utilities restored, all affected structures rehabilitated /compensated; • The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up; • All hardened surfaces within the construction camp area shall be ripped, all imported materials removed; • PMC will conduct post-construction audits during the defect liability period to make sure that construction sites and camps are properly cleaned and restored to pre-project conditions before the acceptance of works and hand-over to the Toza Hudud.	Contractors implement PMU and PMC monitor implementation	Included in the Contractors budget
For workers	• Comply with the requirements of the Labor Code of Uzbekistan (1998) and standards on work and health safety[34];	Contractors implement	Included in the Contractors budget

[34] Construction Norms and Rules # 3.01.01-03. Organization of Construction works. 2003

Impact	Mitigation measure	Responsibility	Cost
	• Ensure that all site personnel have regular Environmental and OHS training on EMP implementation; • Ensure all workers are provided with and required to use PPE; • Logbooks on conducted OHS and Environmental training will be performed on all construction sites. Moreover, all construction sites will have a logbook on accidents and emergency situations; • For Tashkent and Namangan sites, AMCMP will be developed by Contractors and implemented by workers (Appendix 2).	PMU and PMC monitor implementation	
Archeological heritages: Chance of finding heritage	• All workers have to be instructed about chance finding procedures; • In case of finding objects which could be considered as possible heritage, a Chance finding procedure has to applied in accordance with Appendix 3	Contractors implement PMU and PMC monitor implementation Representative from Khokimiyat assist in assessment and undertake necessary actions	Included in the Contractors budget
Operation phase			
Impact on air	• Watering of service center sites during windy weather; • Immediately replacement of defective equipment and removing it from the work site; • Prohibit trucks and machinery idling for more than 5 minutes; • For service centers located close to settlements, working hours will be limited from 8 am until 7 pm; • Ensure that heating system in the service center will operate in accordance with requirements indicated in guidance for usage of heating facilities[35]	District Toza Hudud	Included in Toza Hudud operational costs
Impact on water resources	• Prohibit the discharge of any sewage or wastes in drainage and canals located close to service centers (Tashkent, Karshi, Urgench sites); • Ensure proper maintenance of the septic tanks and timely removal of sludge from the tanks; • Prohibit vehicle and equipment washing in the service centers.	District Toza Hudud	Included in Toza Hudud operational cost

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Impact	Mitigation measure	Responsibility	Cost
Soil pollution	• During maintenance servicing, all used oils have to be stored in specially designated and equipped places (in accordance with service center design)[36], and disposed of at relevant local oil treatment facilities; • Each service center has to be equipped with oil spill kits.	District Toza Hudud	Included in Toza Hudud operational cost
Health safety	• All requirements of national OHS procedure have to be fully implemented in service centers; • All workers and staff have to be trained on OHS	District Toza Hudud	Included in Toza Hudud operational cost

[36] Design of the service center includes special designated place to store oil, lubricants and their residuals

8.2. Environmental Monitoring

383. To ensure that mitigation actions are implemented in accordance with the requirements of the EMP, monitoring shall be undertaken as follows:

- Instrumental Monitoring for environmental quality such as air and water quality. Cost for this equipment is included in Contractor's budget. Schedules, parameters, locations are presented in Environmental Monitoring Table # 20.
- Observational Monitoring – Throughout the project construction phase, the PMC shall continually monitor the Contractor's actions. This will be achieved through weekly inspections of the Contractor's environmental performance by PMC's national environmental specialist throughout the construction period. PMC shall have the right to suspend works or payments if the Contractor is in violation of any obligations under the EMP and SSEMPs.

384. Developed within the current IEE, an Environmental Monitoring Plan provides details on required measurements, the locations of measurements points, frequency and responsibilities associated with each monitoring task (Table 39).

385. Besides instrumental environmental monitoring indicated into the Table 39, monitoring of EMP's implementation will be carried out. For efficient implementation of this activity it is proposed that several levels of supervision activities need to be undertaken: (i) daily inspection by the Contractor's Environmental Specialist or designated specialist, (ii) monthly inspection by PMC's Environmental Specialist, and (iii) periodic audit (quarterly) by PMU's Safeguards Specialist.

386. Results of environmental performance, including monitoring activity, have to be properly documented and reported. As indicated in the EMP and Chapter 7, each Contractor has to maintain a log book with information about conducted training on EH&S for workers, and another book for the registration of accidents during the civil works. Original records on the results of required instrumental environmental monitoring (air and water quality) also need to be kept in the separate file for records.

Table 39: Environmental Monitoring Plan

Mitigation measures	Parameter to be monitored	Location	Frequency	Responsibility	Standards	Cost
Construction Stage						
Air quality	Dust	Construction sites located within settlements (Namangan, Tashkent and Syrdarya)	Weekly base during dry season	PMC	Hygienic norms. List of Maximum Allowable Concentrations (MACs) of pollutants in ambient air of communities in the Republic of Uzbekistan including Annex 1. SanR&N RUz No.0179-04	Dust measurement device – 2,500 USD. The cost is included in PMC budget.
Noise level	Noise level	In front of living houses in Namangan, Tashkent and Syrdarya	Per complaints from people on noise disturbance during construction	Contractor and PMC	1. "Sanitarian Norms of allowed level of noise at the construction sites" SanR&N №0120-01 2. SanR&N No.026709 Sanitarian Rules and Norms on providing allowed noise level into the living building, public building and territory of living areas. (55 dB day time and 45 0 night time)	Two noise measurement devices – 400 USD. The cost is included in Contractor (1 device) and PCS (1 device)
Water quality	1. Visual monitoring of surface water on existence oil film and turbidity	Water bodies located next to construction sites (Karshi, Tashkent, Khorezm sites)	1. Visual during each visit of construction site (at least weekly).	1. Contractor and PMC	1. Absence of oil films on the water bodies surface.	No cost is needed

8.3 Reporting

387. The Contractor(s) EO will prepare weekly environmental checklists and environmental sections in monthly progress reports, which will be submitted to the PMC for review. Based on site inspections and Contractors' reports, the PMC shall be responsible for preparing an environmental section of detailed Quarterly Progress Reports to submit to the PMU. The PMU will use this environmental section and the findings of review missions conducted by the PMU's ESSS to submit to ADB quarterly assessments of EMP implementation.

388. The PMC is responsible for assisting the PMU in preparing semi-annual Environmental Monitoring Reports (EMRs) and a final EMR including post-construction environmental audits. If there are any changes in the design or alignment or if there are any unanticipated impacts, the IEE/EMP will be updated to account for any additional or new environmental impacts and relevant corrective actions. In January and July every year, the PMU will submit semi-annual environmental monitoring reports to ADB and relevant government authorities, and these reports will be disclosed to the public on the Association's website (in Uzbek or Russian) and ADB (in English) websites.

8.4 Implementation Arrangements

8.4.1 Institutional arrangements

389. The SCEEP is the executing agency (EA) for the project. A PMU under the SCEEP will handle procurement, contract management, financial management, project administration, and safeguards compliance and reporting. The Association is the implementing agency (IA) for the project, responsible to coordinate, monitor, verify and report project implementation progress.

390. The PMU and PMC will be responsible for implementation of the EMP, to comply with ADB's safeguards requirements and environmental national regulations. Monitoring will be accomplished by the Safeguards Specialist of the PMU, and the Environmental Specialist of the PMC. The cost for implementing the EMP will be financed by the project, specifically: costs of mitigation measures and environmental monitoring will be included in the construction contracts, the cost for the PMU environmental supervision through an individual employment contract, and the cost of PMC supervision in the PMC consulting service contract. The PMU is responsible for overall environmental compliance with SPS 2009.

