Initial Environmental Examination

September 2018

Tajikistan: Maternal and Child Health Integrated Care Project

Prepared by the Ministry of Health and Social Protection for the Asian Development Bank

ABBREVIATIONS AND ACRONYMS

ACBA	Agency for Control of Building and Architecture
ADB	Asian Development Bank
ADF	Asian Development Fund
AP	Affected Person/ People
CDH	Central District Hospital
CEP	Committee for Environment Protection
C-EMP	Contractor's Environmental Management Plan
CWWTP	Central Wastewater Treatment Plant
DHC	District Health Center
EA	Executing Agency
EARF	Environment Assessment and Review Framework
EASC	Euro-Asian Council for Standardization, Metrology and Certification
EIA	Environmental Impact Assessment
EIC	Information, Education, and Communication
EMoP	Environmental Monitoring Plan
EMP	Environmental Management Plan
EMR	Environmental Monitoring Report
GoT	Government of Tajikistan
GRM	Grievance Redress Mechanism
IA	Implementing Agency
IEE	Initial Environmental Examination
LAR	Land Acquisition and Resettlement
M&E	Monitoring and Evaluation
MET	Ministry of Environment and Tourism
MCH	Maternal and Child Health
MOF	Ministry of Finance of the Republic of Tajikistan
MOHSPP	Ministry of Health and Social Protection of the Republic of Tajikistan
NGO	Non-Governmental Organization
PAM	Project Administration Manual
PHC	Primary Health Care
PAG	Project Administration Group
REA	Rapid Environmental Assessment
RRP	Report and Recommendation of the President
SPA	Special Protection Area
SPS	Safeguard Policy Statement
VOC	Volatile Organic Compound
WHO	World Health Organization

Notes

1. The fiscal year of the Government ends on 31 December.
2. In this report, "$" refers to US dollars unless otherwise stated.

Currency Equivalents

(as of August 28, 2018)

Currency Unit	–	Tajik Somoni (TJS)
TJS 1.00	=	$0.106053
$1.00	=	9.42924 TJS

Weights and Measures

1 Cusec	:	Measure of flow rate (28.317 liters per second)
1 ha. (hectare)	:	10,000 sq m
1 km (kilometer)	:	1,000 m
1 kV	:	kilovolt (1,000 volts)
1 kW	:	kilowatt (1,000 watts)
1 kWh	:	1 kilowatt-hour = 1000 watts

Glossary of Terms Used

General Terms

Hukumat	:	Municipality/local administration
Jamoat	:	Local self-government
Dehkan	:	Peasant
Construction Drawings	:	Technical and detailed drawing for construction of building

For the Purposes of this IEE

Sub-project	:	Individual Hospitals / Health Centers selected and included in the project for expansion and new construction

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I. Executive Summary

A. Introduction

1. Tajikistan has one of the lowest health expenditures in the Central Asian region. Investments in health has been a major constraint in the recent years. Maternal and Child Health (MCH) is a priority in the National Development Strategy 2030. The constraints to MCH stem from systemic health sector issues such as low quality in health service delivery, financing, and human resources, as well as population's limited knowledge on the importance of MCH. Outside the health sector, poverty, rural residence, and access to clean water, are important determinants of outcomes. The pursuit of Sustainable Development Goals is echoed in the "National Health Strategy for Tajikistan 2010–2020" which envisions strengthening of maternal, newborn, child and adolescent health, prevention and control of infectious diseases, decreasing the burden of preventable non-communicable diseases, and strengthening PHC. The project will aim at the following impact: health status and well-being of mothers and children in selected districts improved. The project will be implemented from March 2019 to February 2025.

B. Components and Summary Environmental Issues

2. The IEE report comprises of baseline data on the existing condition of the physical and biological environment, the anticipated environmental impacts, proposed mitigation measures, monitoring framework, grievance procedure and public consultations. The consultant team undertook field surveys to project sites to assess the physical and biological environment including factors such as site ecology, management of construction, sanitation, use of equipment and machineries, environmental health and safety, occupational hazard etc. The Environmental Management and Monitoring Plan have been dealt with in detail in the respective sections of the report.

3. Potential impacts are mostly temporary, predictable, and reversible, and can be mitigated through adherence to national1 and international standards2, design criteria, and/or implementation of Environment Management Plan (EMP). Hospital / Health Center are proposed on government land and the location of Hospital / Health Center avoided any sanctuary / protected areas or any other environmentally-sensitive areas. Utilization of the best available technology and best management practices are built-in to the project design and listed through the EMP and more specifically through the site specific EMPs to be developed by the Contractor.

4. The proposed construction sites are already in the midst of residential areas. Proposed project activity on reconstruction of hospitals is not legally prohibited. However, it needs to undergo state environmental expertise by Committee on Environment Protection under the Government of the Republic of Tajikistan.

5. IEE including EMP has been prepared to mitigate the potential adverse impacts of construction. The new Hospitals / Health Centers are proposed are proposed only on land owned by the Government and therefore acquisition of land will not be required from the surrounding communities. The proposed expansion of Hospitals / Health Centers will be located on existing government lands or those lands that are allotted to MOHSPP by Government of Tajikistan. All proposed new Hospitals / Health Centers have been identified to have possession of vacant land area; whereas the Hospitals / Health Centers where expansion is to be done in their existing land, there is no need to acquire land. Current facilities for hospitals / Health Centers will be shifted to temporary properties for continuous functioning during construction allowing minimal nuisance to the patients and staff.

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1 Relevant Tajikistan Standards mentioned in section 2 later

2 World Bank/IFC Environment Health and Safety Guidelines 2007

6. Modern state of the art buildings with equipment and building infrastructure fitted with firefighting and alarm systems, electric shockproof designs, seismic resilience, storm and flooding resilient structures are being designed by architects. Buildings will be designed having provisions for energy efficiency and green design. Sangvor Central District Hospital is proposed for demolition as the Hospital was constructed in 1938. Initially, the Hospital was intended designed for people with mental disorders. In 1991, after formation of the district, it was reorganized into Central District Hospital and psychiatric patients were moved to Rasht district. The main building is outdated and the left wing of the building is decayed due to the appearance of cracks. Construction of additional building for Health Centers are proposed as well. In addition, demolition of the old building of Sh. Shohin Central District Hospital that was built in the past century and construction of a new Central District Hospital with integrated Health Center are proposed. During site visits, the hospital management assured no hazardous materials would be involved in demolition and disposal of debris to designated waste sites planned. Experts under the guidance of the Agency for Control and Building and Architecture will conduct physical engineering survey to determine existence of asbestos in the existing building. An asbestos management plan has been explained in detail in Annex 9.

7. Presence of asbestos-cement roofing materials on some existing buildings is an issue as most buildings are old. Construction workers can be exposed to asbestos fibers during roofing modification, repair, or replacement. ACM will not be used as a new material in rehabilitation works or new buildings. Existing asbestos-cement roofing sheets will be removed and disposed of following the internationally-recognized *Standard Practice for Maintenance, Renovation and Repair of Installed Asbestos Cement Products* (American Society for Testing and Materials [ASTM] E 2394)3. Normally, the design team will design rehabilitation to reduce impact of asbestos roofing disturbance and removal and adhere to the applicable IFC (2007) guidelines for asbestos-containing materials (ACM)4 for its removal and disposal. As listed in Annex 9, the Contractor must develop a feasible occupational health asbestos action plan and seek approval from PAG/MOHSPP prior to start of construction.

8. The proposed medical facilities rehabilitation works will not have any adverse impact on people and community lands, structures and properties as the construction works will be carried out within the existing territories. During engineering design of the hospital facilities by the Contractor, potential impacts on structures and lands will be avoided since the existing territories are sufficient. If any adverse impacts are identified during the detailed design stage or construction, adequate mitigation measures will be taken following the ADB SPS 2009 for smooth implementation of the project.

9. For most of the proposed new Hospitals / Health Centers, the construction drawings (technical reports) will be finalized after conducting detailed physical survey of the land through architect firms engaged by the EA under the project. Each site has an issue regarding availability water, sustainable solid waste management options for solid municipal solid waste, incinerator waste, hazardous wastes such as human placenta etc., and wastewater options for sanitary wastes, hospital medical waste water – their treatment and handling at proposed rehabilitation sites. Currently, there is no system for their management except disposal onsite. Evaluation and design of each proposed site for site-appropriate water supply, heating, water

3 ASTM International. ASTM E2394-11, Standard Practice for Maintenance, Renovation and Repair of Installed Asbestos Cement Products. West Conshohocken, PA, 2011. http://www.astm.org/Standards/E2394.htm. This standard describes work practices that protect worker and community health within the resources available in developing and industrialized countries. As much as possible it relies on readily-available tools, equipment, and supplies, and techniques that require careful and diligent workmanship but not the services of highly-skilled tradesmen. The standard is written for construction workers and tradesmen, for those involved in the preparation of contracts and tenders, and for government officials involved in developing regulations to protect worker and community health.

4 International Finance Corporation. Environmental, Health, and Safety Guidelines, 2007. http://www1.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/sustainability+framework/environmental%2C+health%2C+and+safety+guidelines/ehsguidelines

storage, water distribution, toilet, and sanitary, segregation of solid waste and its disposal (municipal solid waste, incinerator and human waste) is required in consultation with the MOHSPP.

10. The expansion/new construction will be done avoiding existing apartment/housing, other buildings, trees or any other existing settlement directly related with the livelihood of people. As assessed, the project benefits outweigh the negative impacts.

11. The negative environmental impacts are likely to be associated with construction activities of the Hospitals / Health Centers include - noise during construction, transportation of construction material to site, disposal of waste soil, and inconvenience to neighboring communities due to increased traffic due to new building construction activities. Constant movement of vehicles that transport construction materials will cause increased level of dust and noise during the construction period. There will be a minor increase of traffic during the construction activities. The impact will be negligible as sprinkling of water, proper handling of excavated soil, and proper construction material storage would be done at the sub-project sites. Effective traffic management and accident management plan will be prepared by Contractor under guidance of PAG.

12. Construction activities may require a camp for construction staff and/or machinery parking area and additional space for heavy machinery movement; in this regard the hospital and clinic administrations will be required to host the camps and to provide additional space for machinery movement. Most workers will be local residents at the project sites but some of the workers might come from other regions and may stay in nearby accommodation planned by the Contractor. The Contractor to develop occupation health and safety plan for those workers from other regions as per EMP.

13. To maintain customer/residential access to the premises surrounding the medical institutions, construction contracts should include a clause requiring contractors to provide appropriate walkways and access to all required sections of the project in the area.

14. Spoil accumulation points and disposal to be identified – inert material to go to waste fill site, other clinical/ medical waste will go to medical waste site during operations. Any hazardous material will be handled as per national Tajikistan environmental laws. At existing hospital areas, the drainage plans will be prepared and disclosed by local environment protection and sanitary and epidemiological specialized agencies before the construction start.

15. During the site visits, the officials and consultants made numerous observations and held discussions with Hospital / Health Center management concerned to assist in proper design of new Hospital / Health Center. The public consultation team conducted group consultations and discussions with the apartment dwellers/public residing in these sub-project areas to sensitize them about project activities, their impacts and get their suggestions. The public was very supportive of the project as the proposed project will help make the hospital health care facilities better and they would not have to travel far distance for treatment.

16. Very small numbers of trees exist in the sites selected for subprojects. Tree replantation/transplantation to be carried out inside premises by Contractor for any trees that are cut. There are about 17 trees at Sangvor District Hospital that need to be removed or re-planted, among them 13 apple-trees, 1 pear tree, 1 willow tree and 2 spruces. There are about 10 trees at Sangvor District Health Center that need to be removed or re-planted, among them 2 apple tree, 3 cherry-trees and 5 poplars. There are about 12 apple-trees at Sh. Shohin District Hospital that need to be removed or re-planted, among them 13 apple-trees and there are 9 apple-trees and 20 poplars need to be removed or replanted at Sh. Shohin DHC. Any of the above-mentioned trees do not have protected status both domestically and overseas.

17. Before start of construction, the Contractor shall prepare a construction site specific EMP and procure all requisite regulatory approvals from all concerned authorities. Adequate

provisions have been made for the environmental mitigation and monitoring of predicted impacts, along with their associated costs in the IEE. Adverse impacts if noticed during implementation will be mitigated using appropriate design and management measures as per the EMP by the Contractor.

18. Some risks expected during construction (for hospital personnel, patients and nearby residents), but can be addressed through sound construction site management such as sound proofing noise, construction yard protection fencing, proper traffic management during construction material movements. The Contractor and Hospital / DHC sites will plan and implement disaster management plan, emergency site accident remedial measures and information disclosure etc. Regular monitoring of the recommended mitigation measures for environment parameters as per Monitoring Plan shall also be carried out during the implementation phase of the project.

19. Hospitals and Health Centers will generate hazardous, infectious and chemical waste during its operation that can be managed properly following to EMP. No other significant risks are anticipated during operation. An Emergency Response Program (ERP) will be prepared by Contractor in consultation with Environment safeguard specialist of the PAG. ERP training will be provided to all stakeholders in the project construction and operations stages.

20. According to Committee of Environment Protection (CEP) regulation, a domestic Environment Impact Assessment (EIA) development is required. In accordance with the Government of Tajikistan (GoT) EIA Notification, these projects are not listed as environmentally sensitive. However, site construction/reconstruction project needs to undergo state environmental expertise by Committee on Environment Protection under the Government of the Republic of Tajikistan. Since the project does not involve activities that have significant adverse impacts and no banned substances are present, an IEE has been developed comprising development of an environmental management plan and monitoring plan as per ADB's Safeguard Policy Statement (SPS) 2009. The IEE report conforms to national environmental regulations and is also consistent with ADB SPS 2009. Accordingly, the environmental classification for the project is "Category B" as per ADB SPS 2009.

II. Introduction

A. Background

21. Sector Issues. Maternal and child health (MCH) is a priority in the National Development Strategy 20305. Tajikistan is committed to the attainment of Sustainable Development Goals (SDG). Tajikistan is lagging in its attainment of key SDG indicators in neonatal mortality and infant mortality. SDG targets for neonatal mortality and infant mortality is 12 and 25 per 1,000 live births, respectively while recent estimates for Tajikistan is 21 neonatal deaths per 1000 live births and 45 infant deaths per 1,000 live births, around half of the targets[6]. The constraints to MCH stem from systemic health sector issues such as quality health care services delivery, financing, and human resources, as well as population's limited knowledge on the importance of MCH. Outside the health sector, poverty, rural residence, and access to clean water, are important determinants of outcomes.

22. Poor referral systems for MCH care. Most patients directly go to secondary and tertiary level hospitals, bypassing most rural hospitals during delivery. Most patients lack confidence on the quality of PHC health services because of outdated facilities, lack of equipment, and untrained health care staff. Bypassing leads to disrupted patient care and a more expensive health service delivery. Although regulations on referral system exist, implementation is not enforced.

23. Government's Sector Strategies. The pursuit of Sustainable Development Goals is echoed in the "National Health Strategy for Tajikistan 2010–2020" which envisions strengthening of maternal, newborn, child and adolescent health, prevention and control of infectious diseases, decreasing the burden of preventable non-communicable diseases, and strengthening PHC. The health strategy is a shift from the Semashko model[7] and is focused on strengthening PHC. The government approved the Strategic Plan for the Rationalization of Medical Facilities in the Republic of Tajikistan for 2010–2020 (No. 169 dated 1 April 2011) as a response to its health service delivery issues. Given high rates of bypassing, the said rationalization plan envisions an integration of health services across levels of care and types of providers. Targets for PHC include one urban/rayon health center per city or rayon, one rural health center per 5,000 people, and one rural health center with emergency care and minor surgery services per 20,000 people.

B. Outputs, Outcomes and Impact

24. The proposed project will have three outputs:

1. Output 1: Integrated delivery of quality maternal and child care services in project districts improved.

25. Enhance human workforce planning and capacity building through the development of the human resource planning. Operationalize effective MCH referral system between community, PHC and district level hospitals in managing MCH services Pilot case-based financing mechanism at project district hospital(s).

5 Republic of Tajikistan. 2017. National Development Strategy 2030. Dushanbe.

6 United Nations Children's Fund. Monitoring the situation of Women and Children https://data.unicef.org/country/tjk/.

7 The Semashko was built as a multi-tiered system of care with a strongly differentiated network of service providers at various levels (district, central rayon, municipal, oblast and federal hospitals). As a legacy of the former Soviet Union, Tajikistan inherited a relatively dense network of facilities, that are largely unfunded and uncoordinated (Eurohealth, 2015).

2. Output 2: Infrastructure and equipment for MCH services in project districts rationalized and improved.

26. The project will construct or renovate of new central district hospitals (CDHs) and DHCs buildings based on the careful assessment of the building conditions, district health sector master plan and the needs for the provision of quality services. Supply of medical equipment and medical furniture to refurbished district hospitals and provision of basic equipment to PHC facilities at district level. Enhancement of the equipment management system in targeted health facilities.

3. Output 3: Knowledge on maternal and child health and health seeking behaviors in project districts improved.

27. Consists of capacity enhancement of the Republican Healthy Lifestyle Center (RHLC) and its structures and strengthen partnership with relevant stakeholders. Development of the district specific BCC approach by design and implementation and upgrading counselling skills development of health workers and community members. The project will finance development of the training curricula and materials and training to target groups.

28. **Outcome**:: These solutions will result in the following **outcome**: Integrated MCH services expanded. The project will be aligned with the following **impact**: health status and well-being of mothers and children in selected districts improved (Sustainable Development Goals 3).

29. **Development Partner Support.** Kreditanstalt für Wiederaufbau (KfW) has been supporting the rationalization of hospitals since 2011 in Khatlon Oblast while the World Bank (WB), Japan International Cooperation Agency (JICA), and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) have been supporting PHC. WB, Swiss Agency for Development and Cooperation (SDC), and United States Agency for International Development (USAID) have also been providing training programs and piloting Continuous Quality Improvement (CQI) activities. United Nations agencies such as World Health Organization (WHO), United Nations Children's Fund (UNICEF), United Nations Development Program (UNDP) and United Nations Population Fund (UNFPA) are also providing policy and implementation support to the sector. Development partners' assistance such as the planned European Union (EU) budget support for health can also help alleviate fiscal constraints.

30. **ADB Value Addition.** The project will build upon achievements and lessons learned from Asian Development Bank's past support to health sector in Tajikistan. A major lesson learned from Health Sector Reform Project (GRANT 2054-TAJ) is that "rationalization of PHC institutions and provision of adequate health financing should go hand in hand."[8] The completion report also noted the value of conducting comprehensive needs assessment before drawing up civil works and equipment lists to ensure right inputs are made as well as the need for intensive information campaigns to ensure community participation. ADB will contribute to the integration of primary and secondary care at the MCH level which is key for better quality and efficient provision of services. The project will consolidate different pilots of development partners, which focuses on either PHC or secondary care, into an integrated concept. Integrated care refers to integration across primary, secondary, and tertiary health services to provide more continuous care to patients with the aim of achieving improved patient care through better coordination of services provided. ADB will bring in regional lessons on integrating health care services and improving efficiencies in health service delivery to inform the project and the ongoing country health reforms.

8 Asian Development Bank. 2010. Project Completion Report: Tajikistan Health Sector Reform Project (Grant 2054- TAJ). Manila: Philippines.

C. Implementation Arrangements

31. The executing agency will be the MOHSPP. The implementing agency will be the project administration group (PAG), which will be reporting to MOHSPP. The PAG will be supported by international and local consultants. The project will be implemented from March 2019 to February 2025. A steering committee, chaired by the Minister of MOHSPP, will oversee project implementation and will include members from various departments from MOHSPP and other relevant ministries. There will be close collaboration with development partners, including joint review missions. Implementation arrangements' feasibility, as well as possibilities for co-financing with other development partners, will be reviewed and validated during the project processing. The nature of key expected contract packages for the project are civil works, equipment and consulting services. Indicative implementation arrangement is shown in Table 1.

Table 1: Indicative Implementation Arrangements[9]

Aspects		Arrangements
Indicative implementation period		1 March 2019−28 February 2025
Indicative completion date		28 February 2025
Management		
(i)	Executing agency	Ministry of Health and Social Protection
(ii)	Key implementing agencies	Project Implementation Unit

D. Scope of Work and Methodology Adopted

32. The broad scope of the Environmental Assessment study is:

- To conduct field visits to collect data relevant to the study area and also collect secondary data so as to establish the baseline environmental status of the study area;
- To assess the impacts on environmental attributes due to the location, design, construction and operation of the proposed project;
- To prepare a mitigation plan outlining the measures for protecting the environment including institutional arrangement and environmental monitoring;
- To identify critical environmental attributes required to be monitored subsequent to the implementation of the proposed project;
- To carry out consultation with local people to identify the public perception of the project; and
- To establish the Environment Management Plan (EMP) for the MOHSPP.

33. Each proposed Hospital / Health Center on the list was further examined for conformance to ADB's safeguards and technical due diligence confirmed for support before the design of the project is finalized in June 2018. Accordingly, transect walks and field surveys were undertaken to assess physical and biological environment in June/July 2018. However, the exact design of some Hospitals / Health Centers may vary after the exact measurements of locations by the Architects preparing construction technical drawings and Agency for Control of Building and Architecture Agency under the Government of the Republic of Tajikistan requirements.

34. The IEE report comprises baseline data on existing condition of physical, ecological, economic, and social information, together with the anticipated environmental impacts and proposed mitigation measures. This report is prepared on the basis of preliminary survey, field study and consultations with the help of available secondary data of different sites, articles and report.

9 Source: Asian Development Bank

35. Detailed assessment of secondary source baseline environmental data for Tajikistan and concerned districts/Hukumats was done to support the findings of the field survey by consultants. Public consultations were held with affected persons such as house dwellers, other stakeholders, and government officers of the project area. Annex 7 gives details of places and persons who attended these consultations. The field studies were supported by data collected from secondary sources such as internet, forest atlas, published data from GoT documents, population census statistics data, as well as documents from MOHSPP and documents from other government departments etc.

III. Policy, Legal and Administrative Framework

36. This section presents an overview of the policy/legislative framework as well as the environmental assessment guidelines of the Republic of Tajikistan that apply to the proposed project. The section also identifies relevant ADB Safeguard Policies that will be applied in the project.

A. Environmental Clearance Requirements

37. According to ADB's Guidelines and Environmental Assessment Requirements of Infrastructure Projects, an IEE will be presented to both the Government of Republic of Tajikistan and ADB. According to initial environmental assessment the project has been qualified as category "B".

1. ADB's Safeguard Policy Statement (SPS 2009)

a) Environmental Impact Assessment Requirements of ADB

38. The safeguard policies are operational policies that seek to avoid, minimize or mitigate the adverse environmental and social impacts of projects including protecting the rights of those people likely to be affected or marginalized by the development process. ADB's safeguard policy framework in the SPS consists of three operational policies on the environment, indigenous people and involuntary resettlement. ADB has developed Operational Procedures to be followed in relation to the SPS policies and these are included in the ADB Operations Manual.

39. The ADB's Safeguard Policy Statement (SPS), 2009 is applicable to all projects. All projects considered for grants and investments by ADB are subject to classification for the purposes of determining environmental assessment requirements. These projects can be categorized as A, B, C or FI. The determination of the environment category is to be based on the most environmentally sensitive component of the project. Within this system, projects are screened for their expected environmental impacts and reporting requirements. Table 2 below provides a list of categorization of the activities related to Environment, Safeguards, as per ADB's Safeguard Policy Statement 2009 requirements:

Table 2: Environment Safeguards Categorization: Definition

Category	Environment	Type of reporting required.
A — Significant	Projects that anticipate 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 (EIA) is required to address significant impacts.
B — Less Significant	Projects with potential adverse impacts that are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be more readily designed than for Category A investments.	An initial environmental examination (IEE) is required to determine whether or not significant environmental impacts.
C — Minimal or impact	Projects that have minimal or no adverse environmental impacts.	Environmental due diligence report or any other document that reviews environmental implications is required,
FI — Financial Intermediation	Projects of ADB funds through financial intermediaries (FI)	An environmental and social management system (ESMS) report is required.

40. At an initial stage of identifying project activities, the ADB's Prohibited Investment Activities List (described in Asian Development Bank's Safeguards Policy Statement 2009.) will apply. If the investment involves any prohibited activity, EA will not consider the investment. However, in this project, there are no prohibited activities being undertaken. [10]

b) ADB SPS Requirements (SR1): Environment Policy

41. ADB's SPS sets out the policy objectives, scope and triggers, and principles for the environmental safeguards. To achieve the policy objectives and deliver the policy principles, ADB carries out the actions described in the Policy Delivery Process (subsection B of the SPS). To help borrowers/clients and their projects achieve the desired outcomes, ADB adopts a set of specific safeguard requirements that borrowers/clients are required to meet in addressing environmental and social impacts and risks. ADB staff, through their due diligence, review, and supervision, will ensure that borrowers/clients comply with these requirements during project preparation and implementation.

42. The objective of ADB's due diligence for the Project grant is that EA ensures the environmental soundness and sustainability of projects and to support the integration of environmental considerations into the project decision-making process.

43. Environmental safeguards are triggered if a project is likely to have potential environmental risks and impacts. The policy principles for environment assessment are listed in ADB's SPS 2009 document.

44. This Project has been evaluated as a Category B Project, requiring an IEE. Guidelines on the ADB's requirements for EIA include the SPS (June 2009).

2. National Tajikistan Legislation

a) Tajikistan's Country Policy, Legislative and Administrative Framework

45. Various central government organizations have roles and environmental and social responsibilities:

- The Ministry of Health – responsible for development and implementation of policy, regulations, and norms related to public health;
- Ministry of Labor, Migration, and Employment – responsible for developing and implementing policies relating to employment, labor issues, and migration practices;
- Committee of Women and Family Affairs – responsible for gender issues and realization of family orientated policy;
- Architecture and Construction Committee – responsible for technical advice in relation to water supply and sewage systems, including construction and design standards, contract standards and rules, and regulation of project and construction activities;
- Tajik GOST Standard – responsible for drinking water quality standards;
- State Statistical Committee – responsible for collecting, filing and delivering data on drinking water supply and sanitation;
- Committee for Environment Protection (CEP) – executive body responsible for environmental protection, sustainable use of natural resources including water.

46. Local governments have some environmental responsibilities and are organized in two levels:

- Hukumat – municipality / local state administration. Each hukumat is headed by a chairperson appointed as a local representative of the President in the implementation national policy and administration of State services and regulations;

10 No production of, trade in, or use of unbonded asbestos fibers

- Jamoat - local self-government. A jamoat covers a smaller administrative area than a hukumat. The jamoat is responsible to organize community-based delivery of some basic public services. The jamoat has no budgeting authority and has a very limited independent role.

b) Government Environmental Laws, Regulations and Guidelines Legislation

47. Tajikistan has a well-developed environmental legal and regulatory framework. Current environmental legislation in Tajikistan includes statutory acts and laws on the following topics: (i) Protection of the environment; (ii) ecological audit and monitoring; (iii) protection of flora and fauna; (iv) environmental information and education; (v) soil, water and air quality; (vi) biological safety; (vii) human health and safety; and (viii) waste and chemicals management. These laws, along with the regulations approved by the Government of Tajikistan (GoT) create a favorable legal framework for environmental protection and for the use and protection of the country's natural resources. They also enforce the rights of any citizen for environmental safety, organic products, eco-friendly environment, access to environmental information, possibility of investing (moral, material and financial) to improve the ecological situation in the country.

48. Environmental legislation in the Tajik Republic includes the Constitution, codes and laws on air quality, noise, mineral resources, land management, forests, health and safety, waste and chemicals management. The Tajikistan Framework Environment Law was adopted in 1993 it was enacted in 1994 and amended sequentially in 1996, 1997, 2002, 2004 and 2007. Then in 2011 it was replaced by new law. The Water Code was adopted in 2000 (amended in 2008, 2009, 2011 and 2012), the Land Code in 1996 (amended in 1999, 2001, 2004, 2006 and 2011, twice in 2008 and 2012) and the Forest Code in 1993 (amended twice in 1997 and 2008).

49. Other important environmental legal acts, laws and regulations relevant to the project are listed in Table 3.

Table 3: Relevant Environmental, Health and Safety Laws in Tajikistan

Law	Enacted and Amended	Responsible Agency	Brief Description
Law on Environmental Protection	August 2, 2011, No.760	Committee on Environment Protection and its subdivisions at the districts	The Law defines legal state principles of environment protection and aimed at provision of sustainable social and economic development, guarantees of human rights for healthy and friendly environment, law enforcement strengthening, prevention of negative impact of business and other operations on the environment, management of rational use of nature resource and securing environmental safety. Chapter 6 requires an Environmental Impact Assessment and Chapter 7 specifies requirements for the location, design, construction, reconstruction and commissioning of enterprises, buildings and other facilities
Law on Environmental Impact Assessment	18.07.2017 No.1448	Committee on Environment Protection and its subdivisions at the districts	The Law establishes the legal and organizational framework for assessing the environmental impact, relationship with state environmental expertise, and the procedure for registering and classifying impact of assessment objects on the environment.

Law	Enacted and Amended	Responsible Agency	Brief Description
Land Code of the Republic of	Enacted in 1996, last amended in 2016	Committee on Land Management and Geodesy of the Republic of Tajikistan and its subdivisions at the districts,	Land legislation governs the relations of land use and protection, land use property relation which arise from getting (acquisition) of convey land use rights.
Law on Special Protected Areas	Enacted in 26.12.2011, last amended in 2014	State Institution on Specially Protected Natural Areas of Forestry Agency under the Government of the Republic of Tajikistan and its subdivisions in the districts,	The Law defines legal, organizational and economic principles of specially protected natural areas, establishes the assignments, activity operations and zoning
Law on Plant Protection	Enacted in 16.04.2012 No. 817	Committee on Environment Protection and its subdivisions at the districts Ministry of Agriculture Forestry Agency under the Government of the Republic of Tajikistan Academy of Sciences	The Law defines legal, organizational and economic principles of plants and agricultural commodities protection from pests, diseases and weeds.
Law on Protection and Use of Plants	Enacted in 17.05.2004, last amended in 2008	Committee on Environment Protection and its subdivisions at the districts Ministry of Agriculture Forestry Agency under the Government of the Republic of Tajikistan Academy of Sciences	The Law establishes state policy of the Republic of Tajikistan on protection and efficient use of plants, defines legal, economic and social principles of the field and aimed preservation and reproduction of plants
Forestry Code of the Republic of Tajikistan	Enacted in 2.08.2011	Forestry Agency under the Government of the Republic of Tajikistan Committee on Environment Protection and its subdivisions at the districts Ministry of Agriculture	Regulates relations for protection, possession, sustainable use & reproduction of the forest in Tajikistan. Defines prohibited activities in protected forest zones & their regimes &conditions when undertaking allowed activities in the utilization zone forests & their regimes.
The Law on Conservation and Usage of the Historical and Cultural Heritage	Enacted in 03.03.2006	Ministry of culture of the Republic of Tajikistan Academy of Sciences of the Republic of Tajikistan Committee on Environment Protection under the Government of the Republic of Tajikistan Forestry Agency under the Government of the Republic of Tajikistan	The Law regulates legal framework on conservation and use of historical and cultural heritage objects at the territory of the Republic of Tajikistan and being national property of Tajik people.

Law	Enacted and Amended	Responsible Agency	Brief Description
Law on Subsoil	Enacted in 20.07.1994, last amended in 2013	Geology Head Office under the Government of the Republic of Tajikistan Committee on Environment Protection under the Government of the Republic of Tajikistan	Regulates relations concerning the use & protection of subsoil in the interests of present and future generations.
Law on Soil Conservation	Enacted in 16.10.2009	Committee on Environment Protection under the Government of the Republic of Tajikistan Committee on Land Management and Geodesy of the Republic of Tajikistan Ministry of Agriculture	The law defines main principles of state policy, legal framework of public authorities, individual and legal entities for the efficient and safe use of soils, preservation of quality, fertility and soil protection from negative impacts and regulates the variety of relationship related to soil protection
Water Code	Enacted in 20.10.2000 last amended in 2012	Committee on Environment Protection under the Government of the Republic of Tajikistan - Ministry of Energy and Water Resources of the Republic of Tajikistan Ministry of Agriculture Geology Head Office under the Government of the Republic of Tajikistan Ministry of Health of the Republic of Tajikistan	The aims of Water Code of the Republic of Tajikistan are protection of state water fund and state water fund lands for the improvement of population social condition and environment, water pollution control, impurity, depletion, prevention and control of water adverse effect, enhancement and protection of water objects, strengthening legality and rights protection of individual and legal entities in water management field.
Law On Protection of Atmospheric Air	Enacted in 1995 and amended in 2012 Enacted in 28.12.2012	Committee on Environment Protection under the Government of the Republic of Tajikistan Ministry of Health of the Republic of Tajikistan Hydrometeorology Agency	The Law regulates relations of individual and legal entities irrelevant of ownership form with an aim of conservation, rehabilitation of atmospheric air and securing of environmental safety.
Public Health Code of the Republic of Tajikistan	Enacted in30.05.2017	Ministry of Health of the Republic of Tajikistan	The Code regulates public health relations and aimed at implementation of constitutional rights and health protection of citizens. Chapter 17 of the Code secures sanitary and epidemiological safety

Law	Enacted and Amended	Responsible Agency	Brief Description
Law on Production and Consumption Waste	Enacted in 10.05.2002, last amended in 2011	Committee on Environment Protection under the Government of the Republic of Tajikistan Ministry of Health of the Republic of Tajikistan State Unitary Enterprise on Municipal Housing and Utilities of the Republic of Tajikistan	The Law regulates the relations arising in the process waste generation, collection, storage, utilization, transport, deactivation and landfilling of wastes, state management, supervision and control of waste management and is aimed to prevent the negative impact of production and consumption wastes on the environment and human health when handling with them, their involvement into economic and production turnover as an additional stock source.
On Protection of Population and Territories from Natural and Man-Made Emergencies	Enacted in 15.07.2007	Committee for Emergency Situations and Civil Defence under the Government of the Republic of Tajikistan and its structural subdivisions	The Law defines organizational and legal framework on protection of population of the Republic of Tajikistan and persons without citizenship at the territory of the Republic of Tajikistan, as well as the lands, interiors, water, airspace, animals and plants and other natural resources of Tajikistan, objects of industrial and social purpose and environment from natural and man-made emergencies. Regulates public relations on prevention, occurrence and development of emergencies, reduction of damages and losses, elimination of emergency situations and timely notification of population in dangerous zones on natural and man-made emergencies.
Law on wildlife	Enacted in 05.01.2008	Committee on Environment Protection under the Government of the Republic of Tajikistan Ministry of Agriculture Academy of Sciences of the Republic of Tajikistan Forestry Agency under the Government of the Republic of Tajikistan	The Law regulates public relations in protection, restoration and reasonable use of wildlife, establishes legal, economic and social framework of the field and is aimed at protection and restoration of wildlife resources.
Law on Labor Protection	Enacted in 19.05.2009	Ministry of Labor, Migration and Employment of the Republic of Tajikistan, Ministry of Health of the Republic of Tajikistan	The Law establishes legal framework of labor protection relations between employers and employees and is aimed at creation of conditions that meet the requirements of employees lives and health preserving gin the work process.
Labor Code of the Republic of Tajikistan	Enacted in 23.07.2016	Ministry of Labor, Migration and Employment of the Republic of Tajikistan Ministry of Health of the Republic of Tajikistan	The Code regulates labor and other relations directly aimed at them, protection of the rights and freedoms of the parties of labor relations, securing minimal guarantees of labor rights and freedoms.

Law	Enacted and Amended	Responsible Agency	Brief Description
Law on Fire Safety	Enacted in 20.04.2008last amended in2010	Main Department of State Fire Prevention Agency of the Ministry of Internal Affairs of the Republic of Tajikistan	The Law defines general legal, economic, social and organizational principles of fire prevention in the Republic of Tajikistan, regulates the relations between state authorities, local authorities, organizations, other legal entities irrelevant of organizational and legal forms, as well as between public amalgamations, officials and citizens of the Republic of Tajikistan, foreign citizens and persons without citizenship.

B. Tajikistan Environmental, Health and Safety Standards

1. Environmental Assessment Framework

50. **Framework environment law.** The Law on Environment Protection (No. 208, 2011) states that national environmental policy should prioritize environmental actions based on scientifically proven principles and integrates nature preservation and sustainable resource use with economic development. The Law defines applicable legal principles, protected objects, and the competencies and roles of Government, local authorities, public organizations, and individuals. The Law also stipulates measures to secure public and individual rights to a safe and healthy environment and requires a combined system of ecological expertise and environmental impact assessment to reach a decision on any activity with potential adverse environmental impacts.

51. The Law defines environmental emergencies and ecological disasters, and prescribes the order of actions in such situations, defines the obligations of officials and enterprises to prevent occurrences and eliminate consequences, and the liabilities of the persons or organizations that damage the environment or otherwise violate the Law. The Law establishes several types of environmental enforcement: State control, ministerial control, enterprise control and public control. State control is effected by the Committee for Environment Protection, the Sanitary Inspectorate of the Ministry of Health, the Inspectorate for Industrial Safety, and the Mining Inspectorate. Public control is carried out by public organizations or trade unions and can be exercised with respect to any governmental body, enterprise, entity or individual.

52. **State ecological expertise.** The Law on Environment Protection (No. 208, 2011), the Law on State Ecological Expertise (2011) and the Procedure on Organization and Performance of Environmental Assessment (2014) stipulate that all types of economic and other activities shall be implemented in accordance with environmental standards and norms and shall have sufficient environmental protection and mitigation measures to prevent and avoid pollution and enhance environmental quality. They define a state ecological expertise (SEE) process that examines the compliance of proposed activities and projects with the requirements of environmental legislation and standards and the ecological security of the society. SEE is a mandatory cross-sectoral process that must be scientifically justified, comprehensive, and objective. It precedes decision-making about activities that may have a negative impact on the environment.

53. Financing of programs and projects and decisions on siting, construction, or reconstruction are allowed only after a positive SEE finding has been issued. If these requirements are violated, the Committee for Environmental Protection and/or other duly authorized control bodies may terminate construction until necessary improvements are made. SEE for investment projects is the responsibility of the Committee for Environmental Protection (CEP) and its regional offices.

54. **EA administrative framework.** The Law on Environmental Protection states that SEE is to be conducted by the State Committee for Environment. A small unit in the ministry is entrusted with guiding and managing both EIA and SEE.

55. **EIA studies.** Preparation of the Environmental Impact Assessment (EIA) study is a responsibility of the project proponent. EIAs are to analyze the short- and long-term environmental, genetic, economic, and demographic impacts and consequences of projects, and must meet the standards of other sectors and environmental media line agencies (sanitary-epidemiological, geological, water, etc.).

56. **Environmental clearance.** The Committee of Environment Protection is the authority responsible for state review of EAs and environmental clearance of civil works.

2. Occupational health and safety standards

57. Relevant national laws include:

- Labor Code, 12 May 1997
- Law on Protection of Labor No 517, 19 May 2009 / 1 August 2012
- Law on Industrial Safety at Hazardous Facilities No. 14, 28 February 2004 / 2008
- Law on Occupational Safety, December 24, 1991, amended 1998 and 2007
- Law on Public Sanitation and Epidemiology Welfare, No 1010, 22 July 2013
- Law on Health Protection of the Population, No 420, 15 May 1997 / 22 July 2013

58. Worker health and safety standards are agreed among trades unions, employer associations – who are responsible to implement the measures – and the Ministry of Health and Social Protection of the republic of Tajikistan (MOHSPP) – who is responsible for supervision and enforcement.

Asbestos

59. Tajikistan's sole regulation on asbestos, the regional multi-state agreement Interstate Standard GOST 12871-93 signed by Tajikistan, regulates interstate trade and transport of chrysotile asbestos. Asbestos-containing products are legally available e.g. pipes and corrugated roofing material are being imported from Russia and China and the Dushanbe cement factory resumed production of corrugated asbestos-cement sheets in September 2013[11].

60. The ILO Conference in Geneva (May 31-June 16, 2006), its resolution declares that the elimination of the future use of asbestos and the identification and proper management of asbestos currently in place are the most effective means to protect workers from asbestos exposure and to prevent future asbestos-related diseases and deaths. In Tajikistan, the Ministry of Education passed a special resolution prohibiting use of asbestos and asbestos nets in chemical and physical labs of secondary schools, vocational-technical schools and higher educational institutions twenty years ago already.[12]

Waste Management

61. Environmental permits are issued and monitored by the Committee on Environment Protection or the Hukumat regulatory authority (depending on level of impact). The State regulatory authority is responsible for high-impact enterprises and the appropriate department of the Hukumat level is responsible for middle- and low-impact enterprises.

62. Independently from ownership form, all companies that generate, store and process waste on their territory has to obtain a License. Moreover, the enterprises have to agree the volumes of waste generation with state authorities and obtain the wastes limit. Depending on

11 Barki Tojik. 2013. Initial environmental examination, Golovnaya 240 Megawatt Hydropower Plant Rehabilitation Project, Tajikistan. http://www.adb.org/sites/default/files/project-document/78683/46418-001-taj-iee-01.pdf
12 http://news.tj/en/news/ilo-adopts-resolution-concerning-exposure-asbestos

the volume of waste generation the Limit is issued: by local environment protection authority if less than 20 tons; by Committee on Environment Protection if more than 20 tons. In accordance with the Law of the RT "On Industrial and Household Wastes", household wastes are considered as hazardous and following the Law of the RT "On Licensing the Activities Related to Hazardous Waste Management" hazardous waste management activities, require to obtain a license.

63. Companies or organizations which generate waste, including municipalities, have to apply for permit (permit application involving $20m^3$ or more is obtained from relevant authority). After submission of the application, the appropriate authority coordinates with the relevant Sanitary and Epidemiological Inspectorate and the Fire Prevention Agency and checks all relevant aspects of the application. Within one month of submission, an approval is issued and the applicant is provided with a license. In an annex to the license the technical requirements are listed. The license fee goes directly to the state budget.

64. Municipal departments for environmental protection are authorized to levy certain environmental fees based on pollution emissions to air and water and solid waste generation. The fee income is used, in part, to fund local and central government administration but also as a fund for environmental protection.

Mercury lamps disposal

65. Procedures of waste mercury lamps collection from population, legal entities, individual entrepreneurs, storage, transportation, disposal, 2011.

66. The Procedures establish the rules of waste management of spent and out of service fluorescent energy saving and other mercury lamps (hereinafter waste mercury lamps), inappropriate collection, storage, utilization, deactivation, transportation and location that may result in the infliction of life harm, citizens' health, animals, plants and environment.

67. Out of service, undamaged lamps and lamp fragments (broken lamps, fragments and broken lamps luminophore, the paper used for mercury pollution disposal, sponges, cloths, adhesive tape, paper towel and other materials) are considered mercury waste that requires established sanitary procedures and separate collection.

3. Other Environmental Laws

68. Other environmental laws include:

- Law on Environmental Expertise No 818, 16 April 2012
- Law on Protection of Atmospheric Air No 915, 28 December 2012
- Law on Environmental Monitoring No 707, 25 March 2011
- Law on Environmental Information No 705, 25 March 2011
- Law on Routine Inspections of Operating Facilities No 194, 28 July 2006
- Law on Waste of Production and Consumption, No 109, 25 July 2005

Environment Protection Licenses, Permits, Standards, Enforcement, and Compliance.

69. Generally speaking, regulatory powers related to environmental protection are held by Committee on Environment Protection and their subordinate departments with an interest in hazardous activities, water use, emissions/discharges to air and water, and handling and disposal of waste and toxic chemicals.[13]

13 For a detailed description, see for example: Tajikistan Ministry of Transport. 2013. Initial Environmental Examination, [ADB] Improved Maternal and Child Health Through Connectivity Project [Tajikistan]. http://adb.org/projects/documents/improved-maternal-and-child-health-through-connectivity-iee

70. A number of legal acts establish liability for violations of environmental laws and assign enforcement responsibility to various State bodies. In particular, the 1998 Code of Administrative Violations establishes administrative liability for organizations, their officers and individuals for a range of violations, from the careless treatment of land to violation of the rules for water use or water protection, or failure to comply with a State ecological expertise. The most common administrative sanction is a fine of up to 10 minimal monthly salaries for individuals, and up to 15 minimal salaries to officers of organizations. The 1998 Criminal Code covers crimes against ecological safety and the environment, such as violations of ecological safety at work, poaching, and spoiling land, and violation of rules for the protection and use of underground resources. The maximum fine is up to 2000 minimal monthly salaries and the maximum sentence is up to eight years in prison. EA enforcement and compliance are the main responsibility of Environmental Inspectors of the Committee for Environment.

4. Environmental Standards

71. Environmental standards are shown in Annex 1 for emissions to the atmosphere, ambient air, water quality and discharges to water, and drinking water standards, plus selected GOST (Russian: ГОСТ) technical standards[14].

5. Environmental Standards

a) Noise Standards (day time - night time):

72. Tajikistan has also noise quality standards for receptors in different areas as indicated by Table 4. These standards are equivalent to the World Bank EHS standards (See Annex 2).

Table 4: Tajikistan Noise Standards

#	Area	Day time Limits *	Night Time limits**
1	Residential area	55 dBA	45 dBA
2	Commercial area	60 dBA	50 dBA
3	Industrial area***	70 dBA	70 dBA
4	Hospitals	35 dBA	25 dBA
5	Schools, Library,	45 dBA	45 dBA
6.	Hotels etc.	60 dBA	50 dBA

* Tajik standards with daytime defined as 07:00 – 22:00 in line with IFC EHS General guidelines. Exception: areas adjoining hotels and dorms where IFC standard is more stringent 55 dB (A).
** Tajik standards apply with night time defined as 22:00 – 07:00 in line with IFC EHS General Guidelines. Exception 1: IFC standard will prevail from 22.00 to 07.00. Exception 2: areas adjoining hotels and dorms where IFC standard is more stringent 45 dB (A)
*** Limit as per IFC standard.

b) Surface Water Quality Standards

73. Tajikistan has also water quality standards for surface watercourses with selected parameters as indicated by Table 5.

Table 5: Water Quality Standards[15]

#	Parameter	Limit Value
1.	Oxygen	Winter – 4.0 mg/Liter; Summer – 6.0 mg/Liter
2.	Salt ammonium	0.5 mg/liter

14 These are standards maintained by the Euro-Asian Council for Standardization, Metrology and Certification (EASC), a regional standards organization operating under the auspices of the Commonwealth of Independent States (CIS).

15 Source: State Committee for Statistics. Environmental Protection in Tajikistan: Statistical Summary 1990-2000. 2002 edition (in Russian).

#	Parameter	Limit Value
3.	BOD	3.0
4.	Oil and petrochemicals	0.05
5.	Iron	0.05
6.	Copper	0.001
7.	Zink	0.01
8.	Phenols	0.001
9.	Chlorides	300
10.	Sulphates	100
11.	Calcium	180
12.	Potassium	50
13.	Suspended Matter	1000

c) Air Quality

74. Table 6 gives the Air Quality Standards.

Table 6: Air Quality Standards16

#	Pollutant	Tajikistan Standard mg / m3
1.	Particulate Matter	0.150
2.	Nitrogen Oxide (NO)	0.060
3.	Nitrogen Dioxide (NO2)	0.040
4.	Sulphur Dioxide (SO2)	0.050
5.	Carbon Dioxide	3.000
6.	Ammonium	0.200

d) Guidelines and good practices in ADB SPS

75. The ADB SPS Policy Statement 2009 (SPS) states, "During the design, construction, and operation of the project the borrower/client will apply pollution prevention and control technologies and practices consistent with international good practice, as reflected in internationally recognized standards such as the World Bank Group's Environment, Health and Safety Guidelines. These standards contain performance levels and measures that are normally acceptable and applicable to projects."

76. For this purpose, World Bank EHS guidelines are recommended. The Environmental, Health, and Safety (EHS) General Guideline[17] (April 30, 2007) will be applicable for this Project. The World Bank EHS standards relevant to the project are listed in Annex 2 for reference.

77. National regulations take precedence; but when they differ from the EHS Guidelines, the more stringent levels or measures apply. In some circumstances, less stringent levels or measures may be appropriate due to specific project conditions (e.g. existing facilities). In these cases, the borrower/client is required to prepare alternatives that are consistent with SPS requirements for the protection of human health and the environment. Full and detailed justification of the proposed alternatives should also be provided.

6. Environmental Assessment Requirements of Tajikistan

78. Tajikistan does not specify EA categorization criteria. There are two laws in the country that stipulate all aspects of the EA: (a) Law on Environment Protection; and (b) Law on Ecological Expertise. The Chapter V, Articles 35-39 of the Law on Environment Protection (2011),

16 Source: Asian Development Bank. Environmental Profile of Tajikistan. 2000.

17 These standards contain performance levels and measures that are normally acceptable and applicable to projects. When host country regulations differ from these levels and measures, the borrower/client will achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the borrower/client will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in this document.

introduces the concept of state ecological review (literally, state ecological expertise[18] – SEE) that seeks to examine the compliance of proposed activities and projects with the requirements of environmental legislation and standards and ecological security of the society. The mentioned laws stipulate the mandatory cross-sectoral nature of SEE, which shall be scientifically justified, comprehensive, and objective and which shall lead to conclusions in accordance with the law. SEE precedes decision-making about activities that may have a negative impact on the environment. Financing of programs and projects is allowed only after a positive SEE finding, or conclusion, has been issued.

79. The following activities and projects are subject to state ecological review:

- draft state programs, pre-planning, pre-project, and design documentation for economic development;
- regional and sectoral development programs;
- spatial and urban planning, development, and design;
- environmental programs and projects;
- construction and reconstruction of various types of facilities irrespective of their ownership;
- draft environmental quality standards and other normative, technology, and methodological documentation that regulates economic activities;
- existing enterprises and economic entities.

80. The laws stipulate that all types of economic and other activities shall be implemented in accordance with existing environmental standards and norms and shall have sufficient environmental protection and mitigation measures to prevent and avoid pollution and enhance environmental quality. The EA studies analyzing the short- and long-term environmental, genetic, economic, and demographic impacts and consequences shall be evaluated prior to making decisions on the allocation, construction, or reconstruction of facilities, irrespective of their ownership. If these requirements are violated, construction will be terminated until necessary improvements are made, as prescribed by the GoT and/or other duly authorized control bodies, such as sanitary, geological, and public safety agencies.

81. An EIA is a component of the SEE, as set out in the 2011 Environmental Protection Law and in the 2012 Law on State Ecological Expertise, which comprises both the department within the Committee for Environmental and the process as well. Conducting the EIA is the responsibility of the project proponent. The State Ecological Review[19] which comprises the process component only - for all investment projects is the responsibility of the GoT Committee for Environmental Protection (CEP) and its regional offices. Furthermore, according to the 2012 Law on State Ecological Expertise, all civil works, including rehabilitation ones, should be assessed for their environmental impacts and the proposed mitigation measures should be reviewed and monitored by the CEP.

82. According to the 2012 Law on Ecological Expertise, ecological expertise is intended to prevent negative impacts on the environment as a result of a proposed activity, forecast impacts from activities that are not considered as necessarily damaging to the environment and create databases on the state of the environment and knowledge about human impact on the environment.

83. This Law on Ecological Expertise and the Law on Environment Protection envisage two types of ecological expertise – State ecological expertise and public ecological expertise, which are not given equal importance. While State ecological expertise is a prerequisite for beginning any activity that may have an adverse environmental impact, public ecological

18 State Ecological Expertise means both the department (institution) within the Committee for Environmental Protection and the process of review as well

19 State Ecological Review which is also commonly referred to as State Environmental Review means the process only

expertise becomes binding only after its results have been approved by a State ecological expertise body.

84. The State Ecological Expertise is authorized to invite leading scientists and qualified outside specialists to participate in the review. Approval should be issued within 30 days, unless the project developer agrees to an extension, and remains valid for two years, if the decision is positive. For very complicated projects the term of consideration and approval can be extended till 60 days.

85. According to the Law on SEE the public ecological expertise of economic activities or other activities implementation of which can negatively impact the environment of population which live in relevant area can be carried out by any public organization and citizen. They have right to send the proposals to the responsible government bodies concerning environmental issues of implementation planned activities; to receive information on results of conducted state ecological expertise from relevant responsible bodies. The materials reflecting the public expertise delivered to the experts' commission should be taken into consideration under preparation of conclusion of state ecological expertise and decision making on realization of expertise object. The public ecological expertise is carried out under the state registration of application of public organization. The registration can be done by local executive authorities (during 7 days) in place where the expertise activities are planned. The public organizations which are organizing this expertise, should inform the population of initiation of expertise and then on its results.

86. The legal and regulatory system for the EIAs also include:

- Procedure of Environmental Impact Assessment (adopted by the Resolution of the Government of the Republic of Tajikistan No. 509 as of 01.08.2014).
- Procedure to implement State Ecological Expertise (approved by the Resolution of the Government of the Republic of Tajikistan No. 697 as of December 3, 2012).
- Guidelines on the composition and order of development of content and structure of the documentation to be submitted for review (SEE), as well as coordination and approval of all projected budget or investment estimations, design drawings or documentation that must be developed in coordination with the SEE[20], buildings and structures and EIA chapters, Strategic Environmental Assessment SEA and feasibility documents; and
- List of objects and types of activity for which preparation of documentation on Environment Impact Assessment is mandatory (adopted by the Resolution of the Government of the Republic of Tajikistan No. 253 as of June 3, 2013).

87. The elaborated existing normative legal base is intended for determination of legal basis for implementation of projects and their compliance with state requirements for environmental protection and mitigation of environmental impact.

88. In the Republic of Tajikistan, the organizations with most responsibility for environmental monitoring and management currently are the Committee for Environmental Protection (CEP) under the Government of the Republic of Tajikistan (GoT), the Sanitary Inspectorate of the Ministry of Health, the Inspectorate for Industrial Safety and the Mining Inspectorate. An environmental licensing system exists in relation to handling hazardous waste and mineral extraction. An environmental permitting system regulates the use of natural resources.