391. Contractors will be responsible for implementing mitigation measures indicated in EMP and relevant to the project. Within 30 days after contract award and prior to commencing any physical works, Site-specific Environmental Management plans (SSEMPs) will be developed by the Contractors under the guidance of the PMC, and be endorsed by PMC before submission to the PMU for approval. The SSEMP is the document that the Contractors shall prepare, outlining how they intend to implement the EMP and ensure that all of the mitigation and monitoring is completed according to the implementation arrangements specified in the EMP. During construction, the Contractors must retain the expertise of a full-time Environmental Officer (EO) to implement and continually update the SSEMPs, and to report on the implementation of mitigation measures throughout the contract period.

392. The PMC is tasked with specific responsibilities to assist the PMU in ensuring safeguard compliance of civil works: with particular emphasis on the monitoring of the implementation of the EMP through the contractors SSEMP, and Topic Specific EMP and related aspects of the project. The PMC shall ensure that the Contractors comply with their environmental obligations. It is required that the IES provides a short training program to the

PMU safeguard person and Contractors EO prior to the start of construction to develop their knowledge and understanding of the environmental, social, and health and safety aspects of the Project. The TORs for the IES and NES are in the PMC contract. The IES will also be responsible for assisting to develop and update the Asbestos Management and Disposal Plan Training EHS for contractors, which needs to be conducted throughout project implementation, at every visit of the IES.

393. The PMU will hire a safeguards specialist to manage and coordinate the Contractors and PMC in reporting to the EA and ADB on the safeguard performance of the project. The PMU is responsible for overall EMP implementation and will be assisted by the PMC. The PMU's responsibilities include the following, but not limited to:

- Ensure the bidding documents of PMC and Contractors include all tasks as described in the approved EMP;
- Supervise the PMC and Contractors in EMP implementation for overall compliance with SPS 2009 requirements and project environment-related legal covenants;
- Approve SSEMPs which will be prepared by the Contractors and endorsed by the PMC;
- With the assistance of the PMC, prepare, submit to the EA and ADB, and disclose semi-annual environmental monitoring reports on the ADB and Government websites.
- Report in a timely manner to ADB of any non-compliance or breaches with ADB safeguard requirements and take corrective actions promptly;
- In assistance with PMC's IES, update the IEE in case of technical design changes or unanticipated impacts; and
- Establish a GRM after project effectivity and act as the GRM secretary to make sure that the GRM is operational to effectively handle environmental and social concerns of project affected persons.

394. It is therefore recommended that the PMU hire a full-time Safeguards Specialist who will be in charge of the implementation of the EMP, and ensure compliance with national environmental requirements during the operation phase.

8.4.2 Capacity building activity

395. It is proposed that the Project's capacity building on environmental aspects will cover three main directions:

i) ***PMU's capacity*** on EMP implementation during the construction stage - to enhance the PMU's capacity regarding EMP implementation, the PMC's International Environmental Specialist will provide respective training for PMU's Safeguards Specialist and further assistance in monitoring SEMP implementation and guidelines for Contractor's Environmental Specialists or designated officers as required.

ii) ***SCEEP capacity*** on conduction of environmental monitoring of disposal sites. The PMC will work on a revision of the existing environmental monitoring system in the country and develop program with recommendation of parameters of overall environmental performance during the project operation. The PMC, jointly with the ESS Specialist, will develop and conduct a training program on general compliance with national environmental requirements such timely receiving timely permissions, monitoring of environmental performance, and submission of reports to respective national agencies.

iii) ***awareness program for population*** in the project area – for project sustainability it is important to increase people's awareness about waste management. The program should be targeted on two groups: (i) households, daily consumers, and (ii) the younger generation (pupils, colleges' students). The program should be

developed by a Regulatory Frameworks Development Specialist, and implemented along with the project implementation period.

396. The tentative plan of required training is presented in Table 40.

Table 40: Tentative program of training for PMU, Toza Hudud and Contractors staff

	Name of training	Time	Recipients	Organizer
1	Overall EMP implementation, Environmental Monitoring Reports preparation	Prior to commencement of civil works	PMU Safeguards Specialist	PMC
2	SEMP implementation	Prior commencement of civil works	Contractors workers	Contractor's Environmental Specialist or designated officer with support of PMC
3	Handling and disposal of hazardous materials (including asbestos wastes for relevant sites)	Before starting respective works	Contractors workers, PMU. ESS Specialist	PMC
4	Occupational health and safety	Regularly during construction and operation period	Contractors workers Toza Hudud staff	Contractor's Environmental Specialist or designated officer with support of PMC, Toza Hudud, OHS specialist
5	Working with equipment of mobile laboratory	Regularly during operation phase	Staff of laboratories	Initial training will be conducted by PMC's IES and further by trained staff of SCEEP for provincial laboratories

8.4.3 Cost estimation for EMP implementation

397. Costs required to implement the EMP cover the following activities:

(i) Conduct instrumental environmental monitoring of air by PMC;
(ii) Implement mitigation measures; and
(iii) Develop an awareness program including the organizing of an education center.

398. Although some of the measures included in the EMP are an integral part of the civil works (watering, storage of top soil and etc.), some measures (establishing sound-absorbing panels, temporary bridges, handling and disposal of hazardous materials) require additional funds. The cost estimate for the EMP by the main items is presented in Table 41.

Table 41: Cost estimates for EMP implementation

Item	Quantity	Unit cost, USD	Total Cost, USD	Remarks
Instrumental Monitoring				
Air quality – dust control device	1	2,500	2,500	The cost is included in PMC budget
Noise measurement devices	200	2	400	Cost is included in Contractors budget
Environmental Mitigation Measures/Permissions				
Nosie protection screen	3	4,000	8,000	The cost in included in the Contractor budget
Implementation of Asbestos Management and Disposal Plan	2	2,000[37]	2,000	This plan will be implemented in Namangan and Tashkent provinces
Environmental awareness program				
Training	13	3,000	39,000	As indicated in table 16. Budget is included in PMC contracts
Subtotal			**51,900**	
Miscellaneous			5,190	10% of subtotal
Contingency			6,851	12 % of subtotal + Miscellaneous
Total			**63,941**	
Staffing				
PMC Environmental Specialist International, National	2 6	18,000 4,000	36,000 24,000	Cost is included in PMC budget
PMU National Environmental Specialist	30	1400	42,000	Cost is included in PMU
Regulatory Framework Consultant International, National	2 3	18,000 4,000	36,000 12,000	Cost is included in Regulatory Framework Consultant budget
Total for staffing			**150,600**	

399. Expenses related to staffing of the PMU, PMC, the Regulatory Framework and Contractors with Environmental Specialists are included into their budget, therefore they are excluded from the total budget for the EMP. The total budget for the EMP is USD 63,941.

[37] Calculation based on Asbestos materials management plan developed for Kyrgyz Republic: Issyk-Kul Sustainable Development Project (2015)

9. CONCLUSIONS AND RECOMMENDATIONS

400. The conducted IEE demonstrates the importance of the proposed project, which will improve environmental and public health conditions in small urban centers, peri-urban and rural areas nationwide, through improved and expanded municipal solid waste (MSW) collection services. The project contributes significantly to the implementation of the National SWM Strategy that was approved in April 2019.

401. Along with this, the IEE identified several environmental aspects which need to be addressed during project preparation and implementation. Among them are the need to comply with buffer zone requirements, and the strict implementation of site specific and topic specific environmental management plans.

402. Ensuring adequate institutional capacity, with the proper allocation of human resources and funds, should be in place from project commencement, and be continued throughout the construction and operation phases. Recommended capacity building programs, included as an integral part of the project will improve Toza Hudud performance, and particularly environmental performance, in order to meet national environmental requirements.

403. The IEE indicated that during project implementation, the project will have temporary impacts on air and water quality, and may cause inconvenience to the local population. However, all anticipated impacts can be properly mitigated through implementation of the EMP developed within the current IEE.

404. Conducting environmental monitoring at all stages of the project is crucial. The monitoring of EMP implementation and adequate reporting at all levels and phases of the project cycle will provide effective mitigation of anticipated impacts. Environmental monitoring needs to be carried out at the operation phase as well.

405. The Implementation Agency should ensure proper functioning of the GRM that is an integral part of the IEE and has been discussed with the project's various stakeholders during the public consultation phase.

406. During the entire process of project implementation, it is important to maintain frequent stakeholder communications, especially with affected communities, to comply with all national environmental and EMP requirements, and to conduct thorough public awareness among the population.

Appendix 1: Letter from State Sanitarian and Epidemiological Surveillance

O'ZBEKISTON RESPUBLIKASI
SOG'LIQNI SAQLASH VAZIRLIGI
RESPUBLIKA DAVLAT SANITARIYA-EPIDEMIOLOGIYA NAZORATI MARKAZI

100097, Toshkent, Bunyodkor ko'chasi, 46-uy.
Telefon 278-59-46Fax 278-38-51
e-mail: respublika dsenm@minzdrav.uz

MINISTRY OF HEALTH
OF THE REPUBLIC OF UZBEKISTAN
REPUBLICAN CENTER OF STATE SANITARY-EPIDEMIOLOGICAL SURVEILLANCE

46, Bunyodkor str., Tashkent, 100097
Phone278-59-46Fax 278-38-51
e-mail: respublika.dsenm@minzdrav.uz

21.08.19 № 09-8/5536

__________ № __________ ga

Гос. Комитет экологии и охраны окружающей среды Республики Узбекистан

Республиканский Центр Госсанэпиднадзора МЗ РУз в соответствии с Вашим письмом за № 04-04/1-568 от 14.08.2019 г. по вопросу необходимых санитарно-защитных разрывов от планируемых автомастерских до ближайшего жилья и приравненных к ним объектов (детские образовательные учреждения, больницы и т.п.) сообщает следующее.

В настоящее время на территории республики по определению санитарно-защитных зон от объектов, в зависимости от их класса опасности, действуют санитарные нормы, правила и гигиенические нормативы СанПиН 0350 – 17 «Санитарные нормы и правила по охране атмосферного воздуха населенных мест Республики Узбекистан».

В соответствии с вышеназванным СанПиНом автомастерские для ремонта спецтехники отнесены к 3 классу опасности (п.4[1]). Однако в связи с применением современных технологий строительства и эксплуатации вышеназванных автомастерских с количеством постов не более 5 эти мастерские могут быть отнесены к 4 классу опасности и соответствующей санитарно-защитной зоной в 100 метров.

В случае, если вышеназванные автомастерские предусмотрены на проведение ремонта мусоровозного транспорта без малярно-жестяных работ, эти мастерские переходят в 5 класс опасности с санитарно-защитной зоной в 50 метров.

При этом, необходимо отметить, что при привязке на местности в каждом конкретном случае отводимые места (земельные участки) должны быть согласованы с территориальными органами Госсанэпиднадзора.

Главный врач　　　　[signature]　　　　Б.И.Алматов

Исп. Михшиева С.П.
Туйчиев Ж.Т.
Тел. 2766742

TRANSLATION

State Committee of Ecology
and Environmental Protection
of the Republic of Uzbekistan

The Republican Center for State Sanitary and Epidemiological Inspection, the Ministry of Health of the Republic of Uzbekistan in accordance with your letter No. 04-04 / 1-568 of 08/14/2019. on the issue of requirements on sanitarian protection zone from planned truck service center to the nearest settlements and facilities equated to them (children's educational institutions, hospitals, etc.) reports the following.

Currently, on the territory of the Republic, by definition of sanitary protection zones from objects, depending on their hazard class, sanitary norms, rules and hygienic standards SanPiN 0350-17 “Sanitary norms and rules for the protection of atmospheric air in populated areas of Uzbekistan” are in force.

In accordance with the above SanPiN, service centers for repairing special equipment are classified as hazard class 3 (appendix 4^{1}). However, in connection with the use of modern technologies for the construction and operation of the aforementioned service center with a number of posts of no more than 5, these workshops can be assigned to hazard class 4 and the corresponding sanitary protection zone of 100 meters

In the event that the aforementioned service center shops are intended to carry out repair of solid waste trucks without painting and tin works, these workshops go into the 5th hazard class with a sanitary protection zone of 50 meters.

At the same time, it should be noted that when referencing on the ground in each case, allotted places (land plots) must be agreed with the territorial bodies of the State Sanitary and Epidemiological Inspection

Head Physician B.I Almatov

Appendix 2: Asbestos-Management and Disposal Plan

Asbestos Management and Disposal Plan

The Asbestos Management and Disposal Plan (AMDP) describes and evaluates the risk of contractors (and others) encountering asbestos-containing material (ACM) at the Project construction sites during the implementation stage of the project; and it provides a procedure for dealing quickly and safely with any ACM that may be found.

The ADB *Safeguard Policy Statement* (SPS) requires that ADB-funded projects apply pollution prevention and control technologies and health and safety measures that are consistent with international good practice, as reflected in international standards such as the IFC/World Bank *Environmental, Health and Safety General Guidelines* (2007). If national legislation differs from these standards, the borrower is required to achieve whichever is more stringent. There is national procedure Sanitarian Norms and Rules (SNR) of RUz # 0300-11 dated from 2011 "Organization of collection, inventory, classification, disposal, storage and recycling of industrial waste in the conditions of Uzbekistan" covering disposal of ACM[38] in Uzbekistan. However, the procedure does provide clear description of handling ACM, therefore, the AMDP follows the World Bank Guidelines.

The main principles of the AMDP are as follows:

A. Prompt recognition of ACM;

B. Prompt and effective action to contain and deal appropriately with the ACM (including safe management and disposal); and

C. Maintaining the safety of site personnel and the general public at all times.

The AMDP is designed for use by the Project's Project Management Unit (PMU) to manage the ACM risk over the project as a whole, and by contractors to deal efficiently with any ACM they or their workers encounter. The procedural element of the AMDP is therefore designed to provide straightforward instructions that can be easily and quickly understood without the need for specialist knowledge and without referring to other sources.

PROTOCOL FOR HANDLING AND DISPOSAL OF ACM AT CONSTRUCTION SITES

Source

This protocol was developed from guidance given by the UK Health and Safety Executive (HSE), which complies with European Union (EU) legislation and the UK *Control of Asbestos Regulations* (2012). For further information see the HSE website: http://www.hse.gov.uk/asbestos/essentials/

Applicability

The Project AMDP applies to project construction sites in Namangan and Tashkent provinces and any related areas (eg workshops, parking lots, storage or disposal areas, etc. used by Project contractors). Contractors employed by Project are legally responsible for their construction sites and related areas and must follow the provisions of the Project AMDP within

[38] Uzbek Sanitary Norms SanPin 0233-07 "National standards "Sanitarian Norms and Rules on Work Hygiene and Environment Protection during production and usage of ACM" was one of a number of pieces of legislation deregulated in the 1980's. Notwithstanding their lack of legal status, as the most recently-available local standard, the regulations were referred to in preparing the ACMMP and the protocol for handling and disposal of ACM (see Section 3) incorporates soil covering requirements from the SanPin.

those locations. Specifically, this protocol must be used to ensure the safe handling, removal and disposal of any and all ACM from those areas.