89. The Environmental Protection Law states that a SEE should be conducted by the CEP, which is designated as a duly authorized state environmental protection body. The CEP has a comprehensive mandate that includes policy formulation and inspection duties. The CEP has

20 All projected budget or investment estimations, design drawings or documentation must be developed in coordination with the SEE.

divisions at oblast (region), city and rayon (district) level, in the form of Departments of Environmental Protection (DEPs), within the Hukumat (local administration) at each city or rayon.

a) Public Participation

90. Article 12 of the Environment Protection Law proclaims the right of citizens to live in a favorable environment and to be protected from negative environmental impacts. Citizens also have the right to environmental information (Article 13), as well as to participate in developing, adopting, and implementing decisions related to environmental impacts (Article 13). The latter is assured by public discussion of drafts of environmentally important decisions and public ecological reviews. Public representative bodies have an obligation to take into consideration citizens‘ comments and suggestions.

b) Licenses

91. Licenses are legal instruments to regulate certain potentially hazardous activities where minimal qualifications and strict adherence to rules are required to ensure that they are carried out efficiently, safely and do not result in potentially very significant and irreparable damage to the environment and human health. In particular, licenses are required for handling hazardous waste; for activities in industrial safety, sources of ionizing radiation, production and handling of pesticides and other agrochemicals. They are issued by the relevant industry regulator (ministry or committee) or an entity to which it has delegated such right. Licensing is also used to ensure the most efficient and sustainable use of natural resources. For example, licenses are required for prospecting, collecting or extracting mineral resources (borrow areas), or for constructing underground facilities not related to mining.

c) Environmental Permits

92. Permits are meant to ensure the sustainable use of natural resources. There are two types of permits: (a) permits to use natural resources; and, (b) permits for emissions or discharges. The natural resources use permits allow their holders to take a certain number or amount of a particular natural resource within a defined territory and time period. They are issued both to individuals (e.g. to hunt a particular species of animal or harvest particular factories) and to organizations (e.g. permits to extract ground or surface water for a particular use). By law, permits are needed for any commercial use of any resource. The authority that issues the permit and the legislation (government resolution) that applies depend on the resource. Permits to discharge polluted matter are issued by the relevant inspectorate (e.g. previous State Water Inspectorate or State Air Inspectorate – now departments) of the local state environmental protection committees to industrial or agricultural enterprises and municipal utilities that release by-products into the environment. The permits allow releasing a certain amount of polluted matter (gases, liquids, solid waste) into the environment. The permits are normally granted for one year and indicate the maximum allowed concentration of the pollutants in the released matter, the maximum volume of the polluted matter and the pollutants allowed.

d) State Environmental Program 2009-2019

93. The Program, approved in 2009, obligates ministries and offices, heads of administrations and mayors of cities to improve environmental conditions and ensure sustainable development of the country during the period of economic transition. It calls for adoption of modern environmental standards for water, air, soil, solid waste, toxic wastes, and noise control, based on maximum permissible amounts. Standards are to be supplemented by discharge permits. The Program is accompanied by broad ecological zoning, dividing the country into ten zones (Syr-Darya, Northern Turkestan, Zeravshan, Gissar, Vaksh, Dangarin, Khulbak-Kulyak-Tchube, Karategin-Baldzhuan - Shurobad, Garm-Muksu-Balandkiik, and Badakshan).

e) Environmental Standards

94. Environmental quality standards in Tajikistan are based on GOST, SNiP and SanPiN. GOST (Tajiki: ГОСТ) refers to a set of technical standards maintained by the Euro-Asian Council for Standardization, Metrology and Certification (EASC), a regional standards organization operating under the auspices of the Commonwealth of Independent States (CIS). SNiP mean Technical Standards (Tajiki: СНИП) - a building code, a set of rules that specify the minimum standards for constructed objects such as buildings and non-building structures. SanPiN (Tajiki: Коидахо ва меъёрхои санитари) are sanitary rules and norms (standards).

95. Environmental quality standards in Tajikistan ensure both MPC (Tajiki: ПДК) and MPE (Tajiki: ПДВ). The maximum permissible concentration (MPC) is approved by law hygienic standard. Under MPC refers to a concentration of chemical elements and their compounds in the environment, which in everyday impact for a long time on the human body does not lead to pathological changes or diseases established modern research methods in any time of life of present and future generations. The maximum permissible (or allowable) emissions (MPE) is standard of maximum permissible emissions of harmful substances (pollutants) into the air, which is set for a stationary source of air pollution in accordance with technical standards for emissions and background air pollution. It provides non-exceeding of the hygiene and environmental air quality standards, limits (critical) loads on ecological systems and other environmental regulations requirements. Table 7 gives an overview of the National Standards and regulations that are applicable to the Project.

Table 7 National Standards and Regulations Applicable to the Project

#	Title - National Standards - GOSTs
1.	31431—2011. Protection of nature. Air. Set of Maximum Permissible Emissions (MPE). 29 November 2011
2.	31434—2011 Protection of nature. Air. Determination of parameters of efficiency of dust collection systems. 29 November 2011
3.	IEC 61241-0—2011 Electrical equipment used at areas containing flammable dust. Part 0. General requirements. 29 November 2011
4.	GOST 17.0.0.01-76 (ST SEV 1364-78) (in edition of 1987) System of standards for environmental protection and improvement of natural resources usage. General provisions
5.	General provisions GOST 17.0.0.04-80 (1998) Protection of nature. Environmental passport (certificate) of industrial facility. General provisions
6.	GOST R ISO14001-98 Environmental management systems. Requirements and guidelines.
7.	GOST 17.0.0.02-79 (1980) Protection of nature. Provision of metrological control of air, surface water and soils pollution.
8.	GOST 17.1.1.01-77 (ST SEV 3544-82) Usage and protection of water. General terms and definitions.
9.	GOST 17.2.1.01- 76 Classification of emissions (content).
10.	GOST 12.1.014-84 (1996) SSBT. Air at workplace. Methodology of measuring of pollutants concentration using indication tubes.
11.	GOST 12.1.005-88 (1991) SSBT. General sanitary and hygiene requirements to air at workplace.
12.	GOST 17.2.2.05-97 Norms and methods of emissions measuring containing spent diesel gases, tractors and self-propelled agricultural machines.
13.	GOST 21393-75 Diesel motorcars. Exhaust gas opacity. Norms and methods of measurement.
14.	GOST 17.2.2.03-77 Concentration of carbon monoxide at exhaust gases of motorcars with gasoline engines. Norms and measurements methodology.
15.	GOST 17.2.2.03-87 Norms and methods of measurements of carbon monoxide at exhaust gases of motorcars with gasoline engines.
16.	GOST 17.4.2.01-81 Nomenclature of sanitary condition parameters
17.	GOST 17.4.1.02-83 Classification of chemical substances for monitoring of contamination.
18.	GOST 12.1.003-83 (1991) SSBT. Noise. General safety requirements

#	Title - National Standards - GOSTs
19.	GOST 12.1.023-80 (1996) SSBT. Noise. Methods of threshold noise levels for stationary machinery.
20.	GOST 12.1.029-80 (1996) SSBT. Means and methods of noise protection. Classification.
21.	GOST 12.1.036-81 (1996) SSBT. Noise. Allowable levels of noise within residential and public buildings.
22.	GOST 12.1.007-76 (1999) SSBT. Harmful substances. Classification and general safety requirements
23.	GOST 12.4.119-82 SSBT. Means of respiratory PPE. Methods of protective features assessment for aerosols.
24.	GOST 12.4.125-83 (1985) SSBT. Means of collective protective equipment from mechanical factors. Classification.
Sanitary norms and regulations (SanPins)	
25.	SanPiN 2.1.4.559-96 Drinking water. Hygienic requirements to the quality of water from centralized systems of drinking water supply. Quality control
26.	CH 2.2.4/2.1.8.562-96 Noise at working places, indoors of residential and public buildings and the territories of residential areas

96. In the tables attached in Annex 1 is a synopsis is given on the specific standards for air quality, water, waste and noise emissions in Tajikistan. In addition, the standards are compared with international guidelines and standards which are stated in Annex 2. In general, it can be concluded that the Tadjik system of environmental standards is well developed and for the purpose of the present Project it is in line with the requirements of IFIs. It was therefore decided to use the Tajik standards as the reference in the present Project.

C. Environmental Impact Assessment Procedure

97. Governing laws and activities subject to state ecological (or environmental) expertise (SEE) that may involve an environmental impact assessment (EIA). Activities subject to SEE may involve conduct of the EIA.

98. The following impact types are considered in environmental impact assessment:

- direct impact immediately influenced by the main and subsidiary types of planned activities within territory of Site location;
- indirect impact influenced by mediate (secondary) factors emerging as a result of project implementation;
- cumulative impact has cumulative specific nature and emerges within whole project implementation period.

99. Environmental impact assessment documents are reviewed by state environment expertise in conformity with assessment objects classification up to 60 days.

100. The decision on determining appropriate procedure for state environmental expertise of environment impact documents is taken by authorized agency within a period of not more than 10 days after submission of the documents for registration. The decision of state environmental expertise related to environment impact assessment documents is obligatory for implementation by the Client of planned economic or other activities.

101. Development planning of all facilities subjected to SEE and EIA activities that may have an impact on the environment under four categories of environmental impact: I – high risk; II – medium risk; III – low risk; and IV – local impact. Requirements and terms of SEE and EIA differ according to the category of a facility.

Environmental Compliance Requirements Relevant to the Project and Timeframes

102. A summary of government environmental compliance requirements applicable to the project is presented in Table 8.

Table 8: Summary of Environmental Compliance Requirements

Permissions and documents required for the Project	Agency	Time Frame
Permissions and documents related to land acquisition/owning		
Land granting, owning decree	Related district governor, city governor or hukumat governor	2019 Q2
Land agreement	Land department of related district or hukumat	
Land certificate	Land department of related district or hukumat	
Cadastral map	Land department of related district or hukumat	
Geo-technical survey (engineer-geological survey)	The professional company executes the survey and appropriate agency approves the survey report	2019 Q3
Permissions and documents related to construction		
Develop preliminary design drawing	Developed by the contracted firm m4H.	2019 Q2
Heating supply technical specification	Issued by any heating company (Government owned entity)	2019 Q2
Electrical technical specifications	Issued by Energy Distribution agency (Government owned entity)	2019 Q2
Water supply and waste water technical specifications	Issued by Water Supply Agency (A Government Agency)	2019 Q2
Approval on demolish existing old buildings	Issued by related district or hukumat authority	2019 Q2
Approval of removal of asbestos	Environmental disposal Agency	2019 Q3
Permission for construction of a new building	Granted by Committee on Architecture and Construction	2019 Q4
Approval of preliminary design drawing	Approved by General Architect of city or related Hukumat	2018 Q4
Develop detailed design (blue print)	Developed by professional firm licensed – An agency under the Committee on Architecture and Construction	2020 Q1
Design check or expertise conclusion on the detailed design	Construction Development Center – An agency under the Committee on Architecture and Construction	2020 Q1
Permission to start of construction works	Granted by Committee on Architecture and Construction, after the contractor is selected	At the start of construction phase
Engineering supervision	Professional construction firm will be contracted to execute engineering supervision	During the construction period
Acceptance Letter for the newly constructed building	Issued by Agency for Control and Building and Architecture	After the construction completes
Documents related to environment, resettlement and public consultation		
Baseline Environmental survey report	Engineering firm contracted to conduct the survey.	2019 Q2
Initial Environmental Examination and EMP (ADB standard)	IEE/EMP development	2018 Q3
Environmental Impact Assessment	Issued by the Committee on Environment Protection under the Government of the Republic of Tajikistan after the preliminary design drawing is approved	2019 Q2
Environmental Impact Assessment including EMP if it requires (domestic standard document)	Firm hired to conduct the EIA which will be approved by the Committee on	Draft EIA by 2019 Q3 and approval after the project

Permissions and documents required for the Project	Agency	Time Frame
	Environment Protection after Permission for construction of a new building is obtained	design is approved
Resettlement survey and action plan	Resettlement survey conducted.	2018 Q3
Household Public Consultation	Organized by PPTA Team in conjunction with the Municipal Authority or the related hukumat authority	In June-July 2018 for project sites
Fire conclusion	Issued by the Main Department of State Fire Prevention Agency of MIA RT (A government institute)	During the Pre-construction phase
EMP implementation and monitoring report during the construction period	Conducted by the construction contractor with the support of professional environmental company	Monthly during the construction period
Periodic inspection of construction work	Carried out by Agency for Control and Building and Architecture	Periodically during the construction period
Documents/permissions related to waste management		
Location of construction waste disposal point	Specified within the permission to start construction works	At the start of construction phase
Medical waste removing agreement	In Tajikistan, there is no a unitary organization providing medical waste disposal services. All organizations generating medical waste in the process of activity are solely responsible for waste disposal in conformity with approved MOHSPP requirements.	At the start of operation phase
Solid waste removal agreement with local service entities	Every district or hukumat has Housing and Communal Enterprise – a state owned agency which offers services on removal and demolishing of solid waste generated by each entity in their respective district/hukumat.	At the start of operation phase

Tajikistan Hospital / Health Center buildings Environmental Infrastructure

103. The consultants reviewed environmental issues related to development of infrastructure at Hospitals / Health Centers in Tajikistan. The project preparation technical assistance would ensure that project design proposes measures to address constraints in carrying out safe construction and expansion activities of Hospital / Health Center buildings as per national and international norms.

104. The project design must include development of overall environmental infrastructure, a systematic technological evaluation of appropriate, cost-effective and sustainable solutions to Hospital waste management, waste water, connections to centralized sewerage systems, effective solid waste management, connected water supply and energy efficient heating system infrastructure at Hospital / Health Center facilities in urban and rural settings.

105. Most hospitals / health centers in Tajikistan are served by electrical supply and deficient water supply. These regional hospitals have negligent environmental infrastructure systems that are entirely lacking in many aspects – for example, in Aini, Rasht, Sangvor and Sh. Shohin there is no central heating system, wastewater collection and treatment facilities, and centralized drainage systems. Attachments A and B1-B5 lists all existing and proposed health care waste management issues noticed at the ten sub-project sites in Annex 11.

D. International Agreements

106. Under Tajikistan's unified (monist) legal system, international agreements and treaties once ratified or acceded to by the Government, have the same force as national legislation.[21]

107. Tajikistan is a party of an international environmental conventions and protocols. It has passes state laws that implement the terms of these international conventions, with provision that: "If an international treaty to which Tajikistan is a party is inconsistent with this law then the provisions of the international treaty shall prevail".

International Environmental Conventions

108. Tajikistan is a party to the following international environmental conventions: In recognition of its global responsibilities, Tajikistan has acceded to a number of international environmental conventions and the key ones are shown in the following Table 9.

Table 9 Relevant International Environmental Conventions[22]

Convention	Year of Accession
UN Convention on Biological Diversity (CBD), 1997; Related updates to CBD are: Cartagena Protocol on Biosafety to the Convention on Biological Diversity, 2004. Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity, signed in 2011 and ratified in 2013.	1997
UN Framework Convention on Climate Change, 1998; A related update is: Kyoto Protocol, accessed on December 29, 2008, and entered into force on March 29, 2009.	1998
UN Convention on Combating Desertification (UNCCD)	1997
Vienna Convention for the Protection of the Ozone Layer, 1996 and updated by: Protocol on Substances that Deplete the Ozone Layer (Montreal), 1998; London Amendments to Montreal Protocol on Ozone Depleting Substances, 1998; Copenhagen Amendments to Montreal Protocol on Ozone Depleting Substances, 2009; Montreal Amendments to Montreal Protocol on Ozone Depleting Substances, 2009; Beijing Amendments to Montreal Protocol on Ozone Depleting Substances, 2009.	1996
Convention on International Trade in Endangered Species of Fauna and Flora (CITES)	2016
Stockholm Convention on Persistent Organic Pollutants (ratified 2007); Related updates: 2009 amendments listing 9 new POPs, August 26, 2010; 2011 amendment listing endosulfan, October 27, 2012; and 2013 amendment listing HBCD, November 26, 2014.	2007
UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage	1992
Aarhus Convention (joined 2001); A related update is: Kiev Protocol on Pollutant Release and Transfer Registers to the Convention on Access to Information, on May 21, 2003.	2003
Bonn Convention on the Conservation of Migratory Species of Wild Animals (joined 2001); A related update is: Bukhara Deer Memorandum, 2002.	2001

109. Relevant international agreements ratified by Tajikistan are:

21 The monist legal system of Tajikistan puts a number of UN Conventions on human rights at the immediate disposal of policy makers as national law" (p. 202, OECD. 2009. Reviews of national policies for education – Kazakhstan, Kyrgyz Republic, and Tajikistan: Students with special needs and those with disabilities. http://www.oecd.org/countries/tajikistan/43851447.pdf)

22 Note: (a) accession; (e) entry into force; (r) ratification

- Occupational Safety and Health Convention, 1981
- Working Environment (Air Pollution, Noise and Vibration) Convention, 1977

Equivalence of International Best Policies in Infrastructure Development

110. The Project is required to meet the ADB SPS guidelines as well as international standards of the IFC, which is part of the World Bank Group. The international environmental and social safeguard policies of these organizations are outlined below.

- World Bank Group's Environment, Health and Safety (EHS) Guidelines, 2007.
- IFC (2007) guidelines for asbestos-containing materials (ACM):[23]
- Environmental, Health, and Safety Guidelines for Waste Management Facilities.
- Environmental, Health, And Safety Guidelines for Water and Sanitation.
- Environmental, Health, And Safety Guidelines for Health Care Facilities.
- ADB's Environmental Safeguards: A Good Practice Sourcebook-Draft Working Document (November 2012).
- ILO Core Labor Standards.
- Internationally-recognized Standard Practice for Maintenance, Renovation and Repair of Installed Asbestos Cement Products (American Society for Testing and Materials [ASTM] E 2394).[24]

23 International Finance Corporation. Environmental, Health, and Safety Guidelines, 2007. http://www1.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/sustainability+framework/environmental%2C+health%2C+and+safety+guidelines/ehsguidelines

24 ASTM International. ASTM E2394-11, Standard Practice for Maintenance, Renovation and Repair of Installed Asbestos Cement Products. West Conshohocken, PA, 2011. http://www.astm.org/Standards/E2394.htm. This standard describes work practices that protect worker and community health within the resources available in developing and industrialized countries. As much as possible it relies on readily-available tools, equipment, and supplies, and techniques that require careful and diligent workmanship but not the services of highly-skilled tradesmen. The standard is written for construction workers and tradesmen, for those involved in the preparation of contracts and tenders, and for government officials involved in developing regulations to protect worker and community health.

IV. Description of the Project

A. Overview

111. As per the Memorandum of understanding (MOU) with Government of Tajikistan, ADB will help improve integrated MCH care delivery at both primary and secondary health care levels in disadvantaged districts. The proposed project will have the impact: health status and well-being of mothers and children in selected districts improved[25]. The project loan is estimated to cost $32.09 million from Asia Development Fund. The project is expected to be implemented from 1 March 2019 to 28 February 2025.

112. For the second output, it is envisioned that construction or rehabilitation works will be conducted on existing Health Centers and hospitals. The proposed project will improve health status and well-being of mothers and children in 3 selected districts. The selected districts are Rasht, Shamsiddin Shohin (former Shurobod) and Fayzobod districts, while Aini and Sangvor (former Tavildara) districts are chosen as back-up districts. The facilities that will be constructed or rehabilitated are 3 Central District Hospitals and 3 district Health Centers whereas 2 other districts are assessed for backstop in case additional sub-projects could be funded at a later stage if additional funds become available.

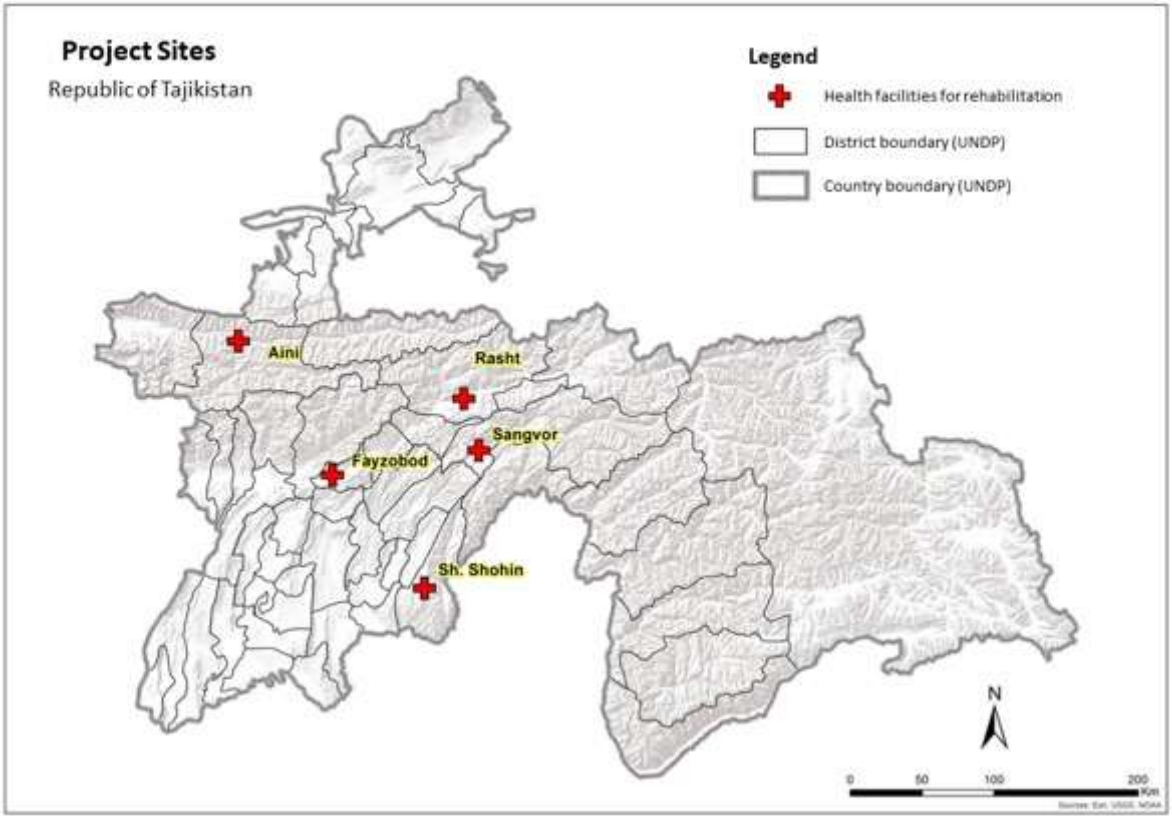

Figure 1 : Project Sites in Tajikistan

113. The rehabilitation works may cover reinforcing existing building or constructing a new medical care Diagnostic and Treatment (D&T) block in two cases and on entire integrated hospital in case of Sh. Shohin within the same hospital area.

114. Rasht district, formerly called Gharm District, is an eastern district in the Region of Republican Subordination in Tajikistan. It lies between Vahdat district on the west and Jirgatol

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district on the east; its southern neighbors are Nurobod, Sangvor, and Tojikobod districts; its northern border runs along the eastern finger of Sughd Province and along the international border with Kyrgyzstan. In July 2007 and May 2012 Rasht district suffered devastating earthquakes (5.5 and 5.7 respectively on the Richter scale[26]). Its capital is Gharm. The population of Rasht district is 126,700 people.

115. Shamsiddin Shohin district, formerly Shurobod, is a district in Khatlon province, southeastern Tajikistan. It bordered in the north by Darvoz, Muminobod districts, in the west by Kulob district, and in the south by Hamadoni district, districts Khatlon province. And in the east River Panj, and four-districts of Badakhshan province of Afghanistan (Khwahan, Raghistan, and Yawan, Shahri Buzurg). The District has a total area 2,380 km² (920 sq miles) and the located in the Hazrat-i Shoh mountains skirts. The population of the district is 53,756 people. Its capital is Shuroabad city.

116. Fayzobod district is a small district in the Region of Republican Subordination in Tajikistan, about 60 km east of Dushanbe. It borders by Vahdat district from the west and the north, the Roghun district from the east, and the Khatlon Province from the south. The district population is 106,046 people. Its capital is Fayzobod.

117. Aini district is a mountainous district in the southern part of Sughd province, Tajikistan, straddling the middle course of the Zeravshan River, located in the Zeravshan valley. It borders in the north with Jizakh province of Uzbekistan and Shahristan district of Tajikistan, in the north-east with Devashtich (former Ghonchi district) and Rasht districts, in the west with Panjakent district, in the south with Shahrinau, Hissar, Varzob and Vahdat districts, in the south-west with Surkhandaryo province of Uzbekistan. It lies about 177 km (110 miles) from Khujand and 165 km (103 miles) from Dushanbe. The district population is 81,477 people. Its capital is Aini town.

118. Sangvor district, formerly Tavildara, is a large eastern district in the Region of Republican Subordination in Tajikistan, extending north of the Darvoz Range that forms the boundary of the Gorno-Badakhshan Autonomous Province (GBAO). Its northern boundary stretches along Rasht, Tojikobod, and Jirgatol districts. The district population is 22,500 people. Its capital is Tavildara.

B. Project Components

119. Table 10 contains the List of Hospital / Health Center Demolition, Expansion, Repair / Refurbishment and Construction Sites.

Table 10: Hospitals / Health Centers

No.	Location	Type of Activity	Year of Construction	Location GPS		Type of existing building /year constructed
1	Fayzobod CDH	Repair and refurbishment	1975	N 38.55122	E 69.31762	3 floor building
2	Fayzobod DHS	New building	2014	N 38.55048	E 69.31626	3 floor building
3	Rasht CDH	Repair and refurbishment	1987	N 39.02200	E 70.37347	2 floor building
4	Rasht DHC	Construction of an additional building	1987	N 39.02198	E 70.37251	2 floor building
5	Sh. Shohin CDH	Construction of a new building	2006	N 37.84011 Pref. site N 37.83735	E 70.04061 Pref. site E 70.03956	1 floor building

26 https://reliefweb.int/report/tajikistan/earthquake-rasht-valley-direct-rule-districts-tajikistan-situation-report-no-1

No.	Location	Type of Activity	Year of Construction	Location GPS		Type of existing building /year constructed
6	Sh. Shohin DHC	Construction of an additional building	2009	N 37.83695	E 70.03925	1 floor building
7	Aini CDH	Repair and refurbishment	1989	N 39.38734	E 68.56206	3 floor building
8	Aini DHC	Repair and refurbishment	1989	N 39.38859	E 68.56270	2 floor building
9	Sangvor CDH	Demolition of the existing and construction of a new building	1936	N 38.69622	E 70.48655	1 floor building
10	Sangvor DHC	Construction of an additional building	2000	Co-Located	Co-located	1 floor building

Subprojects 1-6 are currently proposed for funding and 7-10 are on backstop if more funds become available in future.

C. Scale and Magnitude of Sub-Projects (Scope of Civil Works)

120. The proposed medical facilities rehabilitation/construction does not incur any land acquisition and/or resettlement impact, as the existing land plots are sufficient even for new constructions within the territories of hospital / health center facilities. Majority of hospital buildings are deteriorated and require modern equipment and capital repairs, mainly associated with sewage and water supply, heating and ventilation systems. Some of the hospital one-store buildings were built in between 1930ies and 1950ies and are not worth capital repairs, and they have to be demolished, including Rasht, Sangvor and Shamsiddin Shohin. The majority of one to three-store buildings of 5 clinics are relatively new, as they were constructed in between 1987 and 2013. Particularly, the health centers in Fayzobod, Sangvor and Shamsiddin Shohin have newly constructed buildings, but the clinics in Shamsiddin Shohin and Sangvor require additional buildings to be constructed, if project budget allows.

121. Considering that hospitals and clinic are located close by each other, they apply the same waste collection methods and practices. The observations revealed that the existing waste management system in visited medical institutions is weak, it affects the surroundings communities, especially in Aini district, and requires investments in introducing modern low-cost effective methods of waste management.

122. Depending on the project's decision for rehabilitation and construction works within this hospital and as per preliminary observation and discussions with the hospital and clinic administrations, the project will have no impacts on any properties and income generating activities of other third parties. During construction/rehabilitation works, patients can be accommodated within the hospital in other vacant buildings and wards.