Immediate Action

Prior start works with ACM on a Project site the Contractor must:

a) Stop all work within a 5 m radius of the ACM and evacuate all personnel from this area;

b) Delimit the 5 m radius with secure fencing posts, warning tape and easily visible signs warning of the presence of asbestos;

c) If the site is in an inhabited area, place a security guard at the edge of the site with instructions to keep the general public away;

d) Notify the PMC and Environmental Supervisors and arrange an immediate site inspection; also notify the PMU.

The PMU must:

e) Notify the Territorial Department of the State Sanitary Epidemiological Service.

Equipment

To remove asbestos from a construction site, contractors must provide the following equipment:

a) Warning tape, sturdy fence posts and warning notices;

b) Shovels;

c) Water supply and hose, fitted with a garden-type spray attachment;

d) Bucket of water and rags;

e) Sacks of clear, strong polythene that can be tied to close;

f) Asbestos waste containers (empty, clean, sealable metal drums, clearly labelled as containing asbestos).

Personal Protective Equipment (PPE)

All personnel involved in handling ACM must wear the following equipment, provided by the contractor:

g) Disposable overalls fitted with a hood;

h) Boots without laces;

i) New, strong rubber gloves;

j) A respirator is not normally required if there are only a few pieces of ACM in a small area, and if the ACM is damp;

k) In large or heavily contaminated areas, a disposable respirator is needed (not a dust mask) with an Assigned Protection Factor of 20 or more (eg a respirator with a P3 filter);

l) There must be no smoking, eating or drinking on a site containing ACM.

Decontamination Procedure 1: Removing small pieces of ACM

a) Identify the location of all visible ACM and spray each lightly but thoroughly with water;

b) Once the ACM is damp, pick up all visible ACM with shovels and place in a clear plastic bag;

c) If ACM debris is partially buried in soil, remove it from the soil using a shovel and place it in the plastic bag;

d) Insert a large label inside each plastic bag stating clearly that the contents contain asbestos and are dangerous to human health and must not be handled;

e) Tie the plastic bags securely and place them into labelled asbestos waste containers (clean metal drums) and seal each drum;

f) **Soil that contained ACM debris must not be used for backfill** and must instead be shovelled by hand into asbestos waste containers;

g) At the end of the operation, clean all shovels and any other equipment with wet rags and place the rags into plastic disposal bags inside asbestos waste containers.

Decontamination Procedure 2: Removing ACM-contaminated backfill

a) If soil containing ACM debris has inadvertently been used for backfill this must be sprayed lightly with water and shovelled out by hand to a depth of 300 mm and placed directly into asbestos waste containers (ie not stored temporarily beside the trench);

b) Any ACM uncovered during the hand shovelling must be placed in a clear plastic bag;

c) Once the trench has been re-excavated to 300 mm, if there is no visible ACM remaining, the trench may be refilled by excavator using imported clean topsoil.

Decontamination Procedure 3: Removing AC pipes or large pieces of ACM

1. If AC pipes or other large pieces of ACM are uncovered during excavation in an undamaged condition and they can be re-covered by soil and left in place in the ground undisturbed, this should be done. If AC pipes or other large pieces of ACM need to be removed from site:

a) Inform the city Mahsustrans Enterprise of the nature and size of the large ACM and arrange for them to dig a suitable cavity at the disposal site to receive and bury the material;

b) Sprinkle the ACM thoroughly with water, ensuring that any broken or damaged areas in particular are thoroughly wetted;

c) Inform excavator and truck drivers of the dangers associated with ACM and instruct them to remain inside their cabs with the windows closed throughout the operation.

d) Lift the material by excavator into a dump truck, without causing additional breakage and with as little disturbance as possible;

e) Cover the bed of the truck with a secure tarpaulin and transport the ACM to the disposal site with as little disturbance of the carried material as possible;

f) Manual assistance should be limited to securing the tarpaulin if possible, and personnel providing such assistance should wear PPE as indicated in Section E;

g) At the disposal site, tip the ACM directly into the prepared cavity and arrange for it to be covered with soil immediately.

Disposal

2. ACM should be disposed of safely at a local hazardous-waste disposal site if available, or at the city municipal dumpsite after making prior arrangement for safe storage with the site operator.

- The Contractor must arrange for the disposal site operator to collect the sealed asbestos waste containers as soon as possible and store them undisturbed at the disposal site.
- At the end of construction Contractors must arrange for the disposal site operator to bury all ACM containers in a separate, suitably-sized pit, covered with a layer of clay that is at least 250 mm deep.

a) Personal Decontamination

At the end of each day, all personnel involved in handling ACM must comply with the following decontamination procedure:

- At the end of the decontamination operation, clean the boots thoroughly with damp rags;
- Peel off the disposable overalls and plastic gloves so that they are inside-out and place them in a plastic sack with the rags used to clean the boots;
- If a disposable respirator has been used, place that in the plastic sack, seal the sack and place it in an asbestos waste container;
- All personnel should wash thoroughly before leaving the site, and the washing area must be cleaned with damp rags afterwards, which are placed in plastic sacks as above.

b) Clearance and Checking-Off

- The decontamination exercise must be supervised by DSC site supervisors (engineering or environmental).
- After successful completion of the decontamination and disposal, the PMC should visually inspect the area and sign-off the operation if the site has been cleaned satisfactorily.
- The contractor should send a copy of the completion notice to the PMU, with photographs of the operation in progress and the site on completion.

TRAINING

PMC's Environmental Specialist will conduct training on AMDP implementation for Contractors staff and PMU. The training will include a session focusing on ACM, which covered:

a. Risks of contact with ACM (in general and the Toza Hudud risk assessment);
b. Responsibilities for dealing with ACM on Toza Hudud construction sites;
c. The SSWMP AMDP and the Protocol for site clean-up;
d. Awareness-raising for the contractors' workforce.

COST ESTIMATE

Costs incurred by contractors in implementing the ACMMP are included in their budget in EMP budget.

Appendix 3: Chance Finds Procedure

1. Purpose

Construction sites could be considered as subject to heritage survey and assessment at the planning stage. These surveys are based on surface indications alone, and it is therefore possible that sites or items of heritage significance will be found in the course of development work. The procedure set out here covers the reporting and management of such finds.

Scope: The "chance finds" procedure covers the actions to be taken from the discovery of a heritage site or item, to its investigation and assessment by a trained archaeologist or other appropriately qualified person.

Compliance: The "chance finds" procedure is intended to ensure compliance with relevant provisions of the Law of RUz "On protection and Use of Objective of the Archeological Heritage"(2009). The procedure of reporting set out below must be observed so that heritage remains reported to the Ministry of Archeology are correctly identified in the field.

2. Responsibility

Operators/Workers - To exercise due caution if archaeological remains are found
Foreman/construction site manager - To secure site and advise management timeously
Contractor's manager - To determine safe working boundary and request inspection
Archaeologist: To inspect, identify, advise management, and recover remains

3. Procedure

MITIGATION/MONITORING ACTION	RESPONSIBILITY	SCHEDULE
Should a heritage site or archaeological site be uncovered or discovered during the construction phase of the project, the "change find" procedure should be applied. The details of this procedure are highlighted below:	Person identifying archaeological or heritage material	When necessary
• If operating machinery or equipment: stop work • Identify the site with flag tape • Determine GPS position if possible • Cease any works in • immediate vicinity	Person identifying archaeological or heritage material	
• Report findings to foreman • Report findings, site location and actions taken to superintendent	Foreman/construction site manager	
• Visit site and determine whether work can proceed without damage to findings • Determine and mark exclusion boundary • Site location and details to be added to project GIS for field confirmation by archaeologist	Contractor's manager	
• Inspect site and confirm addition to project GIS • Advise the Ministry of Archeology (MoA) and request written permission to remove findings from work area • Recovery packaging and labelling of findings for transfer to National Museum	Archaeologist	

Should human remains be found, the following actions will be required: • Apply the change find procedure as described above. • Schedule a field inspection with an archaeologist to confirm that remains are human. • Advise and liaise with the (MoA)and Police • Remains will be recovered and removed either to the National Museum or the National Forensic Laboratory.	Archaeologist Representatives of Khokimiyat and Ministry of Archeology Police	

Appendix 4. Letter to Toza Hudud branches about planning Site Visits and Public Consultation. Uzbek version

ЎЗБЕКИСТОН РЕСПУБЛИКАСИ ЭКОЛОГИЯ ВА АТРОФ МУҲИТНИ МУҲОФАЗА ҚИЛИШ ДАВЛАТ ҚЎМИТАСИ РАИСИ ЎРИНБОСАРИ ТОПШИРИҒИ

25 июль 2019 йил 04-04/1-46-сон

Санитар тозалашга
ихтисослаштирилган республика
бирлашмасига

Қорақалпоғистон Республикаси
ва вилоятлар "Тоза ҳудуд"
давлат унитар корхоналарига

ТЕЗКОР ХАБАРНОМА!

Жорий йилнинг 27 июлидан 20 августига қадар "Осиё Тараққиёт Банки" кредит маблағлари эвазига ҳудудий "Тоза ҳудуд" давлат унитар корхоналарининг инфратузилмасини ривожлантириш лойиҳаси" юзасидан Осиё Тараққиёт Банки вакилларини ҳудудларга ташриф буюриши ҳамда лойиҳа доирасида жойларда сервис марказларини қурилиши учун ажратилган ҳудудлар ҳолатини баҳолаш ва экспертизадан ўтказиш бўйича ишлар кўзда тутилган.

Юкоридагиларни инобатга олиб:

1. **Қорақалпоғистон Республикаси ва вилоятлар "Тоза ҳудуд" ДУКлари** "Осиё Тараққиёт Банки"нинг вакиллари ҳамда тегишли мутахассисларини кутиб олиш ва иловада кўрсатилган ўрганишларга доир саволномага асосан тайёргарлик кўриши сўралади.

2. **Санитар тозалашга ихтисослаштирилган корхоналар республика бирлашмаси** "Осиё Тараққиёт Банки" вакиллари ҳамда тегишли мутахассисларни ҳудудларга ташриф буюришлари муносабати билан уларни лойиҳа доираси давомида амалга оширилаётган ишларини режалаштириш мақсадида ҳудудларга олиб бориб ва олиб келиш учун енгил автомашина ажратиш чораларини кўриш сўралади.

Раис ўринбосари Х. Хусанов

№	Название области	Дата	ФИО, контакты специалистов
Сбор данных, посещение объектов			
1	Ташкентская область	27 июля 2019	Мадина Халмирзаева Сергей Ким Виктор Цой Тел: 90 352-22-29
2	Сырдарьинская область	29 июля 2019 С 9:00 – 11:00	Сергей Ким Виктор Цой Тел: 90 352-22-29
3	Джизакская область	29 июля 2019 С 15:00-17:00	Сергей Ким Виктор Цой Тел: 90 352-22-29
4	Республика Каракалпакстан	30 июля 2019 9:30 – 11:30	Сергей Ким Тел: 90 352-22-29
5	Хорезмская область	30 июля 2019 15:30 – 17:30	Сергей Ким Тел: 90 352-22-29
6	Наманганская область	30 июля 2019 9:30 – 11:30	Виктор Цой Тел: 90 973-41-74
7	Андижанская область	31 июля 2019 9:30 – 11:30	Виктор Цой Тел: 90 973-41-74
8	Ферганская область	31 июля 2019 15:30 – 17:30	Виктор Цой Тел: 90 973-41-74
9	Бухарская область	1 августа 2019 8:00 – 10:00	Сергей Ким Тел: 90 352-22-29
10	Навоийская область	1 августа 2019 15:00 – 17:00	Сергей Ким Тел: 90 352-22-29
11	Самаркандская область	2 августа 2019 11:00 – 13:00	Сергей Ким Тел: 90 352-22-29
12	Сурхандарьинская область	1 августа 2019 10:00 – 12:00	Виктор Цой Тел: 90 973-41-74
13	Кашкадарьинская область	2 августа 2019 9:00 – 11:00	Виктор Цой Тел: 90 973-41-74
Общественные слушания			
1	Ташкентская область	6 августа 2019	Сергей Ким Тел: 90 352-22-29
2	Сырдарьинская область	7 августа 2019 С 9:00 – 11:00	
3	Джизакская область	7 августа 2019 С 15:00-17:00	
4	Бухарская область	7 августа 2019 8:00 – 10:00	
5	Навоийская область	7 августа 2019 15:00 – 17:00	
6	Самаркандская область	8 августа 2019 11:00 – 13:00	
7	Наманганская область	13 августа 2019 9:30 – 11:30	
8	Андижанская область	14 августа 2019 10:30 – 12:30	
9	Ферганская область	31 июля 2019 16:30 – 17:30	

10	Сурхандарьинская область	15 августа 2019 10:00 – 12:00
11	Кашкадарьинская область	16 августа 2019 9:00 – 11:00
12	Республика Каракалпакстан	20 августа 2019 9:30 – 11:30
13	Хорезмская область	20 августа 2019 15:30 – 17:30

Для организации **«Общественных слушаний»**

На слушаниях будут представлены основные результаты проведенной экологической оценки воздействия проекта.