D. Existing infrastructure at subproject locations

1. Overview

123. For some of the Hospital / Health Center sub-projects, location specific construction drawings are under development through accredited architects in Tajikistan. The data regarding soil, topography, contour, land cutting and filling required, distance from water body/drainage and distance from major roads, details of fruit/non-fruit trees that can be affected, land details will be collected by engineering firms. However, if sites are changed other than those indicated here in the IEE, supplementary information will be supplied for each of new location for subprojects proposed by MOHSPP to ADB for prior to approval before finalizing design drawings.

124. A summary of measures for all amenities are provided in Table 11 below:

Table 11: Summary Existing Infrastructure at Hospital / Health Center Sites

A	Site Infrastructure at Fayzobod		
i	Sewage	Off-site:	Broken line (1km away) to municipal sewage system seeps into ground.
		On-site:	Septic overflowing holding pit leeching into ground.
ii	Water	Off-site:	Spring fed reservoirs.
		On-site:	Low water pressure due to inadequate feed; existing infrastructure non-functional.
iii	Waste	Incineration:	None existing
		Bio-pit:	Existing unlined pits
		Other:	Municipal waste removal irregular.
B	Site Infrastructure at Rasht		
i	Sewage	Off-site	No municipal sewage system.
		On-site:	Septic overflowing holding pit openly flowing into river.
ii	Water	Off-site:	Inadequate supply due to increased population load.
		On-site:	Low water pressure due to inadequate feed.
iii	Waste	Incineration:	Defunct existing incinerator.
		Bio-pit:	Existing unlined pits.
		Other:	Municipal waste removal irregular.
C	Site Infrastructure at Sh Shohin		
i	Sewage	Off-site:	Broken line (1km away) to municipal sewage system seeps into ground.
		On-site:	Septic overflowing holding pit leeching into ground.
ii	Water	Off-site:	Spring fed reservoirs.
		On-site:	Low water pressure due to inadequate feed; existing infrastructure non-functional.
iii	Waste	Incineration:	None existing; New incinerator required.
		Bio-pit:	Existing unlined pits.
		Other:	Municipal waste removal to unscientific landfill site near Zervshan river.
D	Site Infrastructure at Aini		
i	Sewage	Off-site:	None
		On-site:	Septic holding pits leeching into ground; Onsite system defunct.
ii	Water	Off-site:	Spring fed reservoirs; fed by 11 km line.
		On-site:	Low water pressure due to inadequate feed; existing infrastructure non-functional.
iii	Waste	Incineration:	None existing.
		Bio-pit:	Existing unlined pits.
		Other:	Municipal waste thrown at river side.
E	Site Infrastructure at Sangvor		
i	Sewage	Off-site:	None in the district.
		On-site:	Septic overflowing holding pit leeching into ground.
ii	Water	Off-site:	Spring fed reservoirs.
		On-site:	Low water pressure due to inadequate feed.
iii	Waste	Incineration:	None existing.
		Bio-pit:	Existing unlined pits.
		Other:	Municipal waste removal irregular.

Subprojects A-C are currently proposed for funding and D-E are on backstop if more funds become available in future.

a) Current vs. Suggested Solutions for Infrastructure for Sub-projects

125. Total of 10 sites including 5 Health Centers and 5 Hospitals have been examined for the project. Currently, from 10 project sites, 4 would require New Construction (NC), 3 sites to be built in Separate Buildings (SB). Out of them, 4 sites have connection to Central Heating (CH), 2 sites have individual Heat Only Boiler (HOB) (at present not operational) and 3 sites have Electric Heating (EH), 6 sites have connected to Central Water Supply System (CWSS), 2 sites have individual Deep Water Well (DWW) for water supply and 2 sites have connected Water Distribution System (WDS). In total 2 sites have connected to Central Sewage System

(CSS), 4 sites have individual Holding Tank (HT) (at present not operational), 4 sites have no sewage facility and uses a pit for grey water disposing.

126. Basing on current situation of infrastructure and possibilities to be connected service infrastructures of project sites, the project future solution would be suggested as in Table 12that all sites will have individual Heat Only Boiler (HOB) or Electric Heating (EH), 8 sites will be connected to Water Supply System (WSS), 2 sites must have Deep Water Wells (DWW) for water supply and 1 site will have connection to Water Distribution System (WDS), 5 sites (all ten locations) will have to be connected to waste water treatment system. Table 12 lists all current vs suggested infrastructure solutions for each sub-project site.

Table 12: Existing and Suggested Infrastructures at each Sub-project Site

No	SP	Location	Current/Future situation of infrastructure or Utilities							
			Heating		Water Supply		Waste water		Incineration	
			Current	Future	Current	Future	Current	Future	Current	Future
1	2	3	6	7	8	9	10	11	12	13
1	CDH	Fayzobod	Electric heaters	Restoration of own electric boiler	From main line (centralized)	From main (central) line	Connected to central sewerage system		In the hospital furnace	Installation of a new furnace
2	DHC	Fayzobod	Electric heaters	Repair of own electric boiler	From main line (centralized)	From main (central) line	Connected to central sewerage system		In the policlinic furnace	
3	CDH	Rasht	Electric heaters	Electric heaters	From main line (centralized)	From main (central) line	Wastewater reservoir	Restoration of existing water treatment facility	In the hospital furnace	Restoration of the hospital furnace
4	DHC	Rasht	Electric boiler room		From main line (centralized)	From main (central) line	Wastewater reservoir	Restoration of existing water treatment facility	In the hospital furnace	Restoration of the hospital furnace
5	CDH	Shohin	Existing heating system	New heating system	from a well in a hospital	From hospital's well	Wastewater reservoir	Construction of new wastewater reservoir	In the hospital furnace	Installation of a new furnace
6	DHC	Shohin	Electric heaters	New heating system	from the well in a hospital compound	From hospital's well	Wastewater reservoir		In the DHC furnace	Installation of a new furnace
7	CDH	Aini	Electric heaters	Restoration of heating system	From main line (centralized)	From main (central) line	Wastewater reservoir	Restoration of treatment facilities of the hospital	In the boiler house furnace	Installation of a new furnace
8	DHC	Aini	Electric heaters	From main line (centralized)	From main line (centralized)	From main (central) line	Wastewater reservoir	Restoration of the CDH wastewater system	In the hospital boiler house furnace	Installation of a new furnace
9	CDH	Sangvor	Electric heaters	Construction of an electric boiler room	From main line (centralized)	From main (central) line	Wastewater reservoir	Construction of new wastewater reservoir	In the hospital furnace	Installation of a new furnace
10	DHC	Sangvor	Electric heaters	Construction of an electric boiler room	From main line (centralized)	From main (central) line	Wastewater reservoir	Construction of new wastewater reservoir	In the hospital furnace	Installation of a new furnace

Note: SP = Subprojects 1-6 are currently proposed for funding and 7-10 are on backstop if more funds become available in future.
NC-New Construction, SB-Separate Building, AF-Additional Floor, CH-Central Heating, CWS-Central Water Supply, CSS-Central Sewage System, DWW-Deep Water Well, HOB-Heat Only Boiler, EH-Electric Heating, WDS- Water Distribution System and HT-Holding Tank, ST-Septic Tank. WB=Wood burning, Coal Burning, EF=Electric Furnace

2. Fayzobod District

a) Situation at District Level

127. Fayzobod district is the district of Republican Subordination of the Republic of Tajikistan. It was established on June 14, 1931. Fayzobod is the district center of urban type settlement, which is located 50 km east from Dushanbe. Fayzobod district is located in Hissar Valley, 50km east of Dushanbe. It borders with Vahdat district in the north and the west, Rogun district in the east and Nurek district of Khatlon region in the south. The territory of the district is 874,11 sqm.

128. **Electricity network.** Electrical power of Central hospital is supplied by central electricity network. Two transformers each with capacity 400 kW are installed in the Hospital territory. The transformers are in good condition and fully satisfy hospital needs. One diesel generator is also installed in the hospital.

129. **Sewage network.** Existing conditions (findings from field visit, observations and interviews): There is a broken line (1 km outside site boundaries) within the municipal sewage system and all waste seeps into the ground, at that point in the system. Within the site boundaries, there is an existing undersized septic holding pit which is overflowing and leeching into ground. The pit does not process any waste, it serves only as a holding tank.

130. **Heating network.** Central District Hospital has its own boiler which is not functioning (dispossessed). Hospital buildings are heated by electric devices.

131. **Water supply network.** Fayzobod district has central water supply system which covers whole Fayzobod urban type settlement. The municipal system consists of a spring fed reservoir and has an adequate supply for the municipality.

b) The Central District Hospital

132. The central district hospital serves 106,046 people, the population of Fayzobod district. The CDH has 175 beds. There are 8 buildings, including a three-story main building, a two-story maternity department, a two-story office building, a one-story infectious diseases department, a one-story accounting building, a morgue, a dining room and many storage facilities. In the northern part of the hospital there are residential buildings. On the western side is the road; while in the southern and eastern part of the location are residential buildings.

133. All buildings were built in 1975. Recent roof repairs were done in the main building in 2010 with financial support from Japan. The water supply and sewerage system have deteriorated, as no repairs have been undertaken since more than 40 years.

Figure 2: General Layout of the Fayzobod Central District Hospital (CDH)

134. The proposed project activity – rehabilitation of existing buildings and new construction of a diagnostics and treatment center - in the rather populated area of the center of the district is not prohibited by law. However, it is required that the project undergoes an environmental review by the State Environmental Expert Review of the Committee for Environmental Protection under the Government of the Republic of Tajikistan.

Figure 3: Entrance to the Fayzobod CDH

135. **Solid Waste.** On the territory of the hospital there is a temporary collection point for solid waste. This is a temporary dump with concrete fences without a hard cover, in which non-hazardous solid household waste is collected / accumulated, before they are taken to the central landfill of the district. Waste is disposed of by special equipment of the Municipal Housing and Communal Enterprise department of the district as it accumulates.

Figure 4: Temporary Collection Area for Solid Waste at Fayzobod CDH

136. **Medical waste.** In the procedural (dressing, operating, etc.) separate buckets and boxes are installed, where medical waste is collected. Medical waste is burned in the furnace by a non-functioning boiler house. The furnace works on coal and wood.

Figure 5: Oven for the Burning of Medical Waste at Fayzobod CDH

137. **Wastewater.** Wastewater (sanitation) from the hospital (wards, showers, bathrooms, etc.) are diverted to the district sewer system. Sewage system of the hospital is worn out and needs modernization.

Figure 6: Wastewater Cleaning System of the Fayzobod CDH

138. **Water.** Water supply of the Central Hospital is provided from the central water supply system of the district. The water from the central system is collected by a water tower located

on the territory of the hospital, and then distributed throughout the hospital. Due to deterioration of the system, only some departments have water supply. The on-site distribution has low water pressure due to inadequate feeder from the municipal system and poor distribution system within the site.

Figure 7: Water Supply Utilities at Fayzobod CDH

139. **Electricity.** The hospital was connected to the central power supply network since its construction in 1975.

140. **Heating.** The central hospital has its own boiler room, which does not work. The rooms and rooms of the hospital are heated by electric furnaces.

Figure 8: Boiler Installations at Fayzobod CDH

141. Many ornamental and fruit trees are planted on the boundary of the hospital. During the repair work, these trees will not suffer. There are no rare and protected plants on the territory of the hospital.

c) The District Health Center

142. The District Health Center (DHC) of the Fayzobod district is located in close proximity to the central hospital, in the western part. In the northern part of the hospital there are houses; the eastern side has a road; while the southern and western sides have houses. This three-story building with two wings was built in 2014 with the support from the Presidential Reserve Fund. 57 doctors are working in the DHC. Working conditions are very good. Water supply and sewerage systems are satisfactory. The DHC is located in the same general layout area of the Hospital.

Figure 9: District Health Center, Fayzobod

143. **Solid waste.** Within the DHC area, there is a temporary collection point for solid waste. This is a temporary dump with concrete fences and hard surface, in which non-hazardous solid household waste is collected / accumulated before being transported to the central garbage dump point of the district. As waste accumulates, they are removed by special transport of the housing and public utilities of the district.

Figure 10: Solid Waste Collection Area at Fayzobod DHC

144. **Medical Waste.** In the injection rooms (dressing, Operating Theater, etc.) separate buckets and boxes are installed, where medical waste is collected. Medical waste is burnt as well as solid domestic waste in the furnace of a non-operating boiler house. The furnace works on coal and wood.

145. **Sewage System.** Wastewater (sewage) from the Health Center are diverted and linked to the wastewater system of the district.

146. **Water supply.** Water supply for the DHC is provided from the central water supply system of the district. Water from the central system is collected in a water tower located on the territory of the DHC and then distributed throughout the facility. All the departments of the DHC are provided with water.

Figure 11: Water Supply System at Fayzobod DHC

147. **Electricity / Power supply.** DHC is connected to the central electricity network. It has its own electro-boiler room, which does not work at the moment. The boiler room is located in the basement of the main building.

Figure 12: Boiler Plants at Fayzobod DHC

148. There are no construction works planned at the newly built DHC. On the territory of the DHC there are ornamental and fruit trees, as well as flower gardens. During the repair work these trees will not suffer. On the territory of hospital there are no rare or protected plants.

Figure 13: Ornamental and Fruit Trees on the Territory of the DHC

3. Rasht District

a) Situation at District Level

149. Rasht district - district of Republican Subordination of Tajikistan. The district center, Garm urban type settlement located on the right bank of Surkhob river, between the ridges of Karategin and Peter I, 185 km south of Dushanbe. It is well-known since the Middle Ages as one of the settlement on the Silk Way path, the historical capital of Karategin in the Pamir alai mountains.

150. **Water supply network.** The district is fully connected to unified power supply system of Tajikistan. Rasht district has centralized water supply network which covers whole Garm urban type settlement. Central Hospital is supplied by water from central district water supply system. The municipal system has an inadequate supply due to increased population load. The on-site distribution has low water pressure due to inadequate feed from the municipal system. Due to deterioration of the system, only some departments have water supply.

b) The Rasht Central District Hospital (CDH)

151. The central hospital of the Rasht district is located in the center of the district. It serves 126,700 people, the population of the Rasht district. In addition, some communities from the Sangvor and Lakhsh districts also use the services of this hospital.

152. The main building of the hospital has two stories and three wings. It was built in 1987. In the northern part of the hospital there is the District Health Center and behind it there are apartment houses. In the western and eastern part there are apartment houses as well. In the southern part there are residential houses, and behind them flows the Surkhob River.

153. The following departments are located in the main building: on the ground floor - administration, functional diagnostics and surgery; on the second floor - therapy, cardiology, resuscitation of children, urology, gynecology, maternity hospital, a training center for family medicine. The infrastructure of the Rasht region in recent years has changed greatly for the better side. Many administrative buildings were built, roads and communal services were reconstructed. Partial repairs were carried out in the hospital, in particular, the main building of the hospital with the finance support from UNOPS was renovated in 1996, and repairs were carried out in the department of cardiology and gynecology in 2007.

Figure 14: General Layout of the Rasht CDH

154. The proposed project activity – rehabilitation of existing buildings and new construction of a diagnostic and treatment center – in the rather populated area is not prohibited by law. However, it is required that the project undergoes environmental review by the State Environmental Expert Committee for Environmental Protection under the Government of the Republic of Tajikistan.

Figure 15: Private Houses around Rasht CDH

155. **Solid Waste.** Behind the hospital building there is a temporary collection point for solid waste. This is a temporary dump with concrete fences without a hard cover, in which non-hazardous solid household waste is collected / accumulated, before they are taken to the central landfill of the district. Waste is transported by trucks to the unscientific landfill site by the Housing and Communal Enterprise, a public service company of the district.

Figure 16: Collection Point for Solid Waste at Rasht CDH

156. **Medical waste.** In the injection (dressing, operating, etc.) separate buckets and boxes are installed, where medical waste is collected. On the territory of the hospital there is an oven where medical waste is burned. The oven uses coal and wood for burning waste.

Figure 17: Oven for Medical Waste at Rasht CDH

157. **Waste water**. Hospital sewage network is in poor condition. Some of the pipelines are not operational due to deterioration, and the wastes are flowing outside. Due to deterioration of the network only part of hospital toilets are functioning. In addition, there are outside toilets within the Hospital territory not connected to the sewage network (septic tanks). Hospital sewage flows to wastewater treatment facilities located in the south-west of the Hospital (down the hill). Treatment facilities consist of sink hole and crusher, two concrete tanks and treatment plant. Treatment facilities consist of two concrete tanks with capacity of 600m³ (10 x 10 x 6). Due to deterioration (the tanks were not cleaned for a long time) of treatment facilities wastewaters are directly thrown into Surkhob river without prior cleaning and disinfection. The existing concrete septic holding pit is overflowing and wastewaters are openly flowing into the river. This overflow is sometimes mistakenly used by locals as fresh water. The pit does not process any waste, it serves only as a holding tank.

158. **Electricity.** Electrical power of Central hospital is supplied by central electricity network. Two transformers one with capacity 400 kW and the second with capacity 600 kW are installed on the Hospital territory. The transformers are in good condition and fully satisfy hospital needs. Two diesel generators with capacity 10 and 20 kW are also installed in the hospital. The diesel generators are relatively new and in good condition.

Figure 18: Water Cleaning System at Rasht CDH

159. **Water.** The water supply of the Central Hospital of the Rasht district is provided from the central system of district water supply. Not all rooms are provided with water supply.

Figure 19: Water Supply System at Rasht CDH

160. **Heating.** The central hospital has its own 2 boiler rooms equipped with old equipment and located in the basement of the main building. Boilers work on electricity and coal. This boiler room provides heat only to the main building of the hospital.

Figure 20: Boiler Installations at Rasht CDH

161. Many ornamental and fruit trees are planted on the territory of the hospital. During the repair work these trees will not suffer. There are no rare or protected plants on the territory of the hospital.

Figure 21: Trees on the Territory of Rasht CDH

c) Rasht District Health Center

162. The Rasht DHC is a two-story building, built in 1987, originally planned to serve the needs of 60,000 people. The building was renovated in 2014 from the state budget and partially equipped through the Aga Khan Health Program.

163. .

Figure 22: Rasht District Health Center

164. **Solid Waste.** Solid household waste from the DHC is accumulated at the solid waste collection point of the CDH, located at the back of the hospital building (see above).

165. **Medical Waste.** In the injection rooms (dressing, operating theater, etc.) separate buckets and boxes are installed, where medical waste is collected. The medical waste is burnt together with solid domestic waste from both the Hospital and Health Center in the furnace of this non-operating boiler house. This furnace uses coal and wood for burning waste.

166. **Sewage System.** Wastewater (sewage) from the DHC are diverted and linked to the treatment plants of the central hospital located in the south-western part of the hospital (down the slope). Due to the deterioration of sewage treatment plants, drains from the hospital are dumped into the river without proper cleaning.

167. **Water supply.** The water supply for the Rasht DHC is provided by the central district water supply system.

Figure 23: Water Supply System at Rasht DHC

168. **Electricity / Power supply.** The hospital was connected to the central power supply network since its construction in 1987.

169. **Heating.** The DHC has two own boiler rooms located in a basement of the main building. Boilers of the DHC are similar to the boilers used by the central hospital, they run on electricity and coal.

Figure 24: Boiler Installation at Rasht DHC

170. There are several trees on the territory of the DHC, two of which (located at the rear of the building) will need to be cut down, as they are located very close to the foundations of the building. In the territory of hospital there are no rare or protected plants.

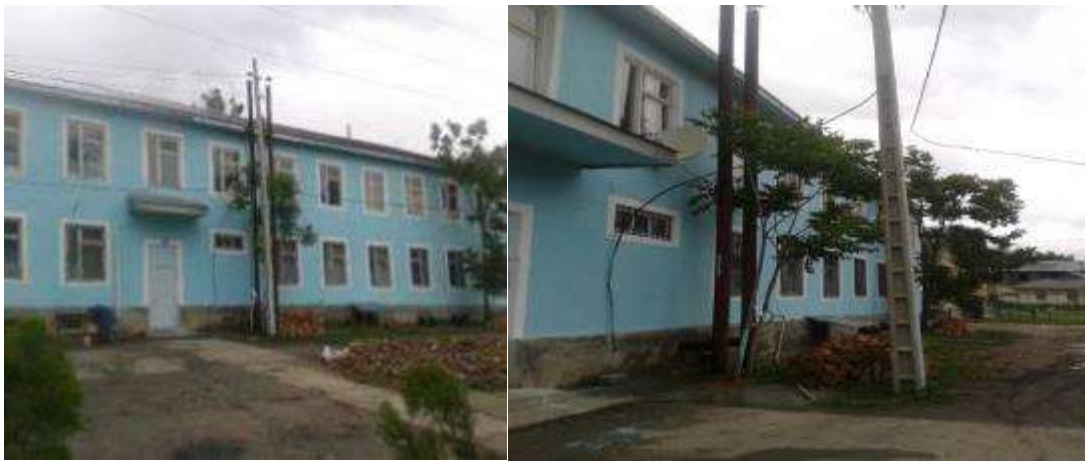

Figure 25: Ornamental and Fruit Trees on the Territory of the Hospital

171. During operation, the center will generate a significant amount of waste. The waste management plan, which includes temporary collection sites, transportation, disposal, health and safety measures, should be considered taking into account the EMP project. And it will also be necessary to modernize the old medical waste disposal system in the hospital.

4. Sh. Shohin District

a) Situation at District Level

172. Sh. Shohin district — is the administrative area of Khatlon region of the Republic of Tajikistan. According to the decision of the Government of the Republic of Tajikistan in 2016 Shuroabad district was renamed to Shamsiddin Shohin district. It was named in the honor of Tajik poet Shamsiddin Shohin. The district center - is Shuroabad urban type settlement. Shuroabad is located in the east of Khatlon region. The territory of the district is 228,4 km.

173. **Electricity.** Electrical power is supplied by central electricity network. **Water supply network.** Sh. Shohin has a centralized water supply network. Not all of the inhabited areas have water supply.

b) The Sh. Shohin Central District Hospital

174. The central hospital is located in the center of the district. It serves 53,756 people, the population of the Sh. Shohin district. 4 numeral hospitals also work in this area. In the CDH has 93 beds and is accommodated in an old school building that do not meet minimum standards for health care facilities, especially in the surgical wards. The last repair work was carried out in the maternity department in 2010. The area of the hospital is 1 hectare.

Figure 26: General Layout of the CDH in Sh. Shohin District

Figure 27: Main Entrance to Sh. Shohin CDH and Surroundings

175. **Solid Waste.** On the territory of the hospital there is no temporary point of accumulation of solid household waste. Solid household waste, like medical waste, is burned in a special furnace. Although there is a general district garbage dump in the district but no waste is collected from the hospital and sent to it.

Figure 28: Oven for Burning of Solid Medical Waste at Sh. Shohin CDH

176. **Medical waste.** In the injection (dressing, operating, etc.) separate buckets and boxes are installed, where medical waste is collected. On the territory of the hospital there is an oven where medical waste is burned. The oven works on coal and wood.

177. **Wastewater.** Hospital sewage network is in poor condition. Some of the pipelines are not operational due to deterioration. In addition, there are outside toilets within the Hospital territory not connected to sewage network (septic tanks). Hospital sewage due to deterioration of the network does not inflow to sewage septic, which is not in working condition. Within the site boundaries, broken pipelines are allowing waste to leech into building foundations and sub-slab areas.

Figure 29: Sewage System at Sh. Shohin CDH

178. **Water.** Water for the Central Hospital is coming from its own well located on the territory of the hospital. The depth of the well is almost 90 m. Water from the well is being pumped into the water tower from which the water is being supplied to the hospital.

Figure 30: Water Supply System of the Sh. Shohin CDH

179. **Electricity.** The hospital is connected to the central power supply network of the district. A transformer with capacity 400 kW is installed in the Hospital territory. The transformers are in good condition and fully satisfy hospital needs.

180. **Heating.** The central hospital has its own boiler rooms in the amount of 2 pcs. located in a separate building. Boilers work on electricity and coal. This boiler room provides heat only to the main building of the hospital.

Figure 31: Boiler System at Sh. Shohin CDH

181. There are about 12 apple-trees at Sh. Shohin District Hospital that need to be removed or re-planted. There are no rare and protected plants on the territory of the hospital.

Figure 32: Ornamental and Fruit Trees at Sh. Shohin CDH

c) Sh. Shohin District Health Center

182. The DHC is located near the District Hospital (0.5 km). This new building, built in 2009 by the Agha Khan Foundation with financial support from the Swiss Development Cooperation (SDC). Though working conditions are very good, functional space available is not sufficient for the number of people to be served.

183. In the framework of the project, district hospital and health center (inpatient and outpatient care) functions will be integrated in one building (following the integrated care concept and approach of the project). It is required that the hospital replacement project undergoes an environmental review by the State Environmental Expertise of the Environmental Protection Committee under the Government of the Republic of Tajikistan.

184. The area of the hospital is 0.41 hectares. The fencing and boundary walls are well established. The clinic has the legal documentation of the building, the land certificate was obtained in 2013.

Figure 33: Main Entrance to the Sh. Shohin District Health Center

185. **Solid waste.** On the territory of the Health Center there is a special box for collecting household waste. Solid household waste is transported to the general district garbage dump as it accumulates.

Figure 34: Garbage Box for Solid Domestic Waste at Sh. Shohin DHC

186. **Medical Waste.** In the injection rooms (dressing, operating, etc.) separate buckets and boxes are installed, where medical waste is collected. Medical waste is burnt as well as solid

domestic waste in the furnace of a non-operating boiler house. The furnace works on coal and wood.

Figure 35: Oven for Burning of Medical Waste at Sh. Shohin DHC

187. **Sewage System.** The DHC is not provided with sewerage. On the territory of the clinic there is a separate toilet, with a cesspit.

188. **Water.** Water for the health center is taken from the well of the CDH located on the territory of hospital (see above).

189. **Electricity / Power supply.** The DHC is connected to the central district power supply network.

190. **Heating.** The CDH does not have its own boiler room.

191. **Construction related issues.** On the territory of the health center many decorative and fruit trees are planted. There are no rare or protected plants.

Figure 36: Ornamental and Fruit Trees at Sh. Shohin Health Center

5. Aini District

a) Situation at District Level

192. Aini district is one of the administrative areas of Sogd region of the Republic of Tajikistan. The administrative center is Aini urban type settlement. The district center of urban type settlement of Aini is located 177 km south of Khujand and in the distance of 140 km north of Dushanbe (over Anzob pass, and 30-40 km closer through tunnel). Aini district in the north

borders with Jizakh region of Uzbekistan and Shakhristan district, in the north-east with Devashtich (till 2016 was named Ganchi district), in the east with Gornaya Matcha and Rasht districts, in the west with Penjikent districts of Sogd region, in the south with Shakhrinav, Hissar, Varzob and Vahdat districts of Republican Subordination, in the south-west with Surkhandarya region of Uzbekistan.

193. **Electricity.** After construction of “Khujand-Aini” power transmission line with capacity 220 kV, Aini district has complete connection to unified power supply system of Tajikistan. Before, district was connected to Uzbek power system.

194. **Water.** Aini district has centralized water supply that cover partially Aini urban type settlement.

b) The Aini Central District Hospital (CDH)

195. The central district hospital located in the south-east part of the center of Aini district and serves 81,427 population of Aini district. Some communities from Mountain Maschoh district are also served by this hospital. This hospital is located in settlement Aini-1 about 3 km from the center of Aini town. The hospital territory is 6 hectares.