Просим Вас пригласить следующие организации:

1. **представители Госкомэкологии;**
2. **представители СЭС;**
3. **представители Махалли (также что бы были малообеспеченные семьи);**
4. **представители Хокимията.**

Registration list of participants attended Public Consultation and photos

Общественные консультации по проекту АБР «Устойчивое управление твердыми отходами»

г. Гулистан, Сырдарьинская область

«8» Августа 2019 года

СПИСОК УЧАСТНИКОВ КОНСУЛЬТАЦИИ

Место проведение: ______________________

#	Организация/Tashkilot Место проживания/МФЙ	Ф.И.О./ To'liq ismi sharifi	Занимая должность/Lavozim	Номер Телефона/ Telefon raqami	Подпись/Imzo
1	Toza hudud	Alisher Ismaev	Director		
2	Гулистон ш. ДСЭНМ	Тоштанов Фахриддин	бўлим мудири	91 621 19 22	
3	Гулистон ш. Экология	Нишонбоев Улуғбек	1-даражали инспектор	99 001 26 30	
4	Улуғобод "МФЙ"	Абдухолимова Малика	раис ёрдамчиси	67 227 71 53	
5	Улуғобод МФЙ	Маърупова Дилдора	[illegible] раиси	67 248 36 56	
6	Гулистон ш. МЧБ	Нозимов Мансур	МЧБ инспектори	94 581 73 37	
7	Тоза худуд ДУК	Амкулов Илхом	Гулистон ш. Тоза худуд	94 355 29 03	
8	Тоза худуд ДУК	Нурматов Мирза	шаҳар Тоза худуд инспек…	91 102 81 44	

#	Организация/Tashkilot Место проживания/МФЙ	Ф.И.О./ To'liq ismi sharifi
9	Вилоят [illegible] худуд ФУК	Маманов Икром
10		

Jizzakh Province

Занимая должность/Lavozim	Номер Телефона/ Telefon raqami	Подпись/Imzo
...рахбар ўринбосари	94 580 56 75	[signature]

Общественные консультации по проекту АБР «Устойчивое управление твердыми отходами»

Джизакская область, г. Джизак

«8» Августа 2019 года

СПИСОК УЧАСТНИКОВ КОНСУЛЬТАЦИИ

Место проведение: ГУП Тоза Худуд, Джизакского р.

#	Организация/Tashkilot Место проживания/МФЙ	Ф.И.О./ To'liq ismi sharifi	Занимая должность/Lavozim	Номер Телефона/ Telefon raqami	Подпись/Imzo
1	Центр сан. эпид. при Обл. управлении здравоохранения	Имамкулов Шухрат Абдураззакович	Заведующий сектором	+998943478661	[signature]
2	Жиззах шаҳар [illegible]	[illegible]	Бош мутахассис	+998972956153	[signature]
3	Жиззах шаҳар [illegible]	Қосимов Ҳамид Абдухамидович	Бош давлат инспектор ўринбосари	+94 579-44-56	[signature]
4	Жиззах шаҳар [illegible]	Абдусатторов Собиржон Абдусатторович	Ҳоким ўринбосари - қурилиш бўйича	+998983112010	[signature]
5	[illegible]				
6	Жиззах вилоят экология [illegible]	Холбоев Шодиёр	Саноат шаҳарсозлик бошлиғи	+998943460274	[signature]
7	[illegible]				
8	Ботиржонов Шухрат Дусмуратов Хошимжон	Ботиржонов Шухрат Дусмуратов Хошимжон	Ботиммамон маҳалласи фуқаролари	+998915954893	[signature]
9	Ботиммамон МФЙ	Дусмуратов Хошимжон	Фуқаро Хоким	+998915806497	[signature]
10	Тоза Худуд "ДУК	Усмонов Шерзод [illegible]	Зам директор Тоза Худуд "ДУК	+998915924182	[signature]

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Samarkand Province

Общественные консультации по проекту АБР «Устойчивое управление твердыми отходами»

г. Самарканд

« 4 » Августа 2019 года

СПИСОК УЧАСТНИКОВ КОНСУЛЬТАЦИИ

Место проведения: Хокимият (Тоза Худуд)

#	Организация/Tashkilot Место проживания/МФЙ	Ф.И.О./ To'liq ismi sharifi	Занимая должность/Lavozim	Номер Телефона/ Telefon raqami	Подпись/Imzo
1	„Тоза худуд" Самарканд [illegible]	Юсупов Зафар Маматкулович	Директор	937200607	[подпись]
2	—"— —"—	Сарибоев Зафар Кокоралиевич	Зам. директ. по эксплуатац	972881643	[подпись]
3	—"— —"—	Холмуминов Шерзод Жамуратович	Зам. директор	937200408	[подпись]
4	—"— —"—	Махмудов Латиф Азатович	Главный инженер	937288858	[подпись]
5	—"— —"—	Холматов Асен Умарович	Главный бухгалтер	93 720 02 04	[подпись]
6	"Санитар тозалаш маркази"	Нурбобоев Умиржон Узкунович	Директор	93 347-22-00	[подпись]
7	Санитар тозалаш маркази	Алимов Музаффар Мирзаевич	Бўлим бошлиғи	90 212 48 25	[подпись]
8	Самарканд [illegible] регион	Алимов Бахтиёр	Коммунал [illegible] бўлими мудири	90-251-97-26	[подпись]

#	Организация/Tashkilot Место проживания/МФЙ	Ф.И.О./ To'liq ismi sharifi	Занимая должность/Lavozim	Номер Телефона/ Telefon raqami	Подпись/Imzo
9	Санитар тозалаш маркази	Бобомуродов Фарход Панжикулович	етакчи мутахассис	93-332 8989	[signature]
10	Санитар тозалаш маркази	Бойзоқов [illegible] [illegible] ўғли	Биллинг тозалаш абонентлар [illegible] бўлим бош мутахассис	93-355-4475	[signature]
11	Санитар тозалаш маркази	Эгамбердиев Келдиёр [illegible]	Сектор бошлиғи	–	[signature]
12	Санитар тозалаш маркази	Қорабоев Фируз Комилжонович	бўлим бошлиғи	93-349-52-18	[signature]
13	Санитар тозалаш маркази	Жумаев Камол Садуллаевич	Бош мутахассис	94 282 4030	[signature]
14	Санитар тозалаш маркази	Бердиев Дилшод Эшмаматович	Бош мутахассис	93-519-91-87	[signature]
15	Санитар тозалаш маркази	Хасанова Лайло Раджабовна	етакчи мутахассис	90 171 87 90	[signature]
16	Санитар тозалаш маркази	Халимова Гулноза Салимжоновна	етакчи мутахассис	97-915-86-06	[signature]
17	Ёшлар Маҳалласи	Боратов Халим. С.	Маҳалла Раиси	90.655-48-57	[signature]
18	Самарқанд иссиқлик [illegible]	Насимов Шерзод	зам директор	94-266-87-87	[signature]
19					
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Tashkent Province

Общественные консультации по проекту АБР «Устойчивое управление твердыми отходами»

Ташкентская область Кибрай

«13» августа 2019 года

СПИСОК УЧАСТНИКОВ КОНСУЛЬТАЦИИ

Место проведение: ______________________________

#	Организация/Tashkilot Место проживания/МФЙ	Ф.И.О./ To'liq ismi sharifi	Занимая должность/Lavozim	Номер Телефона/ Telefon raqami	Подпись/Imzo
1	[illegible]	[illegible]	руководитель	(99) 850 02 54	[signature]
2	Кибрай т. Шайхон МФЙ	Хидиров Нодир Имомназарович	Шайхон мфй. раиси	(99) 800 93 61	[signature]
3	Кибрай тумани ДЕЗКИ	Бобохонов Бехзод Абдуманнонович	[illegible]	99 916-08-33	[signature]
4	[illegible]	Эргашов Шухрат	Тадбиркор	94-416-00-06	[signature]
5	Кибрай туман ЖКХ	Рахимов Таджи Махаматович	механик	99 993 45 98	[signature]
6	Тошкент вилоят „Тоза худуд" рук раҳбар	Тулаганов Жасур Журабой Бертанович	Раҳбар	99 444 04 55 93 591 11 10	[signature]

Namangan Province

Общественные консультации по проекту АБР «Устойчивое управление твердыми отходами»