196. The main building of the hospital is three floor building which was constructed in 1989. Most departments are located in this building - administration of the hospital, diagnostic department, surgery, gynecology department, maternity department, pregnancy pathology and others. The infrastructure of the Aini district has positively changed in last recent years. Many administrative buildings were built, roads and communal services were reconstructed. In the hospital, in same departments the partial repairs were carried out.

Figure 37: Location of the Aini Central District Hospital

197. The central hospital of the Aini district is located in the settlement Aini. In the northern part of the hospital there is a republican road which is connected to southern and northern Tajikistan. In the western and eastern part of the hospital, the residential houses and road maintenance department of the district are located. In the southern part there are also residential buildings, a garden and big empty are which is not used.

Figure 38: Main Building of the Aini CDH

198. **Solid Waste.** Within the hospital boundary, there is no temporary point of accumulation for solid household waste. Solid household wastes, as well as medical wastes, are burned in the furnace of a non-operating boiler house. Although there is a general district garbage dump in the district but no waste is sent to the district landfill.

Figure 39: Solid Waste Incineration Area at Aini CDH

199. **Medical waste.** In the injection rooms (dressing, operating, etc.) separate buckets and boxes are installed, where medical waste is collected. Medical waste is burnt as well as solid domestic waste in the furnace of a non-operating boiler house. The furnace works on coal and wood.

200. **Sewage.** Wastewater from the hospital (wards, showers, toilets, etc.) are drained through the sewage system to special pits (septic tank) located in the southern part of the hospital, which are worn out and require urgent modernization. The hospital has sewage treatment plant, which has become non-operational and the equipment has been fully removed from the facility. Due to inoperativeness of hospital wastewater treatment facilities, hospital sewage flows to septic tank which is located within the hospital territory. Due to overfilling of septic tank there is a pit next to it which is dug to keep inflowing sewage. Delivery department sewage has a separate septic tank.

Figure 40: Special Pits for Septic Waste at Aini CDH

Figure 41: Waste Management Facility at Aini CDH

201. **Drinking water.** Water supply of the Central Hospital of the Aini region is carried out by gravity from the spring, located at a distance of 11 km from the hospital. Spring water is collected in concrete tank and then flows to Hospital over pipeline. Due to the connection of population and other consumers to the pipeline, there is a shortage of water.

Figure 42: Water Supply System at Aini CDH

202. **Electricity.** Electrical power of Central hospital is supplied by central electricity network. Two transformers each with capacity 400 kW are installed in the Hospital territory. The transformers are in good condition and fully satisfy hospital needs. One diesel generator is also installed in the hospital.

203. **Heating.** The CDH has its own boiler which is not functioning (dispossessed). Some of the departments have electric boilers which can heat about 4-6 rooms. Other hospital buildings are heated by electric devices.

Figure 43: Boiler at Aini CDH

Figure 44: Trees on the Territory of Aini CDH

c) Aini District Health Center

204. The Aini District Health Center (DHC) is located on the Central District Hospital Compound, in the south-eastern part of the town of Aini. It serves 81,427 people, the population of the Aini district. In addition, some communities in the Maskoi-Kuhi district also use the services of this hospital. Central part of Aini district. The Aini District Health Center is located in the settlement. The main clinic two-storey building was built in 1989. The infrastructure of the Aini district has positively changed in last recent years. Many administrative buildings were built; roads and communal services were reconstructed. In the Health Center, some departments had partial repairs carried out. General Scheme of the DHC of Aini is same as the Hospital.

205. The hospital territory is 6 hectares in which the Health Center is situated. In the northern part of the hospital is a motorway. In the western and eastern parts there are residential houses and DEU (road maintenance department

Figure 45: Aini DHC

206. Solid waste. Both within the clinic and in the hospital is no time point accumulation of solid household waste. Solid household waste, as well as medical waste, is incinerated in the furnace of a non-operating boiler house. Although there is a general district garbage dump in the district.

207. Medical Waste. In the injection rooms (dressing, operating, etc.) separate buckets and boxes are installed, where medical waste is collected. Medical waste is burnt as well as solid domestic waste in the furnace of a non-operating boiler house. The furnace works on coal and wood. Photograph of the Furnace for the Incineration of Solid Domestic Waste and Medical Waste at Aini DHC is same as the hospital.

208. Wastewater. Wastewater (sewerage) from the clinic (wards, showers, toilets, etc.) as well as from the hospital are allocated through the sewage system special pits (septic tank) located in the southern part of the hospital, which are worn out and require urgent modernization. The hospital has a sewage treatment plant that has become unusable, the equipment has been removed. Photos of the Special Pits for Waste (Septic) at Aini DHC are same as the hospital.

209. Water Supply. Water is supplied to the Aini DHC tanks from a spring by gravity, which is located at a distance of 11 km from the hospital. Due to deterioration of water supply systems, not all hospital wards are provided with water.

Figure 46: Water Supply at Aini DHC

210. Electricity/Power supply. The hospital was connected to the central power supply network since its construction in 1989.

211. Heating. The central hospital has its own boiler room, which does not work. The wards and rooms of the hospital are heated by electric heaters. Photographs of the Boiler Plants at Aini DHC are same as the Hospital.

212. In the territory of policlinic many decorative and fruit trees are planted. During repair work these trees won't suffer. In the territory of hospital there are no infrequent and being under protection of the state plants.

Figure 47: Ornamental and Fruit Trees on the Territory of Aini DHC

6. Sangvor District

a) Situation at District Level

213. Sangvor district — is the district of Republican Subordination of the Republic of Tajikistan. The district center — is Tavildara village. According to decision of the Government of the Republic of Tajikistan in 2016 Tavildara district was renamed to Sangvor district. The district is located in Khingob river valley in the area next to Pamir. In the north it borders with Tajikabad district, in the north-east with Jirgital district, in the north-west with Rasht district, in the west with Nurobod district, in the south-west with Khovaling district of Khatlon region, in the south with Darvaz district, in the east with Vanj and Murgab districts of GBAO.

214. Tavildara has centralized water supply. Population of the area is fully supplied with water. The water is supplied from Mirkalon source located in lower reach of Kalanak river. Centralized water supply inflows through the pipeline (d= 25мм) of main waterline (d= 125) passing in the distance of 300 meters from hospital.

b) Sangvor Central District Hospital

215. The central hospital of Sangvor district is located in the center of the district. The area is very extensive, and access to the central hospital is difficult in the winter season for many villages. There are 3 jamoats in the district, and separate health centers have been established on each jamoat. The hospital serves 22,500 people in the Sangvor area. In addition, some communities in the neighboring areas (Darvoz, Sagirdasht, Khovaling) also use the services of this hospital. There are 70 patients in the hospital. The territory of the hospital from the north is bordered by a highway. From the west, border with private pharmacies and residential buildings, and from the east and the south by residential buildings.

216. The main building of the central hospital is a one-storied building with two wings that houses a maternal home, a kindergarten, a room for infectious diseases and laboratories. The 70-year-old design seems problematic. The old building suffered from damage caused by the earthquakes of 2008 and 2011. The right wing is maternity house and not used. The central and left wing was under capital rehabilitation, completed by UNDP in 2014. The condition of the restored parts is satisfactory; however, the building was redecorated, but the construction is very old. International humanitarian aid also provided some types of equipment / tools.

Figure 48: Buildings at Sangvor Central District Hospital

217. **Solid Waste.** On the territory of the hospital there is a temporary collection point for solid waste. This is a temporary dump without a fence and without a hard cover, in which non-hazardous solid household waste is collected / accumulated before they are taken to the central landfill of the district.

Figure 49: Collection of Solid Waste at Sangvor CDH

218. **Medical Waste.** In the injection (dressing, operating, etc.) separate buckets and boxes are installed, where medical waste is collected. Within the territory of the hospital there is an oven where medical waste is burned. This oven works on coal and wood.

Figure 50: Oven Used for Burning of Medical Waste at Sangvor CDH

219. **Wastewater.** Hospital sewage network is in poor condition. Some of the pipelines are not operational due to deterioration. Sewage network is not operational in all rooms. Only sink and toilet wastes of treatment and delivery hospital inflow to sewage network. There are septic tanks within Hospital area. In addition, there are outside toilets within the Hospital territory not connected to sewage network (septic tanks).

Figure 51: Waste Water Cleaning System at Sangvor CDH

220. **Water.** Water supply of the Central Hospital of Sangvor district is provided from the central system of district water supply. Due to the deterioration of the water supply system, not all hospital departments are provided with water.

Figure 52: Water Supply System at Sangvor CDH

221. Electricity. The hospital is connected to the central power supply network of the district. Electricity. A transformer is installed within the Hospital area. The transformer is in good condition and fully satisfies the needs of Hospital. In addition, a diesel generator is also installed within Hospital territory.

222. Heating. The central hospital does not have its own boiler room. The premises of the hospital are heated by stoves and electric heaters. As fuel in furnaces use coal and fire wood.

Figure 53: Furnace/Oven at Sangvor CDH

223. Many ornamental and fruit trees are planted on the territory of the hospital. There are about 17 trees at Sangvor District Hospital that need to be removed or re-planted, among them 13 apple-trees, 1 pear tree, 1 willow tree and 2 spruces. On the territory of the hospital there are no rare and protected plants network infrastructure development in the project area.

Figure 54: Trees on the Territory of the Sangvor CDH

c) Sangvor District Health Center

224. The DHC is located on the territory of the central district hospital. This one-story building (160 m²) was built in 2000, which serves a population of 22 500 people Sangvor area. In addition, some communities in the neighboring areas (Darvoz, Sagirdasht, Khovaling) also use the services of this hospital.

225. The central hospital is located in the central part of the Sangvor district in the village. The proposed project activity (reconstruction of a hospital including health center functions) is not prohibited by law, but it is required that the project undergoes environmental review by the State Environmental Expertise of the Environmental Protection Committee under the Government of the Republic of Tajikistan.

226. There are 10 small offices and 12 doctors involved. The center requires at least 4 additional offices. The territory of the DHC from the north is bordered by a highway. From the west, from the south and from the east, it borders on the territory of the hospital. The building was restored in 2013 with the financial support of the Aga Khan Health Program / SDC.

Figure 55: Entrance to the Sangvor District Health Center

227. **Solid Waste**. Solid household waste from the DHC is accumulated at the solid waste collection point of the Central Hospital. This is a temporary dump without a fence and without a hard cover, in which non-hazardous solid household waste is collected / accumulated, before they are transported to the central landfill of the district. Photograph of the Waste Management Facilities/System at Sangvor DHC is same as the Hospital.

228. **Medical waste**. In the injection rooms (dressing, operating, etc.) separate buckets and boxes are installed, where medical waste is collected. All medical waste is burned in the furnace oven located at the operating boiler house. The furnace oven works on coal and wood Photographs of the Furnace for Medical Waste Incineration at Sangvor DHC are same as the Hospital.

229. **Wastewater.** Wastewater (sewage) from the clinic (wards, showers, toilets, etc.) is diverted to the sewerage network (septic tank) of the central hospital, located at the rear of the main building of the central hospital. Photographs of the Treatment Plants / Waste Cleaning System at Sangvor DHC are same as the Hospital.

230. **Water.** Water for the Sangvor DHC is provided through the central district water supply system. However, only two of the 10 rooms are equipped with running water. In other offices there are no water pipes.

Figure 56: Water Supply System at Sangvor DHC

231. **Electricity** / Power supply. THe DHC is connected to central electricity district.

232. **Heating.** The DHC does not have its own boiler room. The premises of the clinic are heated by furnaces and electric heaters. As fuel in the stoves, they use coal and firewood. The building does not have a heating system, and in view of the severe winter season, the building badly needs to install a heating system.

233. In the territory of policlinic many decorative and fruit trees are planted. There are about 17 trees at Sangvor District Hospital that need to be removed or re-planted, among them 13 apple-trees, 1 pear tree, 1 willow tree and 2 spruces. In the territory of hospital there are no under protection plants. Photographs of the Ornamental and Fruit Trees are the same that exist in the Territory of the Hospital.

E. Proposed infrastructure measures at subproject locations

1. Overview

234. Keeping in view the funding status, several aspects for repair, rehabilitation and construction were discussed and the following criteria was used to decide the level of investment at each site.

- Rehabilitate / renovate / modernize existing infrastructure - as technically required and financially appropriate!
- Build new infrastructure where rehabilitation is not an option
- Integrate outpatient and inpatient care in one single building if new construction by adding Diagnostic and Treatment (D&T) Centers (imaging, lab, laundry and CSSD, OT, delivery and ICU) if existing infrastructure to be maintained
- Consider utilities and environmental aspects (water, sewage, power supply, household and medical (potentially hazardous) waste management

235. A summary of measures for all amenities are provided in Table 13 below:

Table 13: Summary of Proposed Infrastructure Measures

A	Site Infrastructure at Fayzobad		
i	Sewage	On-site:	New local 6 stage sewage treatment plant or connect to municipal system
ii	Water	On-site:	New water tower, pump and connection to existing pipes; new infrastructure throughout site.
iii	Waste	Incineration: Bio-pit: MSW:	New incinerator required. Existing unlined pits must be remediated and new pits installed. Municipal waste removal system to be established.
iv	Buildings	Repair/New	Repair 2500 m^2 buildings and add new D&T center (3000 m^2)
B	Site Infrastructure at Rasht		
i	Sewage	On-site:	New local 6 stage sewage treatment plant
ii	Water	On-site:	New water tower, pump and connection to municipal source (200m)
iii	Waste	Incineration: Bio-pit: MSW:	Repair or replacement of incinerator. Existing unlined pits must be remediated and new pits installed. Municipal waste removal system to be established.
iv	Buildings	Repair/New	Repair 2900 m^2 buildings and add new D&T center (3000 m^2)
C	Site Infrastructure at Sh Shohin		
i	Sewage	On-site:	New local 6 stage sewage treatment plant
ii	Water	On-site:	Clean existing well, add water tower, filtration and higher capacity pump
iii	Waste	Incineration: Bio-pit: MSW:	New incinerator required. Existing unlined pits must be remediated and new pits installed. Waste segregation must be introduced
iv	Buildings	New	Integrated health center and D&T (3,700 m^2)
D	Site Infrastructure at Aini – on backstop and details to be finalised later		
i	Sewage	On-site:	New local 6 stage sewage treatment plant
ii	Water	On-site:	New water tower, pump and connection to municipal source (200m)
iii	Waste	Incineration: Bio-pit: MSW:	New incinerator required. Existing unlined pits must be remediated and new pits installed; Municipal waste removal system to be established.
iv	Buildings	Demolish/New	Integrated health center and D&T (3,700 m^2)
E	Site Infrastructure at Sangvor– on backstop and details to be finalised later		
i	Sewage	On-site:	New local 6 stage sewage treatment plant
ii	Water	On-site:	New water tower, pump and connection to municipal source (200m)
iii	Waste	Incineration: Bio-pit: MSW:	New incinerator required. Existing unlined pits must be remediated and new pits installed. Municipal waste removal system to be established.
iv	Buildings	Demolish/New	Integrated health center and D&T (3,700 m^2)

Subprojects A-C are currently proposed for funding and D-E are on backstop if more funds become available in future.

236. **Equipment**: Besides the above**,** some equipment was also proposed to funded as part of the project. This component will have negligible environmental impact of the activities proposed below:

- Supply PHC facilities with basic MCH / BEmONC27 equipment.
- Supply District Hospitals with basic medical equipment and furniture.
- Train Health personnel in use of equipment.

2. Fayzobod District

a) Sewage

237. The proposed solution is to remove all waste from the pit and dispose it appropriately (at the municipal waste management plant for processing). As part of the new civil works, designers and contractors shall provide a 6-stage waste water treatment system (refer to the waste water treatment plant recently designed for a KfW funded project in Tajikistan) that would include basic steps as follows:

- Wastewater Collection Infrastructure and Pit
- Odor Control
- Screening
- Primary Treatment (Sedimentation)
- Secondary Treatment (Aerobic)
- Bio-solids handling (Anaerobic Digesters)
- Disinfection (chlorine and sodium hypochlorite)
- Sludge Treatment

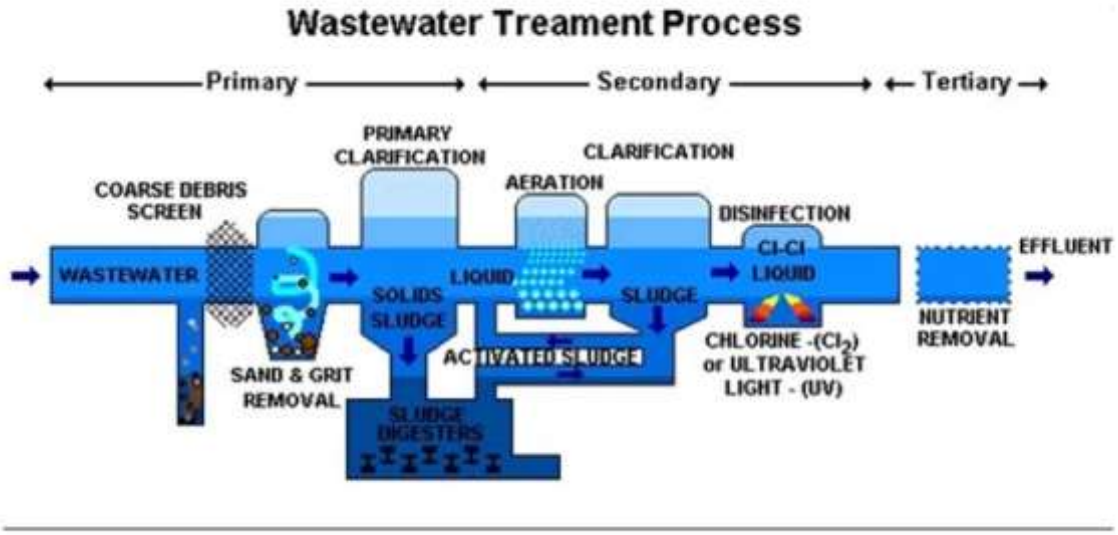

Figure 57: Proposed Wastewater Treatment Process

238. **Water Supply-** The proposed solution is to provide a new water tower containing passive particulate filtration, UV purification and leak detection, at an output elevation of 40 meters above the highest fixture. Additionally, this holding tank shall include a new water pump for filling from the municipal supply, a new connection to the municipal distribution at the site boundaries and a new on-site distribution system to the existing buildings.

27 Basic Emergency Obstetric And Newborn Care (Bemonc) Or Comprehensive Emergency Obstetric And Newborn Care

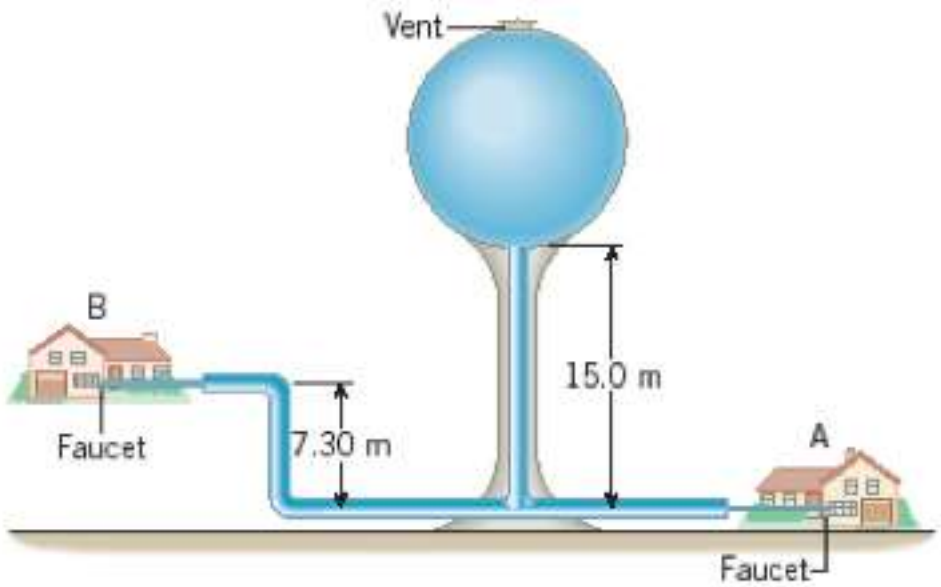

Figure 58: Proposed Water Supply holding tank

b) Solid Waste

- **Incineration:** There is no functioning incinerator. Design team and contractor shall provide a high thermal capacity incinerator with 12kg/h chamber capacity.
- **Bio-pit:** Existing unlined pits must be remediated (by hospital) and new concrete enclosed lined pits installed.
- **Municipal waste removal**: Reliance on municipal or private waste removal, processing and land-fill company. No on-site processing anticipated, other than waste segregation.

c) Building Infrastructure

239. The **Diagnostics & Treatment (D&T)** Platform Building proposed for construction at the Fayzobod CDH will consist of the following departments. The construction aspects and the operation aspects of waste from each building are covered in the previous assessment.

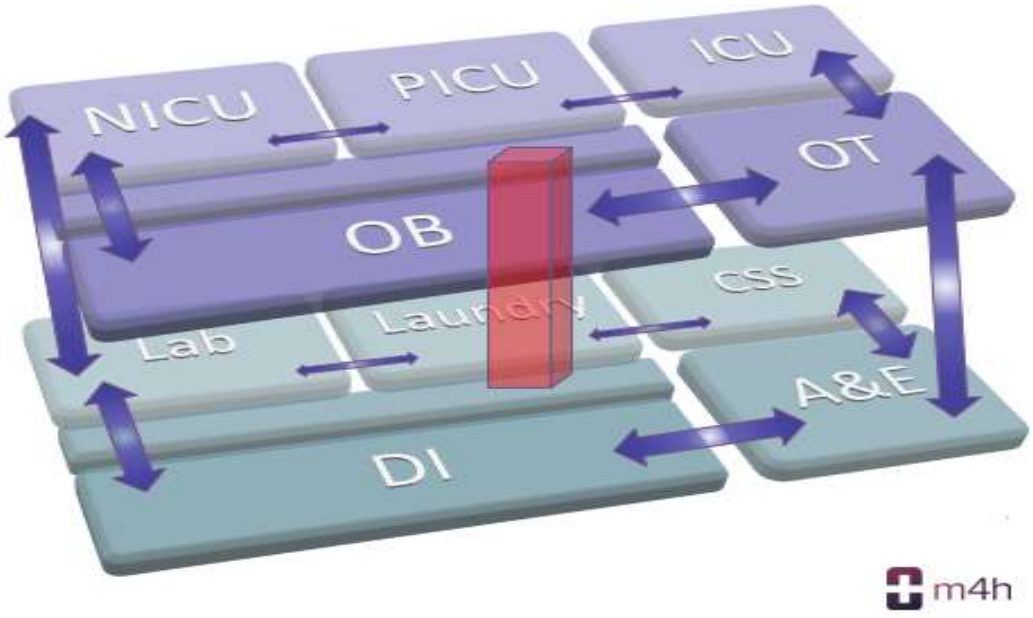

Figure 59: D&T Building platform

List of Units / Departments of the Diagnostics and Treatment Center

i. Accident & Emergency (A&E)
ii. Diagnostic Imaging and Procedures (DI)
iii. Operating Theatres (OT)
iv. Labor & Delivery (OB)
v. Neonatal Intensive Care (NICU)
vi. Pediatric Intensive Care (PICU)
vii. Intensive Care Unit (ICU)
viii. Laboratory
ix. Laundry
x. Central Sterile and Supply Department (CSSD)

3. Rasht District

a) Sewage

240. Al waste shall be removed from the pit and disposed appropriately (at the municipal waste management plant for processing). As part of the civil works, designers and contractors shall provide a state-of-the-art waste water treatment system (see above).

b) Water Supply

241. A new water tower shall be built containing passive particulate filtration, UV purification and leak detection, at an output elevation of 40 meters above the highest fixture. Additionally, this holding tank shall include a new water pump for filling from the municipal supply and a new larger connection of at least 125mm diameter to municipal source (200m outside hospital boundaries).

c) Solid Waste

- **Incineration:** The existing defunct incinerator requires repair or replacement. Design team shall provide proposals for each, contractor shall assume the replacement of incinerator with high thermal capacity incinerator with 12kg/h chamber capacity.
- **Bio-pit:** Existing unlined pits must be remediated (by hospital) and new concrete enclosed lined pits installed.
- **Municipal waste removal:** Reliance on municipal or private waste removal, processing and land-fill company. No on-site processing anticipated, other than waste segregation.

d) Building Infrastructure:

242. The **Diagnostics & Treatment (D&T)** Platform Building proposed for construction at the Rasht consists of the same units and departments listed above (for the Fayzobod CDH).

4. Sh. Shohin District

a) Sewage

243. A new replacement facility is proposed and the current facility will be used by the government for a different non-healthcare (education) program or any other purpose. As part of the new civil works, designers and contractors shall provide a state of the art waste water treatment system ((see above).

b) Water Supply

244. The new facility shall include a new well, water tower containing passive particulate filtration, UV purification and leak detection, at an output elevation of 40 meters above the highest fixture. Additionally, this holding tank shall include a new water pump for filling from the well-water supply.

c) Solid Waste

- **Incineration:** Design team shall provide replacement of incinerator with high thermal capacity incinerator with 12kg/h chamber capacity.
- **Bio-pit:** Existing unlined pits must be remediated (by hospital) and new concrete enclosed lined pits installed.
- **Municipal waste removal:** Reliance on municipal or private waste removal, processing and land-fill company. No on-site processing anticipated, other than waste segregation.

d) Building Infrastructure

245. Sh. Shohin will have a new integrated Hospital cum Health Center that will also consist of all required diagnostic and treatment units and departments.

5. Districts not Selected for Financial Support under this Project

a) Aini District

246. **Sewage -** A new replacement facility is proposed and the current facility will be used by the government for other purposes. As part of the new civil works, designers and contractors shall provide a state-of-the-art waste water treatment system (see above).

247. **Water Supply-** The new facility shall include a new well, water tower containing passive particulate filtration, UV purification and leak detection, at an output elevation of 40 meters above the highest fixture. Additionally, the holding tank shall include a new water pump for filling from the well-water supply.

248. **Solid Waste.** i) Incineration: Design team shall provide replacement of incinerator with high thermal capacity incinerator with 12kg/h chamber capacity; ii) Bio-pit: Existing unlined pits must be remediated (by hospital) and new concrete enclosed lined pits installed; iii) Municipal waste removal: Reliance on municipal or private waste removal, processing and land-fill company. No on-site processing anticipated, other than waste segregation.

249. **Building Infrastructure**: Aini will also have a new diagnostic and treatment center.

b) Sangvor District

250. **Sewage -** A new replacement facility is proposed and the current facility will be used by the government for other purposes. As part of the new civil works, designers and contractors shall provide a state-of-the-art waste water treatment plant (see above).

251. **Water Supply.** The new facility shall include a new well, water tower containing passive particulate filtration, UV purification and leak detection, at an output elevation of 40 meters above the highest fixture. Additionally, this holding tank shall include a new water pump for filling from the well-water supply.

252. **Solid Waste.** i) Incineration: Design team shall provide replacement of incinerator with high thermal capacity incinerator with 12kg/h chamber capacity; ii) Bio-pit: Existing unlined pits

must be remediated (by hospital) and new concrete enclosed lined pits installed; iii) Municipal waste removal: Reliance on municipal or private waste removal, processing and land-fill company. No on-site processing anticipated, other than waste segregation.

253. **Building Infrastructure.** Design of the Sangvor CDH shall follow the integrated model where outpatient and inpatient services are being accommodated in one single building including shared diagnostic and treatment facilities.

V. Description of the Environment (Baseline Data)

254. The Hospital / Health Center subprojects examined are situated in the districts of Aini, Fayzobod, Rasht, Sangvor and Sh. Shohin of Tajikistan. This chapter focuses on the present environmental conditions of the sub-project areas. Most sub-project activities will have minimal impact on the environment, and will not be influenced by current environmental conditions. Thus, the main emphasis of this chapter is on physical, biological, and socioeconomic conditions, and more specifically the environment of the Hospitals / Health Centers.

A. Physical Environment of Tajikistan

1. Topography

255. The topography of Tajikistan is very diverse. Mountains occupy around 93% of Tajikistan. The main elements of Tajikistan's geography are the following: the Kuramin Mountain Range and the Mogoltau Mountains, Fergana Depression, Hissar-Alai Mountains (the South Tian Shan), the depressed area in southwestern Tajikistan (Tajik depression), and Pamir. Altitudes range from 300 to 7495 meters above sea level. There center life of Tajikistan is the result of activities of alpine tectonic movements of the earth surface as well as the denudation process. The majority plain territories of the country are the broad areas of river valleys or the vast depressions between the mountains. Most of the country's population is concentrated in these particular areas along with the main fields of industrial production and agricultural potential of the county.

256. The topography of the study area can be divided from North to South into a rolling section, a mountainous section and a flat section. The territory of Tajikistan is divided into following regions with different geological conditions:

- Chatkal-Kurama region is located on the north of the country (Sugd Province). There are high mountains dominated by intrusive and effusive Paleozoic sediments. Fergana region (Sugd Province) consists of ancient dissected plains and terraces.
- Hissar-Alai region covers Central Tajikistan within the Turkestan, Zeravshan, Hissar and Karateghin ranges. These include the Aini and Fayzobod districts.
- South region includes the Tajik depression with broad foothill and intermountain basins, and the Sh. Shohin district. In the part of the Khatlon Oblast where Sh. Shohin is located, the topography is characterized by planes, undulating lands and foothills with moderate slopes and a weak inclination on the southwest side.
- North-eastern part of the Districts under the Republic subordination (DRS) include Peter the Great Ridge intermediate between the Tajik depression and Hissar-Alai region, where the project Rasht district is located.
- Northern-Pamirian region includes the south-western part of Darvoz Ridge where project Tavildara district is located.
- Pamir region (GBAO) is represented by the Western Pamirian mountains, which is characterized by a large length of canyons and ridges and narrow valleys.
- The low lands of the Vanj valley are moderately sloping changing gradually into relatively steep, to very steep mountain flanks. The valley bottom offers the possibility to cultivate grains, orchards, vegetables and fodder, sloping moderately to rolling foothills with mainly pasture.

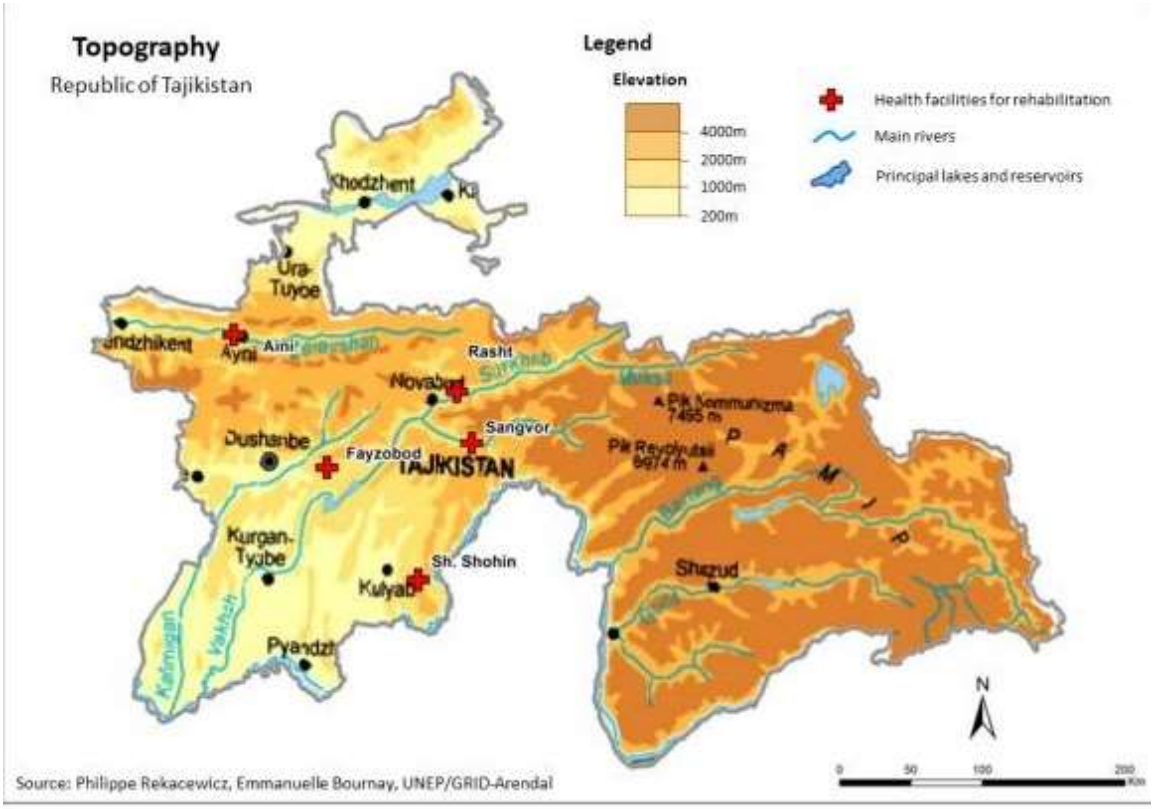

Figure 60: Locations of Hospitals / Health Centers Examined for the Project

2. Soils

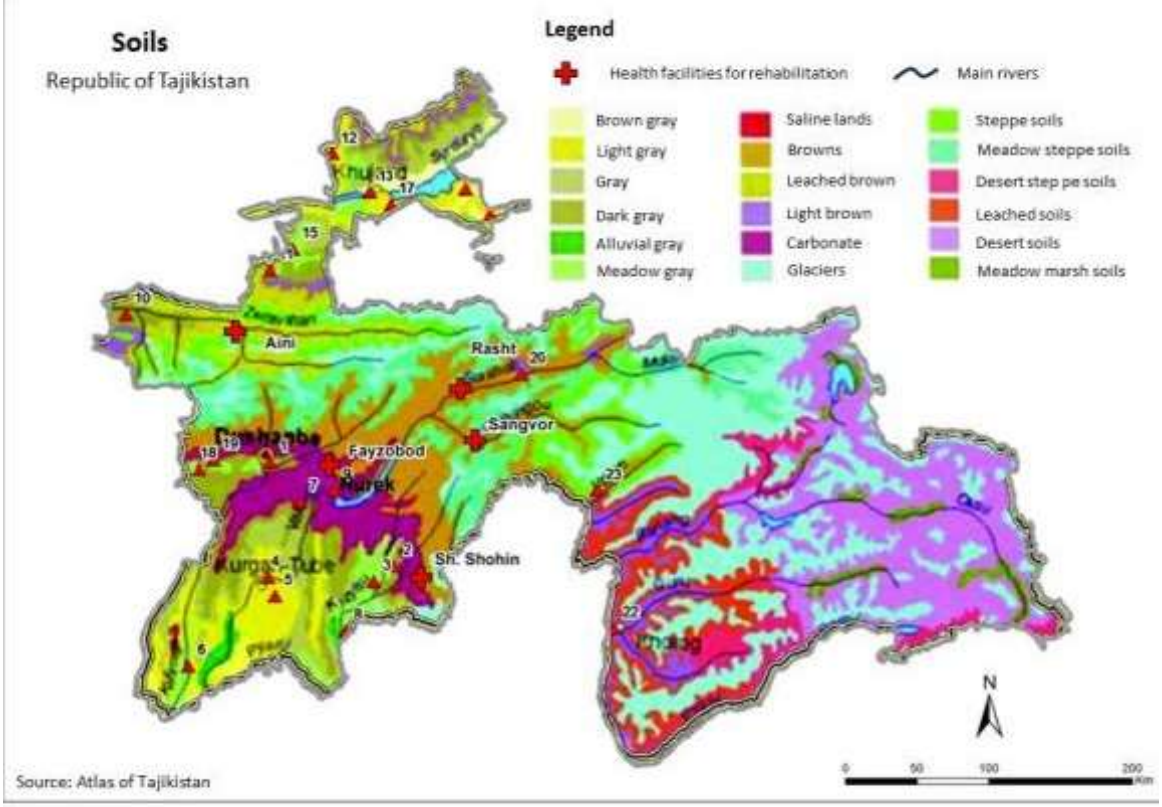

Figure 61: Soil Types

257. As a typical alpine country, Tajikistan has vertical variability of soil cover. Three major vertical belts of soil distribution can be found here:

i. Grey soils of valleys and idle fields;
ii. Brown soils of middle belts of mountains; and
iii. Soils of highlands

258. Regarding soils there is a distinguished gradient from the more humid Northern part of the study area to the very dry southern part. The soils of the study area are highly productive and much of the area is used for agricultural use. In the dry southern part of the Project area agricultural use is however only possible when soils are irrigated. Soil erosion is a major environmental concern throughout the Republic of Tajikistan due to seismic activity, steep slopes, the fragility of the soils and human activities such as inappropriate livestock management, the removal of protective vegetative cover and poor water management practices.

259. The following soil types can be observed in the examined regions / districts:

- Sughd (Aini): plains and mainly gray soils (gray-brown, light, ordinary and dark).
- Khatlon (Sh. Shohin) – typically loess, loamy sands and loamy soils, occasionally bench gravel of the Upper Quaternary age, classically formed through wind deposition over arid or semi-arid areas. Soils are brown-gray, light gray, gray and light and mountainy brown (brown and alpine meadow-steppe)
- Dushanbe and Districts of Republican Subordination – light-brown and carbonate (Shahrinaw, Dushanbe, Tursunzoda) and mountain brown (brown and alpine meadow-steppe)
- (Fayzobod, Rasht and Sangvor) GBAO – Mountain brown soils prevail in highland patches; desert soils.

3. Climate

260. Tajikistan is divided in three major climate zones (Figure 62). Its location in the middle of Eurasia, its remoteness from oceans and seas and vicinity to deserts predefine its climate which can be characterized as continental, with considerable seasonal and daily fluctuations in temperature and humidity. The country‘s very complicated relief structure, with huge variations in elevation, creates unique local climates with great temperature differences.

261. Climate types in the examined districts are:

- A III zone – Sufficient moisture (wet) climate zone.
- A IV zone – Dry climate zone.
- A IV 5d, 5e – Dry climate (very warm).
- A IV 3c – Dry climate (moderate heat), typical for areas of GBAO.
- A III 5d, 5e – Lack of humidity and very warm, typical for Fayzobod.
- A III 4d – Insufficient moisture and warm - typical for Rasht, Sangvor and Sh. Shohin.
- A III 3d – Relatively low humidity and moderate heat, typical for Aini.

262. The climate in the central and south-west regions of Tajikistan is characterized by rather hot summers and mild winters. The cold period lasts 90-120 days, the warm period – 275-235 days. 75-85% of annual precipitations happens from December to May. The climate might affect the construction season in the Project area which can be limited between February and December. Table 14 and Figure 62 indicate average temperature and precipitation levels by district.

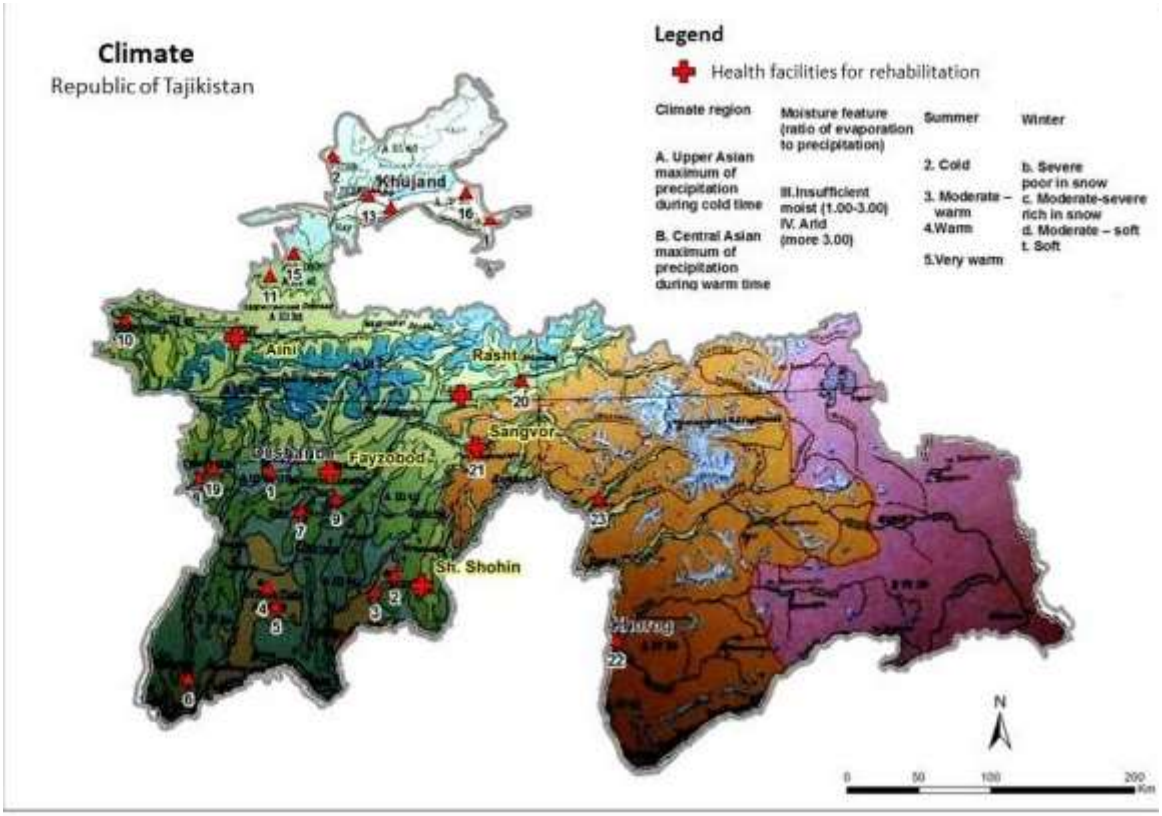

Figure 62: Tajikistan Climate Regions

Table 14: Temperature and Precipitation, by District[28]

District	Month	Max.High Temperature	Min.Low Temperature	Avg.Annual Temperature	Annual Precipitation
Aini	January	2.4 C	-6.4 C	10.5 C	617 mm
	July	30.6 C	15 C		
Fayzobod	January	4.3 C	-4.6 C	12.4 C	682 mm
	July	32.8 C	16.8 C		
Rasht	January	1.2 C	-7.6 C	10.7 C	679 mm
	July	31.5 C	15.6 C		
Sangvor	January	0.7 C	-8.5 C	9.9 C	834 mm
	July	30.7 C	14.6 C		
Sh.Shohin	January	4.2 C	-5.4 C	12.6 C	626 mm
	July	33.6 C	16.5 C		

263. Figure 63 below illustrates precipitation levels in Tajikistan and clearly shows that the lowest amount of rainfall is in the large river valleys, in the plains in the north and south west and in the very east of the country. The minimum amount of precipitation (50-200 mm / year) is characteristic for the southern districts of Tajikistan (Shahrtuz, Vakhsh, Qurghonteppa), GBAO (Khorog, Vanj), and parts of northern Tajikistan. More rainfall (200-400mm / year) is observed in Dushanbe, the Districts of Republican Subordination (Tursunzoda, Shakhrinav, Tadzhikobod, Tavildara), and in some southern districts (Yovon, Norak, Kulob, Farkhor, Vose) and in Shahriston in the north.

28 Source: Tajikistan National Agency for Hydrometeorology

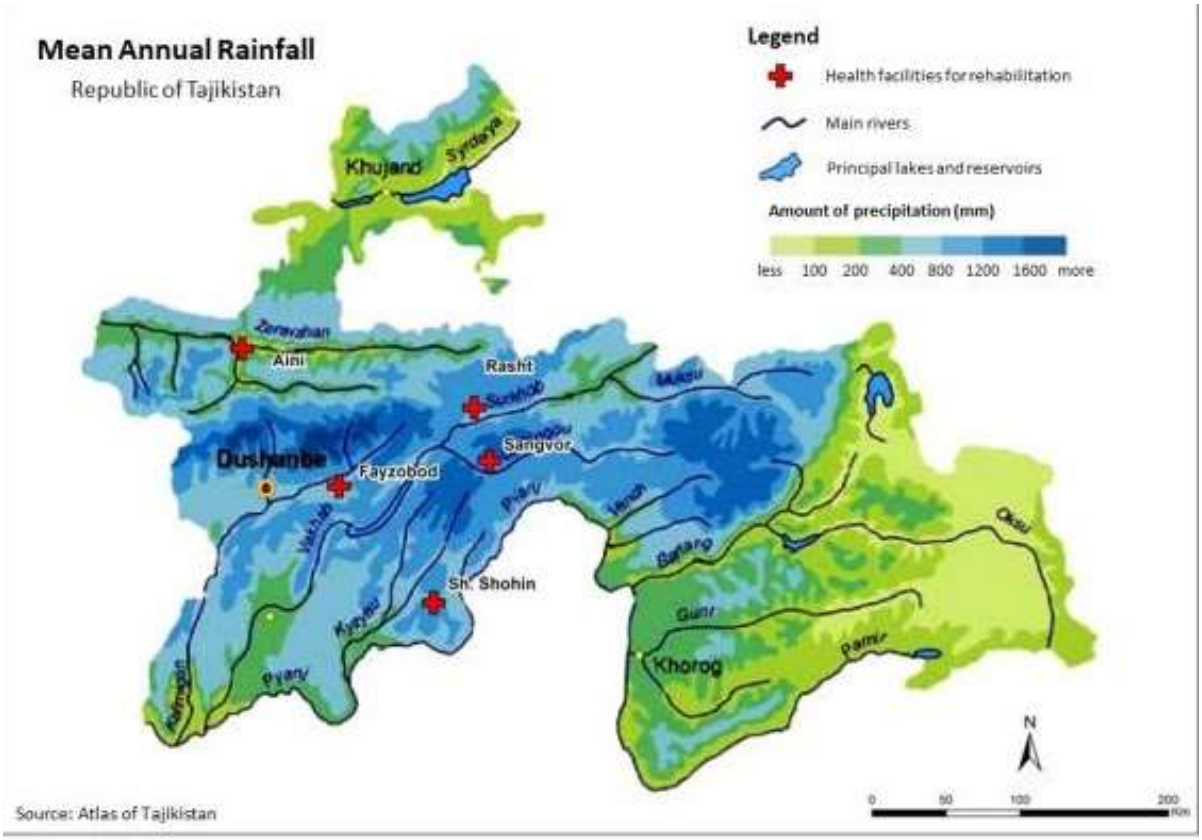

Figure 63: Tajikistan Precipitation Map

4. Water Resources

264. Tajikistan is rich in water resources. It is necessary to note that mountains of Central Asia occupying 20% of the total area of the Aral Sea basin (350 thousand sq. km) gives 90% of surface runoff. The rivers of Tajikistan are important sources of fresh water for the Aral Sea. The glaciers and permanent snow feed the rivers of the Aral Sea basin with over 115 km³ of water a year. The major rivers are the Syr Darya (total length 2,400 km), which flows for 195 km across the Fergana Valley in the north, the Zaravshan, which runs through central Tajikistan, and the Kofarnigon, Vakhsh and Panj rivers, all of which together all of which together drain more than three fourths of Tajikistan's territory and form Amu Darya. On average, 51.2 km³ of water is formed on the territory of Tajikistan which comprise around 44 % of annual water flow of the Aral Sea basin rivers: in the basin of Amu Darya River - 50.5 km3 and Syr Darya River - 0.7 km³. The total catchment area of these rivers (with tributaries) in Tajikistan is estimated being over 120,000 km².

265. Tajikistan's water resources mainly arise owing to glacier melting and precipitation. Total surface water reserves in Tajikistan's glaciers and snowfields are estimated at 550 km³. Many of them are located in the basins of high-mountain rivers (such as Obihingou, Gunt, and Muksu) as well as in other areas. Glaciers and snowfields occupy about 6% of country's territory. Over1,300 lakes contain 44 km³ of water, including 20 km³ of surface fresh water and 24 km³ of saltwater. Their total area is about 705 km².

Table 15: Transboundary Waters in the Basin of the Aral Sea[29]

Basin/sub-basin(s)	Catchment area (km²)	Recipient	Riparian countries
Amu Darya[30]	612,000	Aral Sea	AF,KG,TJ, UZ,TM
-Surkhan Darya	13,500	Amu Darya	TJ,UZ
-Kofarnigon	11,590	Amu Darya	TJ,UZ
-Vakhsh	39,100	Amu Darya	KG,TJ
-Pyanj	113,500	Amu Darya	AF, TJ
--Pamir[31]	10,000	Panj	AF, TJ
--Bartang[32]	24,700	Panj	AF, TJ
SyrDarya[33]	782,600	Aral Sea	KZ,KG,TJ, UZ
-Naryn[34]	59,900	SyrDarya	KG, UZ
-Kara Darya	28,630	SyrDarya	KG, UZ
-Chirchik	14,240	SyrDarya	KZ,KG, UZ
--Chatkal	7,110	Chirchik	KG, UZ
Zaravshan[35]	41,800	Desert sink	TJ,UZ

266. Tajikistan is rich in water resources. High altitudes and mountainous terrains in the country resulted to the creation of a dense river network. Most of the rivers of Tajikistan lie within the Amu Darya basin, in the territory from Hissar Valley to the Eastern Pamir. The rest of the country lies within the Zarafshan basin and the Syr-Darya basin (Figure 64). Most of the rivers in the Amu Darya basin rivers, and the Isfara river of the Syr-Darya basin, are of glacier-snow fed type, and their maximum flow occurs in July-August. The Kafirnigan, Varzob, Khanaka rivers in the Districts of Republican Subordination are of snow-glacier fed type, and their maximum flow occurs in May-June. Figure 65 shows Tajikistan's river network.

29 Source: http://www.unece.org/fileadmin/DAM/env/water/blanks/assessment/aral.pdf

30 Estimation: While some literature sources quote a basin area of up to 612,000 km2, the water divide can only be correctly established in the mountainous part of the basin (309,000 km2); therefore, many hydrologists refrain from giving figures for the total basin area.

31 No exact figure. Some hydrologists give various figures from 5,000 to 10,000 km²

32 https://ru.wikipedia.org/wiki/%D0%91%D0%B0%D1%80%D1%82%D0%B0%D0%BD%D0%B3

33 Estimate: Some literature sources quote a basin area of up to 782,600 km². As with the Amu Darya, the water divide can only be correctly established in the mountainous part of the basin. Thus, many hydrologists do not give a figure for the total basin area but state that 142,200 km² of the basin area is upstream of the point where the river leaves the Fergana Valley.

34 Estimate: Literature gives various figures for the size of the catchment area, from 58,370 to 59,900 km².

35 Estimate: Due the sheer impossibility of determining the size of the catchment area, many hydrologists simply give a figure of 17,700 km² for the mountain part of the catchment area. https://www.unece.org/fileadmin/DAM/env/water/publications/assessment/Russian/G_PartIV_Chapter3_R u.pdf

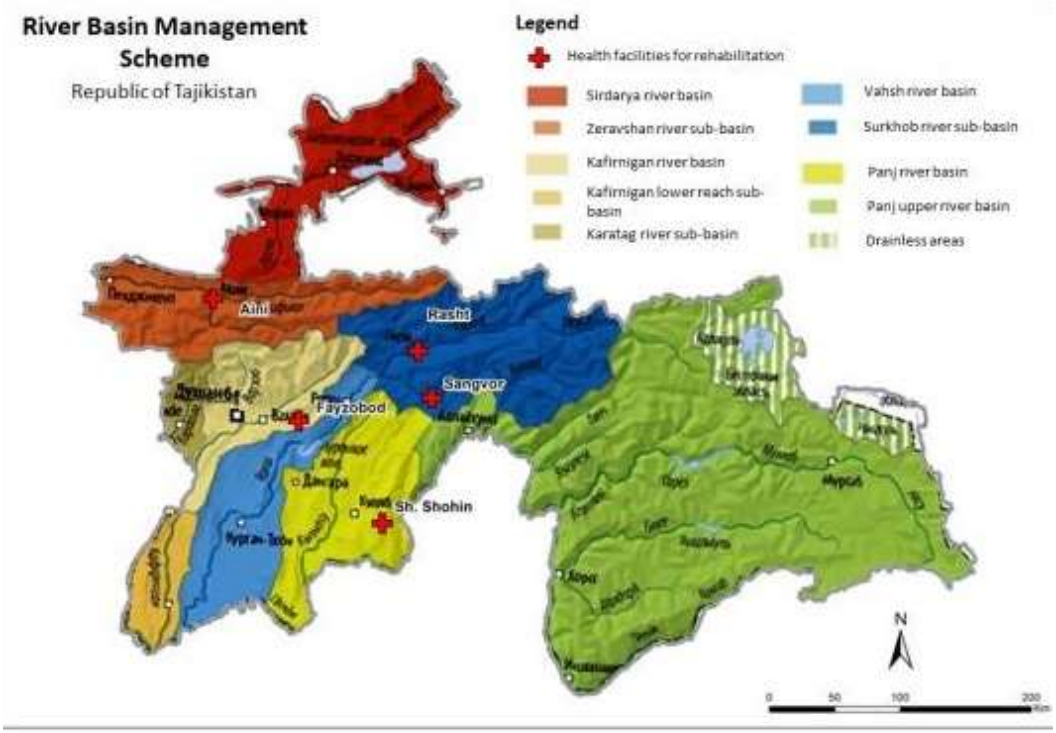

Figure 64: River Basins of Tajikistan[36]

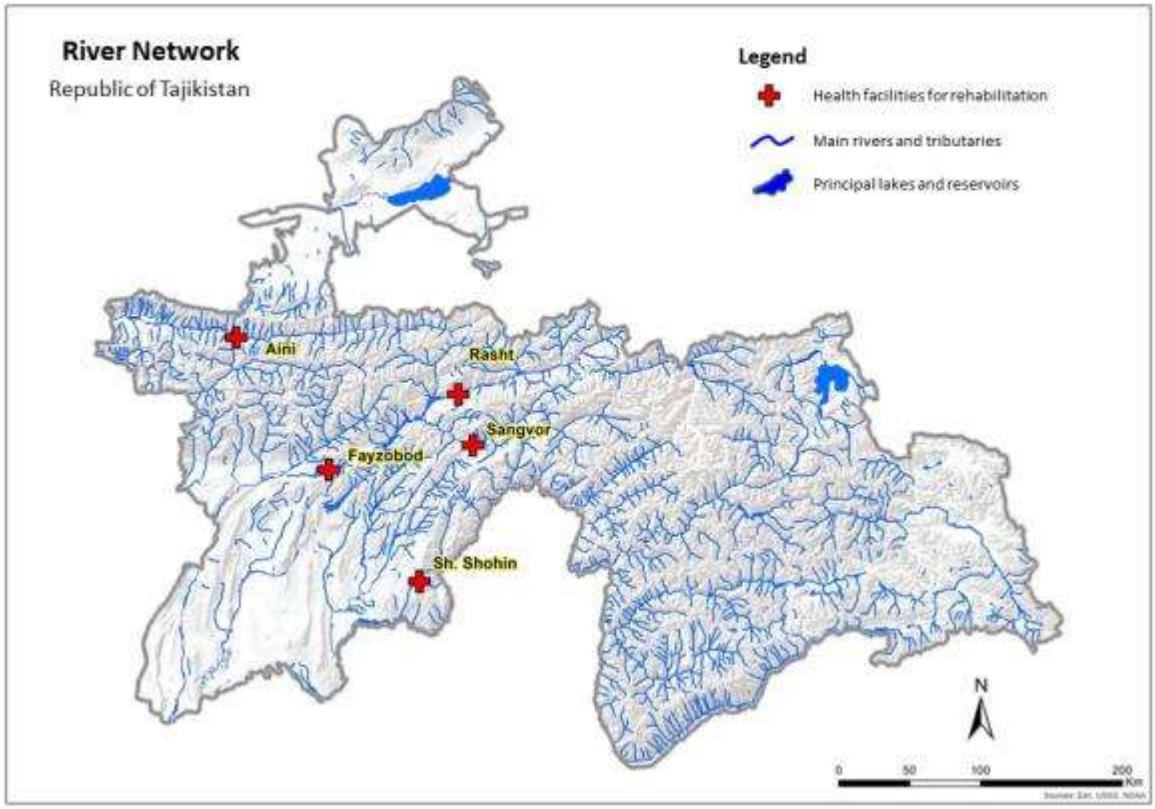

Figure 65: Tajikistan River Network

5. Seismicity

36 Source: Environmental Performance Review, Tajikistan. UN, 2004

267. Tajikistan is the country of intense tectonic movements and high seismicity. Earthquakes are dependent on many factors: geotechnical conditions, the nature of the soil, the presence of groundwater, landforms, etc. Over and above this chronic challenge is the threat of rare but potentially devastating earthquakes, with more than 60% of the country located in zones of high seismic risk.