Наманганская область

«20» августа 2019 года

СПИСОК УЧАСТНИКОВ КОНСУЛЬТАЦИИ

Место проведение: Хокимият Наманганского района

#	Организация/Tashkilot Место проживания/МФЙ	Ф.И.О./ To'liq ismi sharifi	Занимая должность/Lavozim	Номер Телефона/ Telefon raqami	Подпись/Imzo
1	Вилоят Тоза худуд	Иброхимов Ф.	директор	972540470	
2	Косонсой Тозабулок	Салиев Д	Раис	936720534	
3	Жумашуй Тоза худуд	Маткаимова Ш.	рахбар	98 979-50-57	
4	Туман хокимлиги	Бекходжаев Б	ўринбосар	694721402	
5	Туман хоким ўрн.	Ш. Косимов	ўринбосар	69-412-24690	
6	Туман курилиш бўл	А. Маматов	мутахассис	97-258-85-80	
7	Туман ободонлаштириш МТО ф. б. бошлиги	И. Исмоилов	бўлим бошлиги	93-911-56-65	
8	Касон бошбулок	Б. Эргашев	раис	936727175	

#	Организация/Tashkilot Место проживания/МФЙ	Ф.И.О./ To'liq ismi sharifi	Занимая должность/Lavozim	Номер Телефона/ Telefon raqami	Подпись/Imzo
9	Туман ҳокимлиги	Т. Акбаров	Бош мутахассис	97-217-07 71	[illegible]
10	[illegible] экологии обл.	Д. [illegible]	[illegible] управления	91 177-5554	[illegible]
11	Туман [illegible] ходими	[illegible]	мутахасс.	93 438 2045	[illegible]

Andijan Province

Общественные консультации по проекту АБР «Устойчивое управление твердыми отходами»

Андижанская область

«20» августа 2019 года

СПИСОК УЧАСТНИКОВ КОНСУЛЬТАЦИИ

Место проведение: Ходжаобод туман хокимияти.

#	Организация/Tashkilot Место проживания/МФЙ	Ф.И.О./ To'liq ismi sharifi	Занимая должность/Lavozim	Номер Телефона/ Telefon raqami	Подпись/Imzo
1	Экология инспекцияси бошлиғи	Имонджанов Достонбек	инспекция бошлиғи	905427663	
2	"Тоза худуд" ДУК Хўжаобод ф-ли	Гозиев Давронбек	директор	901422970.	
3	"Тоза худуд" ДУК Анд. вилояти	Холкулов Дилшодбек	полигон бошлиғи	926061050.	
4	"Тоза худуд" ДУК Анд. вилояти	Расулов Музаффар	бош инженер	934109981.	
5	Хўжаобод т/и Кадастр бўлими	Корабоев Мансурбек	бошлиқ	914800507	
6	Хўжаобод ТИЧ ДСКЭМ	Мирзаев [illegible]	санитар врач	901724962	
7	[illegible] котиба	Абдуллаева Феруза	[illegible]	912902896	
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Fergana Province

Общественные консультации по проекту АБР «Устойчивое управление твердыми отходами»

Ферганская область

«11» августа 2019 года

СПИСОК УЧАСТНИКОВ КОНСУЛЬТАЦИИ

Место проведение: ДУК Тоза Худуд г. Коканд

#	Организация/Tashkilot Место проживания/МФЙ	Ф.И.О./ To'liq ismi sharifi	Занимая должность/Lavozim	Номер Телефона/ Telefon raqami	Подпись/Imzo
1	Экология Кўкон Шалдирамок МФЙ	Холмирзаев Акмалжон Адхамжон ўғли	Инспектор	91-145-55-58	
2	Мукимий МФЙ Мукимий МФЙ	Рахимов Зафур Курбанович	МФЙ Мукимий раис	97-557-20-10	
3	„Тоза Худуд" ДУК Риштон тумани бўлими	Абдуллаев Эркинжон Маматович	„Тоза Худуд" ДУК рахбари	97-419-65-00	
4	ФСЭНМ Кўкон бўл Шифрик Султонобод	Олтмишев Фарход	ФСЭНМ	91-686-00-25	
5	„Тоза Худуд" ДУК Кўкон бўл [illegible] МФЙ	Хошимов Улугбек Эргашевич	Тоза Худуд ДУК Кўкон бўл	91-692-60-74	
6	Хокимият Кўкон ш. Шикорбеги МФЙ	Рўзматов Эркинжон	Хокимият		
7	Фар. Санитар Марказ Фарғона шахар	Ахмадкулов Музаффар Мохамадалиевич	СТМ Фарғона	91-659-62-63	
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Surkhandarya Province

Общественные консультации по проекту АБР «Устойчивое управление твердыми отходами»

Сурхандарьинская область

«21» августа 2019 года

СПИСОК УЧАСТНИКОВ КОНСУЛЬТАЦИИ

Место проведение: ДУК Тоза Худуд, Джаркурганский район

#	Организация/Tashkilot Место проживания/МФЙ	Ф.И.О./ To'liq ismi sharifi	Занимая должность/Lavozim	Номер Телефона/ Telefon raqami	Подпись/Imzo
1	Тоза Худуд ДУК	Сафаров Гайрат	Директор	99-674-01-74	[signature]
2	Янгиобод МФЙ раиси	Мазаев Шариф		94 266 85 14	[signature]
3	Жаркурган тумани ДСЭНМ бош врачи	Норбутаев [illegible]	Бош врач	97 222 7300	[signature]
4	Жаркурган тумани экология инспекция	Нурмуродов Дилмурод Назарович	бошлик	944634350	[signature]
5	Жаркурган тумани хокимлик [illegible]	Шокулматов Шавкат [illegible]	Заместитель хокима района	93-526-19-66	[signature]
6	Жаркурган Тоза худуд ДУК бошлиги	Джураев Улугбек Турсунович	Бошлик	91 578 06 72	[signature]

Kashkadarya Province

Общественные консультации по проекту АБР «Устойчивое управление твердыми отходами»

Кашкадарьинская область

«22» августа 2019 года

СПИСОК УЧАСТНИКОВ КОНСУЛЬТАЦИИ

Место проведение: ДУК Тоза Худуд г. Карши.

#	Организация/Tashkilot Место проживания/МФЙ	Ф.И.О./ To'liq ismi sharifi	Занимая должность/Lavozim	Номер Телефона/ Telefon raqami	Подпись/Imzo
1	Тоза худуд ДУК	Рузиев Карим	механик	914504143	
2	Карши тумани ДСЭНМ	[illegible]	сан. врач	919546905	
3	Карши тумани Кат МФЙ	Амиркулов Жавохир [illegible]	хукукшунос	918600222	
4	Кашк. вил. Экология ва атроф муҳитни муҳ. қилиш бошқ-си	[illegible] Отабек Бобокулович	Бош мутахассис	93-140-14-07	

Bukhara Province

Общественные консультации по проекту АБР «Устойчивое управление твердыми отходами»

Бухарская область

«23» августа 2019 года

СПИСОК УЧАСТНИКОВ КОНСУЛЬТАЦИИ

Место проведение: Хокимият бухарского района

#	Организация/Tashkilot Место проживания/МФЙ	Ф.И.О./ To'liq ismi sharifi	Занимая должность/Lavozim	Номер Телефона/ Telefon raqami	Подпись/Imzo
1	Бухоро тумани Дўстлик мфй	Раджабов	Дўстлик мфй раиси	99-595-62-72	
2	Бухоро тумани Галаосиё мфй	Эргашева Сарвиноза	Бухоро тумани [illegible] раҳбар		
3	Бухоро тумани Кукчарой мфй	Исмоилов Н	экология ва [illegible] бошлиғи	97-798-30-07	
4	Бухоро тумани Навруз мфй	Шеров Д.	СЭС [illegible] бошлиғи		
5	Бухоро тумани Навруз мфй	Каюмов [illegible]	таълим бўлими раҳбари		
6	Бухоро тумани Дўстлик мфй	Бобоева Санобар	Дўстлик мфй маслаҳатчи	91-417-35-82	
7	Бухоро тумани Ойбек мфй	Раджабова [illegible]	Санитар [illegible] бўлими ходими	417-66-65	
8	Бухоро тумани Работак мфй	Тураев Зариф	Тиббиёт ходими Бухоро тумани поликлиника	93-688-98-25	