268. Figure 66 shows three major seismic zones in Tajikistan with 7, 8 and 9 degree seismic intensity on the MSK-64 scale. In each of these zones, earthquakes at the mentioned level are possible37. Most southern districts are in seismic zone 7 and 8. Northern districts are in zone 8 except for Mastchoh district in zone 7. Dushanbe, the Districts of Republican Subordination, and GBAO are in zone 9.

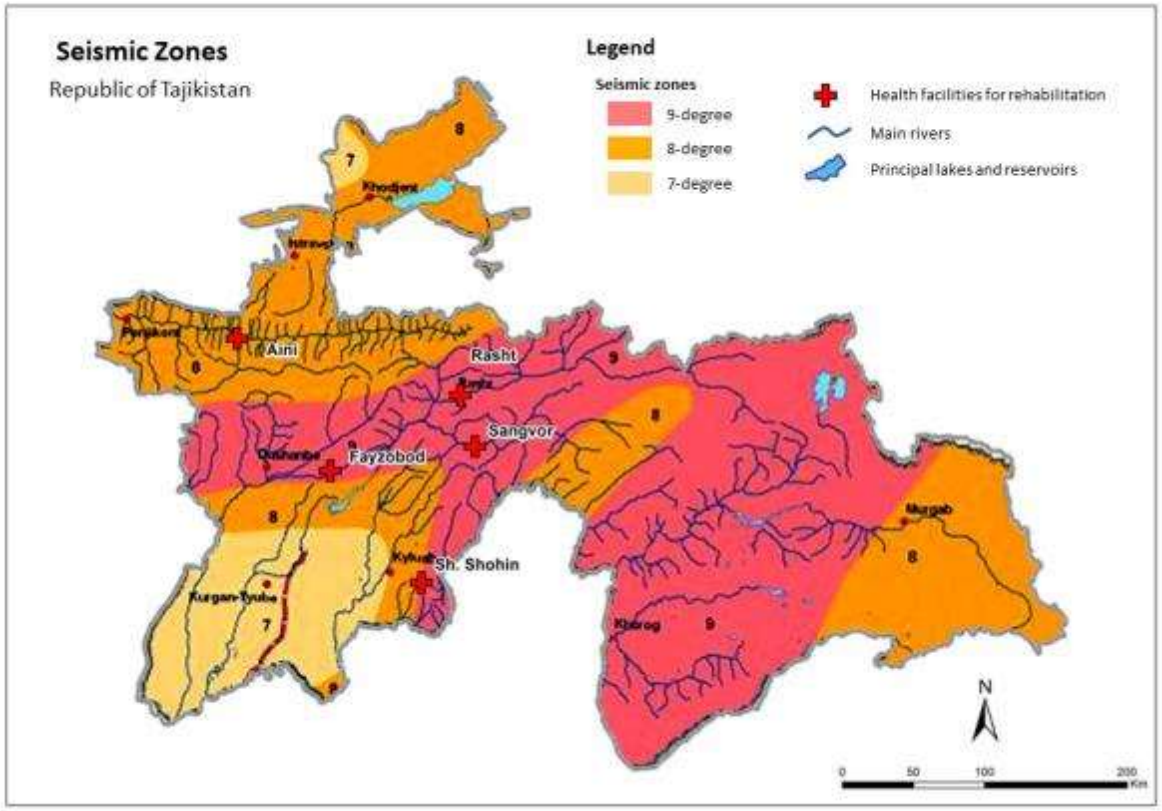

Figure 66: Tajikistan Seismic Zones

6. Air Quality

269. The problem of air quality is one of the basic ecological issues of industrial and urbanized areas in Tajikistan. The main stationary sources of air pollution in Tajikistan are mining, metallurgy, chemical industries, building, mechanical processing, light industries, heat and power generation and agriculture. However, in general no industrial stationary sources of atmospheric air pollution are located within the sub-project cities.

270. In 2005, the share of motor transport emissions was 170,300 tons or 83 % of the total amount of pollutants released into the atmosphere. Motor transport is the main source of substances accumulating in the atmospheric surface layer. Products of fuel combustion are released to the atmosphere and generate smog. Outdated vehicles with increased toxic gas emissions comprise 30 to 40 % of the total number of road transport. The exhaust emissions

37 This normative map of seismic zoning was compiled in 1978 by A.M. Babayev, T.A. Kinyapina, K.M. Mirzoev, R.S. Mikhailova and G.V. Koshlakov under the guidance of S.Kh. Negmatullaev

include about 200 chemical components and dangerous substances: carbon monoxide, nitrogen oxide, hydrocarbons, lead, etc. Typically, a vehicle with an internal combustion engine using 1,000 liters of fuel emits about 200 kilograms of carbon monoxide, 20 kilograms of nitrous oxides, 1 kilogram of ash and solid particles, and 200 to 400 grams of lead components. In urban conditions, emissions from road transport potentially rise because of frequent changes in operation mode and traffic jams.

271. Illegal burning of leafage, street litter and household wastes contributes to the pollution of urban atmospheric air. It is dangerous as leaves absorb harmful elements and heavy metals, such as lead, while household wastes contain rubber, plastic and other organic substances that emit 40 harmful and toxic components when burning. The emissions of harmful substances into the atmospheric air potentially affect many natural and societal objects not depending on the pollution source and distance. As a result of air pollution, cultural values, vulnerable ecosystems, agricultural lands and population might be damaged.

7. Natural Disasters

272. Natural and geological conditions of Tajikistan are various and very often contribute to generation of conditions for strengthening of natural disasters threat. Over the past 10 years, the most frequent dangerous phenomena in the country were mud flows and avalanches.

273. Tajikistan ranks first among countries in the Europe and Central Asia Region in terms of vulnerability to climate change, a situation exacerbated by its lack of adaptive capacity to respond to such frequent shocks. Its unique terrain and geological and hydrological features make it prone to many natural hazards such as floods, earthquakes, landslides, mudflows, avalanches, droughts, and heavy snowfalls. In addition, the occurrence of events dependent on hydro-meteorological conditions is expected to grow due to climate change.

274. Tajikistan's steep mountainous terrain make it highly susceptible to many natural hazards, including earthquakes, floods, landslides, and avalanches. Shocks like these are a recurring obstacle to sustainable development and put at risk more than 15 years of poverty reduction efforts. From 1992 to 2016, natural disasters affected 7 million people in Tajikistan – more than 80 percent of the population – and caused economic losses worth $1.8 billion.

275. Future rainfall patterns are projected to be irregular in terms of intensity, duration, volume, and geographical distribution. Mean annual temperatures are projected to be 2°C warmer by 2050, the number of 'dry' days will increase by 3 days per year, and the number of 'cold' days will decrease by 35 days per year. As a result, increase in annual temperature is already triggering stronger glacier melting, while droughts, floods, and heat/cold waves could occur more frequently. For instance, the current warming rates in the high-altitude areas of Tajikistan are already causing significant changes to glaciers, one of the most vulnerable ecosystems, and many small glaciers will completely disappear in 30–40 years or even earlier if the present rate of glacial degradation continues. Overall, due to the cumulative effects of climate change factors, summers are expected to be wetter, while winters are expected to be drier, which could result in both erratic unseasonal floods and intensified droughts. In Tajikistan, natural disasters have a significant social and economic impact.

276. A recent World Bank study on earthquakes and floods in the Europe and Central Region estimates that average annual losses from floods in Tajikistan can reach 1.4% of GDP and from earthquakes, 5% of GDP. According to various scenarios tested in this same study, a major earthquake of a 50-year return period can damage around 34% of Tajikistan's GDP, while floods of a 50-year return period can cause a loss of around 7.6% of GDP.

277. As the most frequent hazards in the country, floods and mudflows in Tajikistan are a recurrent threat, and are expected to increase due to climate change. Given its complex geography, settlements and economic activities in Tajikistan tend to be naturally concentrated in more fertile but also more disaster-prone areas such as alluvial fans and floodplains along rivers. On an annual basis, floods occur either in spring following heavy rains or during snowmelt in the summer time. Due to climate change, unseasonal floods are expected to be among the extreme weather events faced by the country. Floods affect not only mountainous and hilly rural areas that are sparsely populated but also major urban areas, while flash floods can be extremely destructive in the valleys. Floods occur most frequently in the Zerafshan, Pyanj, and Vakhsh River basin, with an average of over 70 events per year across the entire country. On smaller rivers such as the Yakhsu or Vanj and tributaries, flows during flood periods can exceed the monthly average by the factor of five or more, while for larger rivers such as the Pyanj, this figure is generally two or less. For rivers with glaciers in their uppermost catchment areas, so-called Glacial Lake Outburst Floods can appear. In such events, the average flow is exceeded by even higher factors.

278. Earthquakes are less frequent but represent a threat of the highest adverse impact to Tajikistan. From 2010 to 2015, 145 earthquakes were registered, causing US$4.7 million in damages. With 74 percent of the population living in 8- to 9-magnitude earthquake zones (Richter scale), high seismicity endangers both urban and rural areas, including important facilities for the country such as hydropower plants. Although almost all the territory of the country (96.8 percent) is exposed to some level of seismic threat, high seismicity characterizes the capital city Dushanbe. Less-populated areas, such as the Pamir Mountains, instead, combine the exposure to high-seismic risks together with extreme poverty and lack of resources for risk reduction and infrastructure maintenance, which exacerbate the impact seismic events have in these areas. In 2015, a 7.2 magnitude earthquake struck GBAO, causing widespread damages to infrastructure, blocking transportation routes, displacing 652 people, and leaving 4,000 more in need of assistance. Due to the remote location of the affected area and lack of alternative routes, emergency response activities to this event were significantly constrained as a result. 8. Landslides are another hazard that pose serious threat to Tajikistan. Landslides are usually triggered by heavy rains and floods and, periodically, by earthquakes. More than 50,000 landslides sites have been registered, of which 1,200 put human settlements, roads, irrigation, and other facilities at high risk. About 36 percent of the country's surface is exposed to landslides, potentially putting 728,000 people (11 percent of total population) living here at risk.

279. Mud flows are the result of intensive rainfalls, snow melting and outburst of glacier lakes. They are observed in piedmont and mountainous regions of Tajikistan and the most part of the territory is considered as mudflow dangerous. Turkestan and Kuramin (the North Tajikistan) ridges hills have the most mudflow activity, the Southern hills of Hissar ridges, basins of Yakhsu, Vakhsh, Obikhingou, Panj and Zarafsshon (the south-west and central Tajikistan). Sudden warming in the mountains of Pamir may result in quick snow melting and strong mudflows due to outburst of glacier lakes.

B. Ecological Resources

280. Natural ecosystems are the single reliable source of environmental stability in the world. At the same time, the impact of anthropogenic activity on ecosystems is becoming the main reason for climate change, loss of biodiversity, and desertification/land degradation. Control of environmental risks requires a strong environmental policy, improved coordination of government structures, civil and business society representatives.

Table 16: Main Components of Biodiversity in Tajikistan38

Component	Importance
Ecosystems	12 types
Types of vegetation	20 types
Flora	9 771 species
Wild relatives of cultivated plants	1 000 species
Endemic plants	1 132 species
Plants listed in the Red Data Book of Tajikistan	226 species
Agricultural crops	500 varieties
Fauna	13531 species
Endemic animals	800 species
Animals listed in the Red Data Book of Tajikistan	162 species
Domestic animals	30breeds

281. Forests only take up 3% (412,000 ha) of the land of the country, however they still play an important role in the conservation of biodiversity and genetic resources as well as in atmospheric carbon absorption.

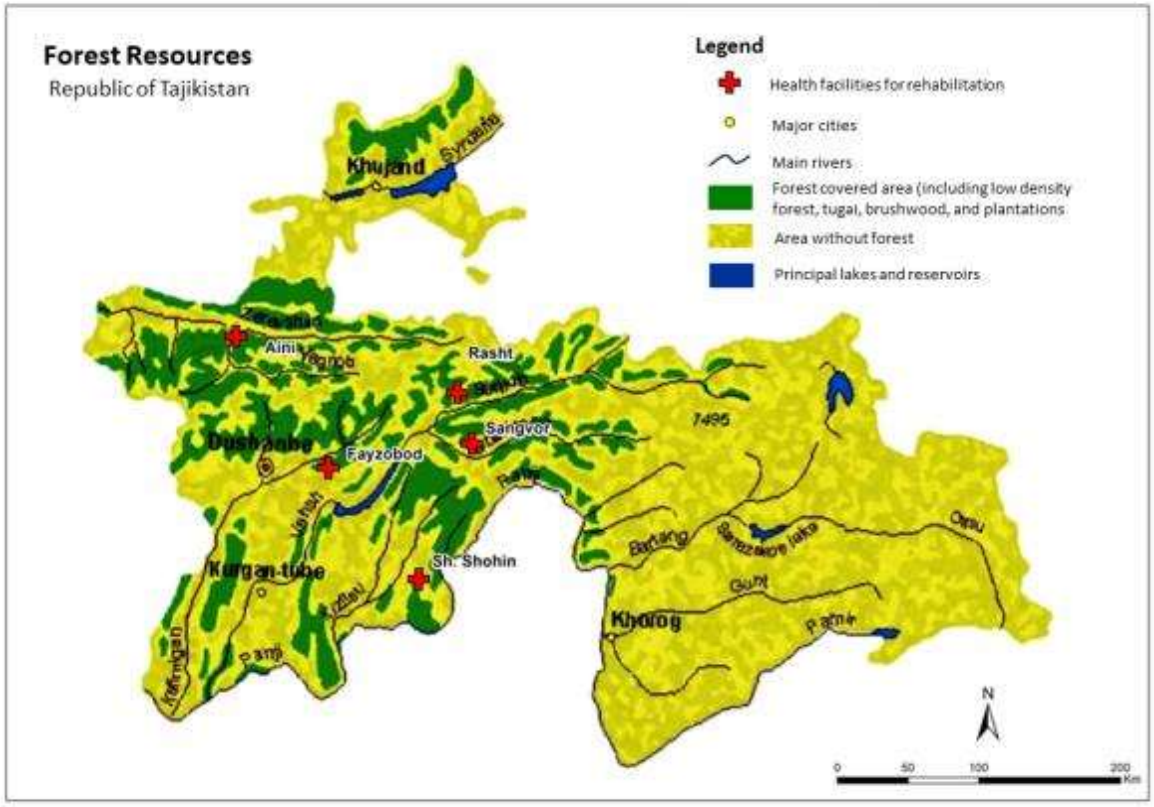

Figure 67: Reserved Forest in Tajikistan

282. The environment of the project sections is consisting mostly of crowded rural/city areas and settlements. There are no specially protected natural areas (PAs) in the immediate vicinity of the project area.

1. Flora

283. No important, rare, endangered, or protected species of flora are found within or in the vicinity of the project area during this study. Please see Figure 67 and Figure 68.

38 First National Report on Biodiversity Conservation and National Biodiversity Strategy and Action Plan, 2003

2. Fauna

284. Fauna of Tajikistan is characterized by the great genetic diversity. Mountain fauna is richer than that of the plain and contains a substantial number of European-Siberian and East-Asian elements. The fauna of the hot, lowland deserts contains plenty of Indo-Himalaya, Ethiopian, and Mediterranean species. In terms of zoogeographic zoning the entire Project falls under the Tajik zoogeographical site. This site is characterized by an abundance of representatives of all classes of vertebrates. This area is home to two species of amphibians, 40 species of reptiles, 186 species of birds and 45 species of mammals.

285. There are no critical habitats for these species within or in the vicinity of the projects. No important, rare, endangered, or protected species or habitats are found within the Project area during this study.

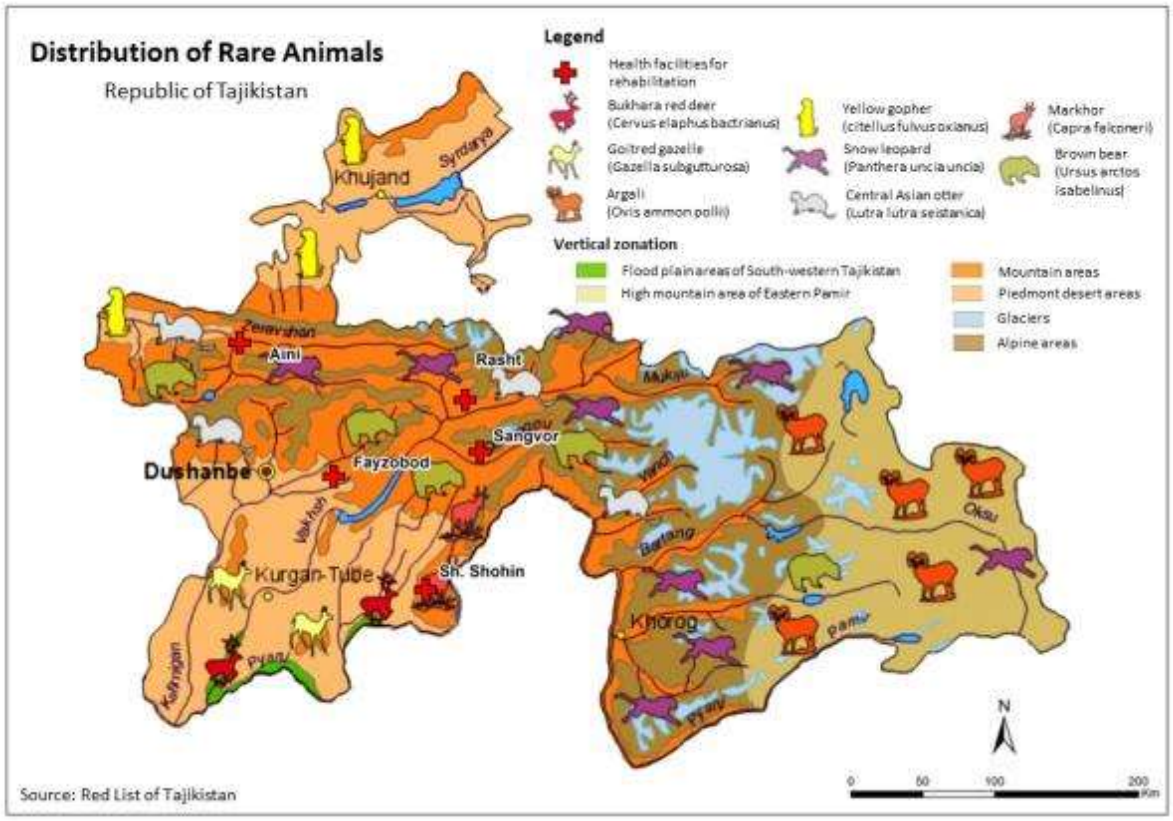

Figure 68: Distribution of Rare Animals (Red List of Tajikistan)

C. Socioeconomic Environment

1. Demographics

286. Tajikistan has a population of 9 million people with majority living in rural areas.

287. In conformity with the data of National Statistics Committee under the President of the Republic of Tajikistan, the poverty level in 2017 was 29.7%, this is 0.6% less than in 2016. Ten years ago, Tajikistan poverty level was 53.5%. Consequently, during the last ten years the poverty level declined by 23,8%. Poverty is multidimensional as it touches the three sectors of education, health, and living standards, implying that there is severe deprivation in these three dimensions.

2. Economic Characteristics of Project Districts and Cities

288. Agriculture is the main economic activity in the region. The main crops and agricultural products are cereals, oilseed, potatoes, carrots, onions, cucumbers, cabbage, grapes, milk, wool, honey and eggs. Orchards are also an important part of the economy. These include apples, peaches, apricots, almonds, pears, pomegranates, mulberries and walnuts.

289. The irrigation infrastructure, inherited at the end of the Soviet era, has suffered from a lack of investment in technical maintenance. This has led to a progressive loss of cultivable lands and damage to embankments, intakes and canals. Therefore, rural household incomes in the project area are generally below the Tajikistan average.

290. Table 17 below shows the area of the cities and districts, number of population and the main economy indicators in the selected regions and cities: the sown area of crops production in the main categories.

Table 17: Economic Data of Project Districts and Cities[39]

Name of city or district	Area, '000 km²	Population, '000 persons	Economic facilities
Aini	5,2	81,477	Sown area, all crops, all categories of farms – 515819 ha Crop production (ha): grain 1630, vegetables 123,4, potatoes 555,5,
Fayzobod	874	106,046	Sown area, all crops, all categories of farms – 87411 ha Crop production (ha): grain 2217, vegetables 240, potatoes 240,
Rasht	5,347	130,000	Sown area, all crops, all categories of farms – 461260 ha Crop production (ha): orchards 1291, vineyards 3, mulberries 189, potatoes ,
Sangvor	5,984	22,852	Sown area, all crops, all categories of farms – 597384 ha Crop production (ha): grain 1489, vegetables 188, potatoes 802,
Sh. Shohin	2,300	53,400	Sown area, all crops, all categories of farms – 87411 ha Crop production (ha): orchards 2805, vineyards 143, mulberries 41

3. Health

291. Indicators such as infant and maternal mortality rates are among the highest of the former Soviet republics. In the post-Soviet era, life expectancy has decreased as a result of poor nutrition, polluted water supplies, and increased incidence of cholera, malaria, tuberculosis, and typhoid. The leading causes of death are cardiovascular diseases, respiratory disorders, and infectious and parasitic diseases. The health care system has deteriorated badly and receives insufficient funding and sanitation and water supply systems are in declining condition. This has resulted in a high risk of epidemic diseases.

4. Education

292. School attendance is compulsory between the ages of 7 and 17. Tajikistan's education system suffers from a depleted infrastructure and an acute shortage of teachers at all levels. This will become more acute because of the relatively high birth- rate. The official literacy rate is 98 %% but the poor quality of education since 1991 has reduced skills of younger generations.

[39] Source: Districts profile

Table 18: Education Facilities in Project Districts and Towns[40]

Districts	Health Facilities	Education Facilities
Aini	Doctors (persons)-93 Nursing staff (persons) – 823 Health facilities (units) - 57	Schools (units)- 52 Teachers (persons)-1756
Fayzobod	Doctors (persons) -101 Nursing staff (persons)- 324 Health facilities (units) - 11	Schools (units)-60 Teachers (persons)-1296
Rasht	Doctors (persons) -208 Nursing staff (persons)- 434 Health facilities (units) - 37	Schools (units)-105 Teachers (persons)-1500
Sangvor	Doctors (persons) -28 Nursing staff (persons)- 96 Health facilities (units) - 30	Schools (units)-59 Teachers (persons)-537
Sh. Shohin	Doctors (persons) -101 Nursing staff (persons)- 324 Health facilities (units) - 30	Schools (units)-56 Teachers (persons)-1154

5. Gender

293. Gender roles/relations in Tajikistan remain influenced by conditions dating back to Persian and Bukharan rule. During the presence of Soviet state in Tajikistan, some attempts were made to launch a campaign for women's equality. Despite initial opposition by traditional Islamic values-oriented local communities, the campaign had a degree of successful. This was partly achieved by raising women employment during the World War II as female population compensated for the shortage of labor force. Another important factor of on-going women empowerment was encouraging a more active role of female population in social life of the republic.

294. However, with the collapse of the Soviet Union the problem was unveiled again as the popularity of Islamic political forces had grown during the period of Civil War (1992 -1997). This entailed a prominent raise in reconsideration of family values, which implied, for the most part, return to traditional Islamic norms and practices in family matters. Due to the traditional customs and societal structures, the role of women is rather weak in Tajikistan. The main gender-related constraints being observed in the country are as follows:

- Land
- Credit obtaining
- Education
- Health care
- Business opportunities
- Unawareness of economic and legal rights
- Need for elimination of domestic violence
- Discrimination towards women living with HIV.

295. On the one hand, remarkable changes being observed in the field of gender relations in Tajikistan recently. The topic of gender equality is now recognized by the government as one of the most vital issues and is introduced on the policy-level, namely in the national development and poverty reduction strategies. For the purpose of creation favorable conditions for implementation of women skills in different spheres of social life, в in 2011 was adopted National Strategy for enhancing the role of women in the Republic of Tajikistan for 2011-2020, were allocated more than 80 Presidential Grants from budget of the republic in the amount of 2 million somoni (250 thousand USD) for the development of women entrepreneurship41, The actions and activities concerning gender issues were coordinated by State Committee on

[40] Source: District Profiles

41 United Nation Economic Commission for Europe "Country profiles on the housing sector: Tajikistan", 2011

Women's and Family Affairs. The Committee is not only actively developing and implementing sector strategies and programs but contributes to extension of women's economic rights. The responsibility of the Committee is also coordinating of governmental and non-governmental organizations on gender and professional training.

296. Moreover, the challenges of gender equality were addressed by some of the international organizations which are active in Tajikistan. One of the most eminent projects was held by the United Nations Development Fund for Women (UNIFEM) and facilitated the broadening of economic opportunities for women living in rural conditions in the context of the State land reform.

297. There are, however, various challenges faced by female population in rural areas. In general women meet difficulties of land access. They also have limited access to legal assistance and economic information. Women in rural areas tend to have lower educational level than those living in urban areas. In general, the number of dehkan farms led by women rose from 2,695 to 5,450 between 2004 and 2010. On the other hand, their proportion had fallen from 13.9% to 10.6% over the same period.

298. Women are generally under-represented in decision-making processes at all levels of political institutions. In 2012, female representation in all branches of power was less than 30 %. The 2004 fatwa (religious edict) of the Council of Ulema prohibiting women from praying in mosques was still in effect as of 2012. According to World Bank data, women and men have equal property ownership rights; however, in practice women own significantly less property than men. Besides, extensive number of male migrant workers from Tajikistan to Russia exacerbated economic pressures on women, who were left to earn for living alone until their husbands manage to make remittance payments.