#	Организация/Tashkilot Место проживания/МФЙ	Ф.И.О./ To'liq ismi sharifi	Занимая должность/Lavozim	Номер Телефона/ Telefon raqami	Подпись/Imzo
9	Бухоро тумани Галаосиё МФЙ	Мирсаликов Илхом	25 МТМ хўжалик мудири [illegible]		
10	Бухоро вилояти	Ноилбов Насилло	Бухоро вилояти, Тоғ "Сурур" ДУК директор		
11	Бухоро вилояти	Сатторов Зокир Р.	"Бухоро вилояти Тоғ "Сурур" ДУК бош мухандиси		
12	Бухоро тумани Галаосиё МФЙ	Бароева Фарида	[illegible] хўжалик мудири, ходим	91-407-06-83	
13	Бухоро тумани Ўртабоз МФЙ	Тураев Камол	Ўртабоз МФЙ маслаҳатчиси	91 244 38 18	
14	Бухоро тумани Янги-турмуш МФЙ	Жураqулова Нодира	СЭС бўлимида врач-хамшира	911-24-18	
15	Бухоро тумани Навруз МФЙ	Жумаева Зеби	СЭС бўлимида врач-хамшира	637-06-75	
16	Бухоро тумани Янги-турмуш МФЙ	Амирова Нодира	Тоғ "Сурур" ДУК ТХ ва ЯРН ходими		
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Navoi Province

Общественные консультации по проекту АБР «Устойчивое управление твердыми отходами»

Навоийская область

«23» августа 2019 года

СПИСОК УЧАСТНИКОВ КОНСУЛЬТАЦИИ

Место проведение: г. Навои, хокимият (Кармана).

#	Организация/Tashkilot Место проживания/МФЙ	Ф.И.О./ To'liq ismi sharifi	Занимая должность/Lavozim	Номер Телефона/ Telefon raqami	Подпись/Imzo
1	Кармана тумани хокимлиги	Ахмеджанов Шохрух Фуркат ўғли	инвестиция ва ташқи савдо бўлим мутахассиси	93 510 05 07.	
2	СЭС Карманинского района	Лукьянов Миша Мордохович	зав. санитарным отделом	93-665-33-11	
3	Тоза худуд ДУК директори	Азизуллаев Серег Безрабович	Директор Тоза худуд ДУК	88 278 10 21	
4	Тоза худуд	Темиров Собир Сафарович	Бухгалтер Тоза худуд ДУК	91. 337 43 90	
5	Кармана тумани "Юқори" МФЙ	Жонихурозова Сайёра Худойбердиевна	мутахассис	93 087 10 92	
6	Кармана тумани Экология инспекция	Асанов Бўрон Немонович	Бош мутахассис	90 731 33 47	
7	Кармана тумани Экология инспекция	Бекмуродов Хает Нуриддинович	Бош мутахассис	97-228-72-07	
8					

The Republic of Karakalpakstan

Общественные консультации по проекту АБР «Устойчивое управление твердыми отходами»

Республика Каракалпакстан

«26» [illegible] 2019 года

СПИСОК УЧАСТНИКОВ КОНСУЛЬТАЦИИ

Место проведение: [illegible]

#	Организация/Tashkilot Место проживания/МФЙ	Ф.И.О./ To'liq ismi sharifi	Занимая должность/Lavozim	Номер Телефона/ Telefon raqami	Подпись/Imzo
1	[illegible]	[illegible]	директор	97 358 8448	[illegible]
2	Экология РК	[illegible] Мурат	[illegible]	93 4545537	[illegible]
3	[illegible]	Жаксылыков [illegible]	начальник [illegible]	97 789 13 62	[illegible]
4	[illegible]	[illegible]	[illegible]	97.506-08-88	[illegible]
5	[illegible]	[illegible]	[illegible]	90.591-03-88	[illegible]
6	Тахиаташ	[illegible]	[illegible]	97.3587799	[illegible]
7					

Khorezm Province

Общественные консультации по проекту АБР «Устойчивое управление твердыми отходами»

Хорезмская область

«26» августа 2019 года

СПИСОК УЧАСТНИКОВ КОНСУЛЬТАЦИИ

Место проведение: ДУК Тоза Худуд, г. Ургенч

#	Организация/Tashkilot Места проживания/МФЙ	Ф.И.О./ To'liq ismi sharifi	Занимая должность/Lavozim	Номер Телефона/ Telefon raqami	Подпись/Imzo
1	Вилоят экологияси қошидаги СТМ	Рахмонов Ойбек	Бош мутахассис	93-9220431	[signature]
2	Хоразм в. Урганч ш. [illegible] Обл. [illegible]	Оримов Илхом Шакирович	Юрист.	972992101	[signature]
3	Машарипов Алишер Тоза Худуд ДУК	Машарипов Алишер	Зам директор	97 452-58-08	[signature]

Meeting with the State Committee on Ecology and Environment Protection (SCEEP)
August 27, 2019

Appendix 5. Template for Site-Specific Construction Traffic Plan

CONSTRUCTION TRAFFIC MANAGEMENT PLAN

(Template)

GENERAL INFORMATION

1. Full postal address of the site
2. Contact details for the person responsible for submitting the Site-Specific Construction Traffic Management Plan (Name, tel., e-mail)
3. Brief description of the work.

PROGRAMME/KEY DATES

4. A broad-brush program and total timescale for the project, giving the duration of each major phase of the construction and the anticipated start date if known. There are example of works which could be included in the Table:

#	Type of work	Planning start date	Duration	Completion
1	Mobilization			
2	Demolishing of building			
3	Leveling of the territory			
4	Earth works			
5	Construction of the main buildings			
6	Finishing works			
7	Equipment installation			
8	Site cleaning			

5. Indicate site operation date and hours.

ROUTING OF DEMOLITION, EXCAVATION AND CONSTRUCTION VEHICLE

6. Proposed supply route to and from the site, showing details of links to the strategic road network (A and B roads). – provide a map with indication directions.

SITE ACCESS

7. Site plan showing all points of access and where materials, skips and plant will be stored, and how vehicles will access the site.
8. How will vehicles enter and leave the site?
9. Provide plan of site with indication of above mentioned items (para 7 and 8)

VEHICLES ACCESSING THE SITE PER DAY/WEEK

10. Provide a breakdown of the number, type, size and weight of vehicles accessing the site.

11. Deliveries and collections should generally be restricted to between 9.30am and 4.30pm. Please confirm your acceptance to this condition and describe how it will been forced.
12. Provide information will vehicle wheel wash facilities be provided or not. If yes, describe who it will be organized.

IMPACT ON OTHER ROAD USERS

13. Site plan showing all points of access and where materials, skips and plant will by stored, and how vehicles will access the site.

GENERAL MANAGEMENT

14. Indicate who will be responsible for overall management of SSCTMP and coordination with local Traffic Police.