299. Tajikistan is gradually and progressively developing a gender policy and emphasizes the economic empowerment of women. Over the past 25 years since gaining independence, Tajikistan has been paying increasing attention to issues related to ensuring the protection of women's rights and the establishment of gender equality in the country. The Government is developing and adopting measures aimed at improving the status of women and strengthening their social and economic role in society.

300. In the Global Ranking of the Gender Gap, published by the World Economic Forum in October 2015, Tajikistan is on the 93rd place, located between Greece and Slovakia. In this rating, Tajikistan is only on one of the four main indicators in the first third of the list: 47th in ensuring the equality of women and men in economic life, while China takes 81st place. In terms of access to education for women, Tajikistan took 118th place; on the possibilities in the sphere of health care 126, and on the possession of political power 102 place.

6. Cultural and Historical Sites

301. No historically or culturally significant sites have been identified along the road sections42 near the District Hospital / Health Center exits. The Consultant visited Institute of History, Archeology and Ethnography under the Academy of Sciences of Tajikistan (Institute) to verify these issues.

42 Trucks containing construction material, heavy machinery etc. must pass through road sections of populated areas to reach the site.

D. Land Use

1. Land Use Pattern

302. Tajikistan is one of the land poor Central Asian countries. Total area of arable lands for agricultural crops makes 8% of the territory of Tajikistan. Low natural productivity of the lands preconditions significant costs for agro-technical and irrigation works. However, agriculture is the main source of the livelihood for rural population. Total area of arable lands is 720.0 thousand ha, where 502.8 thousand ha are irrigated and in average 0.10 – 0.09 ha arable and 0,06 - 0,07 ha of irrigated lands fall per capita.

303. In conditions of demographic growth while population of the country is increasing (around 2% per year), and unfortunately, arable lands are decreasing, the issue of equal and fair distribution and access to land resources, securing equal land titles of either men and women is getting tough. There is considerable variability of land resources load by 4 administrative regions of Tajikistan. It varies from 6 persons per ha in the regions of large arable lands areas (Khatlon and Sogd region), up to 10 persons per ha in the Regions of Republican Subordination (RRS) and 16 persons per ha in Gorno-Badakhshan Autonomous Oblast (GBAO) where arable lands are limited. The most serious environmental concerns aggravating land productivity are land degradation and desertification. Population poverty and especially of rural population which is 39.2% (as per 2013 results) has a great impact on land degradation.

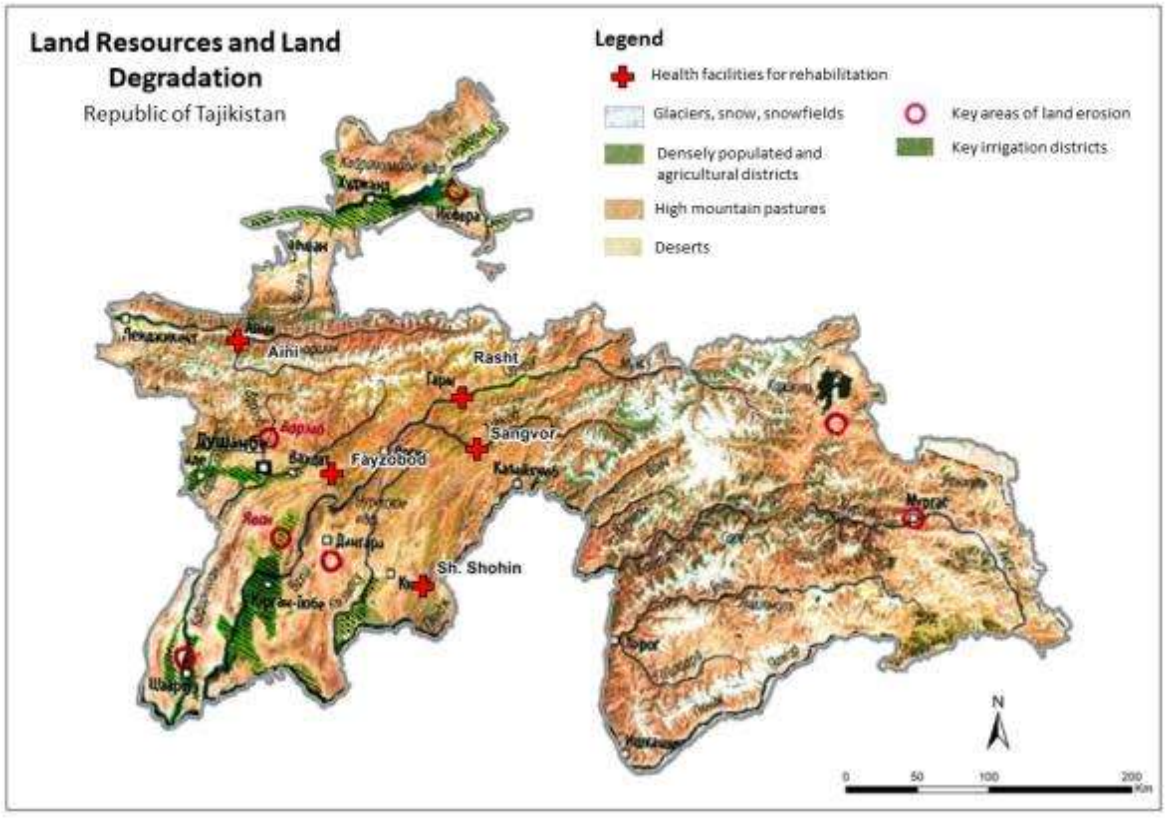

Figure 69: Land Use Pattern in Tajikistan

304. The land degradation is preconditioned by man-made factors:

- non-conforming land use: permanent extensive land cultivation without observing agricultural requirements that results in soil structure damage, fertility fall and increase of soil erosion, particularly on slop soils;
- due to non-observance of agricultural technologies small-scale farming leads to soil fertility damage.

305. The problem of scope and extent of land degradation assessment still exists in Tajikistan. Approximate estimates show that 90% of rain-fed lands have the signs of condition worsening and 40% of them are intensively degraded.

306. In the framework of agricultural and land reforms, the Government of Tajikistan tries to improve access to land resources and especially agricultural lands. In accordance with a Presidential Decree, 75,000 ha of land were allocated in 1995 and 1997 to private farmers. Another step in population land access improvement was the Presidential Decree On Reorganization of Agricultural Enterprises and Organizations, dated on February 2, 2001, No.478, as a result 120 farms were reorganized and 1355 dehkan farms were established. The Resolution of the Government of the Republic of Tajikistan, No 385, dated October 1, 2002 On Reorganization of Agricultural Enterprises and Organizations for the period of 2002-2005, ensured reorganization of 40 households in 2002, 100 households in 2003, 45 households in 2004 and 40 households in 2005. These measures contributed to organization of dehkan farms and improvement of population land access. Access of population and particularly rural population to land resources secures not only food self-sufficiency but family welfare improvement which is the determining factor for rural households. Despite of significant institutional improvements, the certain layer of population, especially women are still vulnerable in terms of land access and they are not fully involved in land management[43].

307. As per the article 3 of Land Code of the Republic of Tajikistan, all lands in the Republic of Tajikistan constitute a single state land fund.

2. Desertification

308. Since the 1930s there has been intensive reclamation of foothill and floodplain valleys to increase the area of arable land in Tajikistan but up to 100 thousand ha of floodplain, pistachio, and partially broad-leaved forests were destroyed in the process. During the economic and energy crises in 1990s juniper forests, which are difficult to reforest, were cut down. Deforestation and animal grazing in forest areas have had a negative impact on the quality and diversity of forests and the natural regeneration of forests have practically stopped.

309. Pasture makes up 80% of agricultural land and is mainly found in the Khatlon region and the DRS. Pasture stocking today is lower than during the Soviet period 25 years ago and the condition of pastures is not adequate. In the east of the Pamir the condition of the teresken (Eurotea) pastures has become critical. Here, due to a lack of energy sources, people have started a massive uprooting of teresken that is a valuable animal fodder, and this has resulted in the desertification of highland pastures. In other districts cattle often graze near human settlements, thus local pastures have become overgrazed and degraded. More than half of the natural pastures in the country are in the highlands at altitudes varying from 1,700-2,000 to 3,500 masl.

310. The causes of land degradation are multiple, complex, and vary across Tajikistan's regions, but to a greater extent deterioration and exhaustion of land resources is the result of admittedly incorrect and destructive agricultural practices, overgrazing, deforestation and cutting down of bushes, forest degradation. Main active factors are wind and water erosion.

311. While natural factors contribute to soil erosion, unsustainable human behavior accelerates the process to an intolerable degree: it is estimated that 97% of agricultural land in Tajikistan has some level of erosion. Land degradation caused from erosion due to overgrazing is estimated to affect approximately 3 million hectares, or 85% of pastures (Asian Development

43 National report on Human Development, 2014, Tajikistan, Access to Human Development Resources:

Bank, 2004). In addition, excessive use of pesticides and fertilizers has resulted in the contamination of soil and waterways.

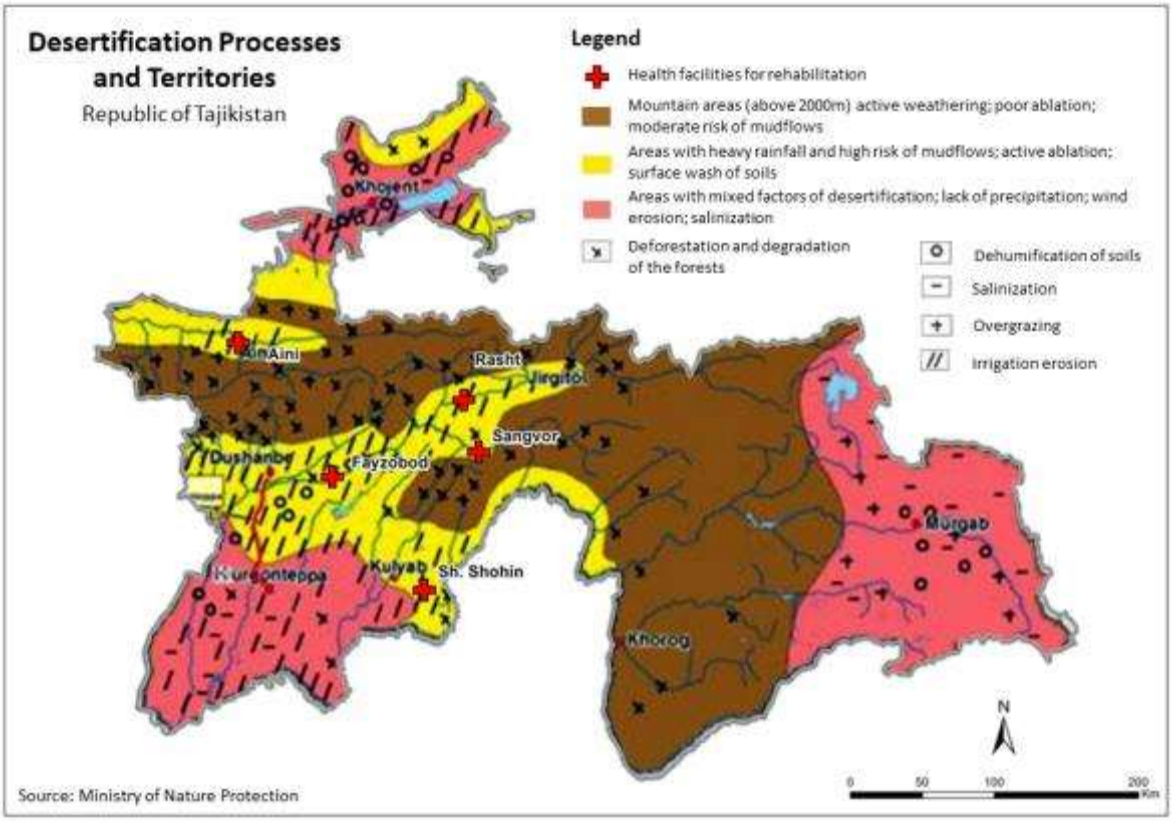

Figure 70: Desertification in Tajikistan

312. The erosive processes are especially active in the foothill regions where poorly cemented sandstones, loess like loams, and similar rock predominate lending themselves to washing out and wind erosion. The two main factors underlying the process of soils degradation in Tajikistan are water erosion and gully erosion. However, anthropogenic factors accentuate the erosive processes through intensive development of agriculture on slopes and unsustainable cultivation practices.

3. Climate Change Risks in Tajikistan

313. In order to address the issue of global climate change and its effects on people and the economy, Tajikistan affirmed the United Nations Framework Convention on Climate Change (UNFCCC) in 1997 and the Kyoto Protocol in 2008. The Government of Tajikistan has taken considerable steps toward the implementation of the UNFCCC, by accomplishing the required commitments such as the Initial National Communication, Technology Needs Assessment and the National Action Plan on Climate Change to address climate change and other legal commitments.

314. The value for total greenhouse gas emissions (kg of CO2 equivalent) in Tajikistan was 15,365 as of 2012. As the graph below shows, over the past 42 years this indicator reached a maximum value of 22,661 in 1991 and a minimum value of 7,694 in 1970[44].

44 Source: European Commission, Joint Research Centre (JRC)/Netherlands Environmental Assessment Agency (PBL). Emission Database for Global Atmospheric Research (EDGAR), EDGARv4.2 FT2012: http://edgar.jrc.ec.europa.eu/E

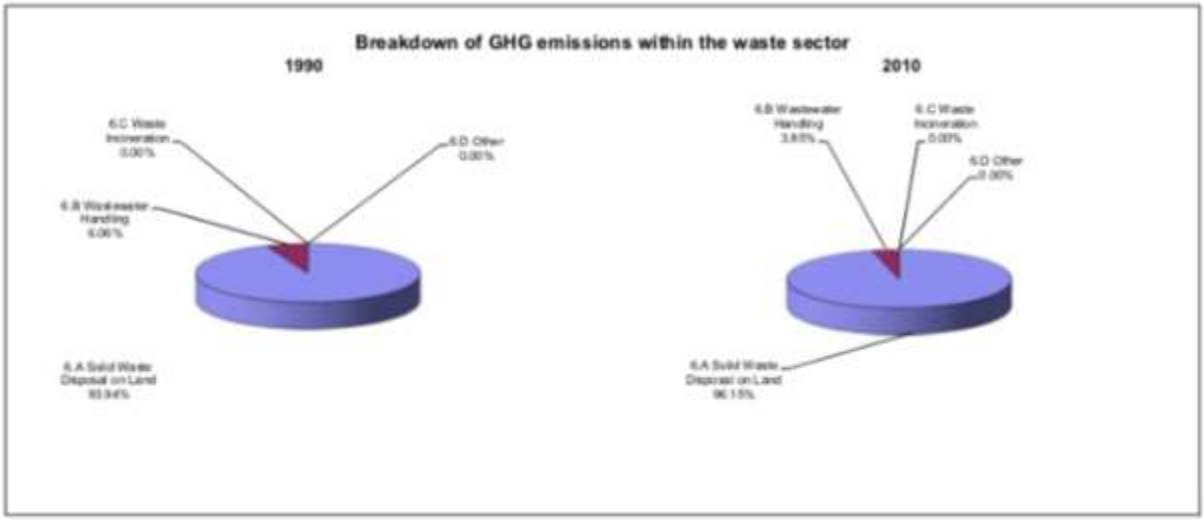

Figure 71: Breakdown of GHG Emissions of Waste Sector[45]

315. Climate change has been identified as an increasing threat to the environment. The greatest concern has been an increase in air temperature, which has serious implications for its glaciers and water resources. Ground air temperatures are increasing in most districts and high-altitude zones. The biggest increase of annual mean temperature has been at Dangara (1.2°C) and Dushanbe (1.0°C) over a 65-year period. In mountainous areas, 1.0-1.2°C was observed in Khovaling, Fayzobod and Iskashim. However, Figure 72 below indicates moderate changes except for sections adjoining to Dushanbe. There has also been an increase of the number of days maximum temperatures have reached 40°C or over. There has been an increase in east and south-east (warm) winds, and a decrease in west and south-west (cold) winds. Thunderstorms and hailstorms, associated with cold fronts, have decreased.

316. According to projections, climate change and its consequences like extreme temperatures, isolated anomalous rainfall and natural disasters will continue to have serious impacts on road infrastructure. However new road infrastructure such as tunnels, improved alignments and pavements will considerably reduce travel time and consequently fuel consumption, which in turn will lead to reduced emissions and increased road safety as well as improved transport communication between the regions and remote districts of the country.

317. Droughts will likely be more intense and frequent in the future. One of the worst was in 2001 where, in the lowland arid region of the Amu Darya River Basin, access to water was halved. According to the IPCC (2007) - the projected decrease in mean precipitation in Central Asia will be accompanied by an increase in the frequency of very dry spring, summer and autumn seasons. Changes in seasonality and amount of water flows from river systems are likely to occur due to climate change. Changes in runoff of river basins could have a significant effect on the output of hydropower generating countries like Tajikistan, which is the third highest producer in the world[46]. Currently about 98% of the electricity in Tajikistan is generated from hydropower[47]. This source of energy produces a minimum level of carbon dioxide and has a great potential for development and growth. Therefore, energy consumption could

45 Source: UN Climate Change Secretariat: Emissions Summary for Tajikistan (https://unfccc.int/files/ghg_data/ghg_data_unfccc/ghg.../tjk_ghg_profile.pdf)

46 Impacts, Vulnerabilities and Adaptation, Fourth Assessment Report, IPCC, 2007

47 On the average. For example, in 2013 99.5% of energy was generated from hydropower

increase and still result in a smaller demand for other sources of energy. Also, neighboring countries could use electricity from Tajikistan to reduce their carbon footprint.

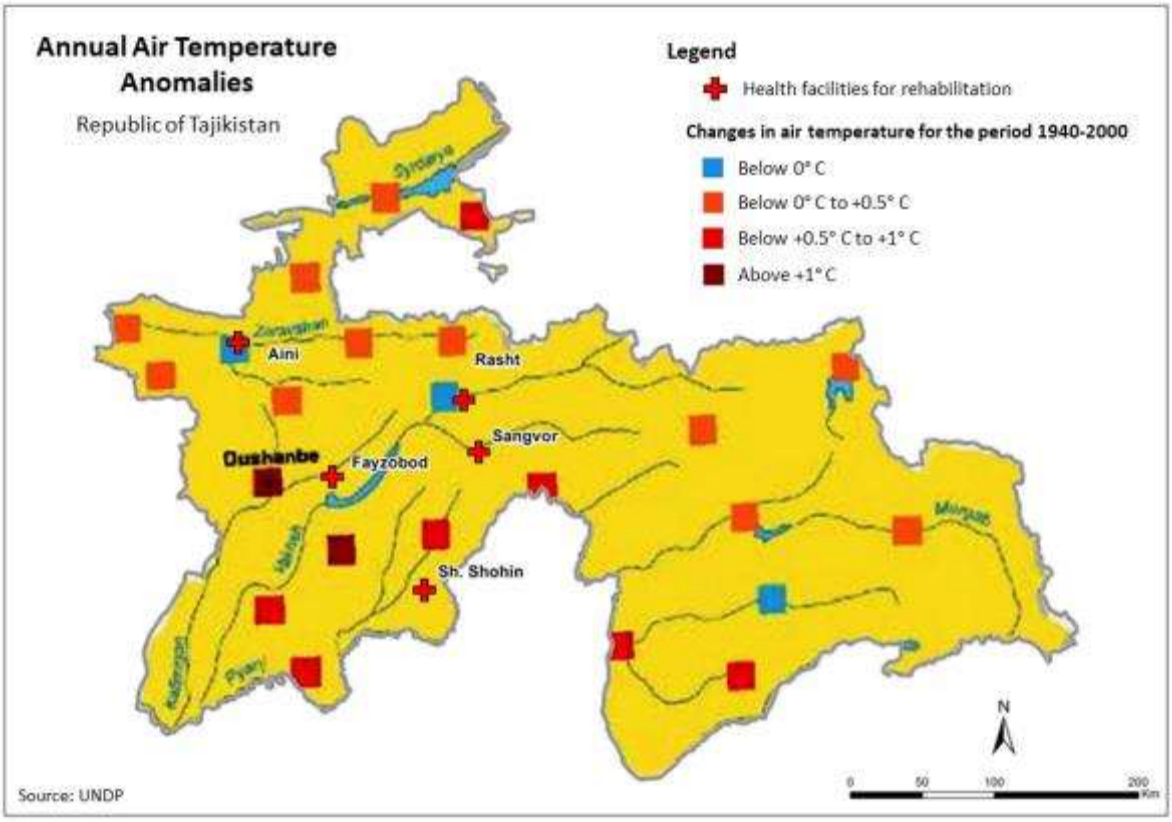

Figure 72: Annual Air Temperature Anomalies in Tajikistan[48]

318. Since 2010, coal mining has increased as a measure to address the seasonal energy deficits and as a substitute for gas imports. This economic coping strategy might result in an increase in carbon dioxide emissions in the near future. From an environmental point of view this option is not ideal, however the country's acute energy deficit, coupled with population growth, slow the pace of development and consequently the capacity to eliminate poverty.

319. In order to implement the UNFCCC commitments and strengthen climate protection and adaptation measures, to date Tajikistan has produced three National Communications on climate change. Tajikistan is one of the pioneers in the preparation of a National Action Plan for climate change mitigation (2003) within its territory. This plan includes adaptation measures many of which are being implemented and recommendations on updating the National Action Plan are currently being developed.

320. Currently Tajikistan's contribution to Carbon Dioxide emissions in Central Asia is negligible[49]. See Figure 73 below. Despite the fact that the country does not have quantitative UNFCCC commitments on the reduction of emissions, the current level of emissions as compared to 1990 have reduced by one third, mainly due to the collapse of the Soviet Union and structural changes resulting from the transition to a market economy and independence. During the last decade, the level of carbon dioxide has remained quite stable, however in the current decade an increase of emissions is expected.

48 Source: Reaching the Tipping Point: Climate Change in Tajikistan. Oxfam, 2009

49 According to the last inventory of GHG emissions (2004-2010), confirmed by international sources, the level of absolute and per capita emissions in Tajikistan remains the lowest in Central Asia. GHG emission was less than 28,000 metric tons in 2011, i.e. twice less than Kyrgyzstan and almost 100 times less than Kazakhstan.

321. Since the late 1990s to the present, agriculture has been the main source of GHG emissions. Considering the low level of mechanization, underfeeding of livestock, and limited use of fertilizers, emissions from the agriculture sector of Tajikistan are lower than in the other countries of Asia and Europe. Opportunities for any considerable reduction of carbon footprint in agriculture are therefore limited, while the measures in other economic subsectors are more promising, especially in energy and industry.

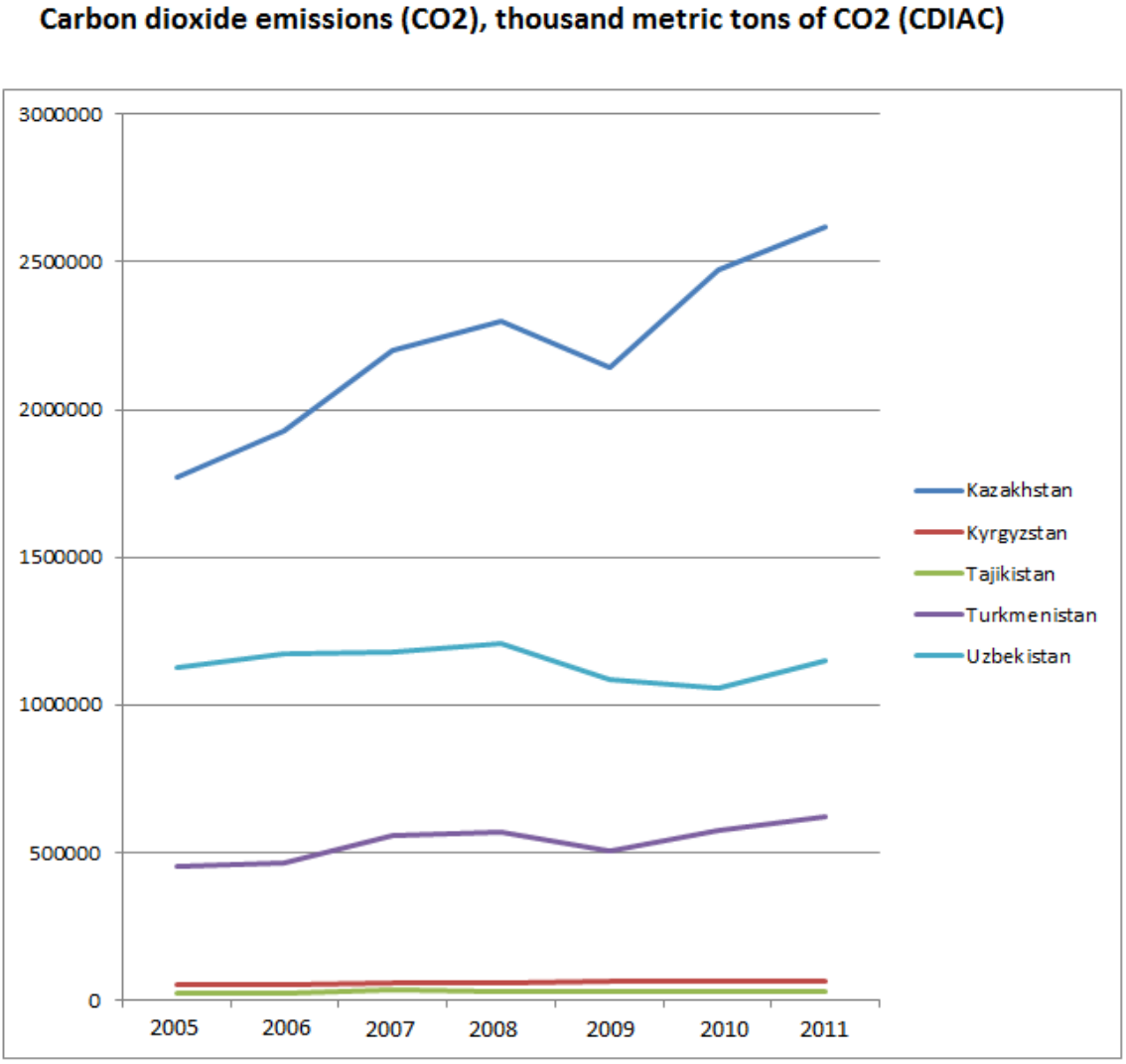

Figure 73: CO_2 Emission in Central Asia[50]

322. In CO_2 equivalent, the contribution of greenhouse gases from the energy sector for different years was between 14 and 67% of total emissions for the corresponding year. In 2010 GHG emissions in the energy sector was 1.2 mln tons or <10% of all emissions in 1990. During the same year, the International Energy Agency estimated that energy emissions in Tajikistan reached 2.8 mln tons per year[51]. The difference occurs because of the lack of balance between supply and demand, and also due to different calculation and registration methods.

50 Source: Carbon Dioxide Information Analysis Center as cited at http://mdgs.un.org/

51 http://www.iea.org/statistics/statisticssearch/report/?country=TAJIKISTAN&product=indicators&year=2010

E. Receptor Details in sub-project areas

1. Plot Size on Land available

323. The hospitals and clinics are located in densely populated areas and surrounded by private houses and state-owned enterprises. Fencing and boundary walls border the territories of all proposed hospitals and clinic, exception in Rasht clinic. The proposed rehabilitation and construction works will be within the boundaries of the medical institutions and no land plots will be acquired.

324. Land area of territory of the hospitals ranges from 0.69 to 4.61 ha. Land area of territory of the clinics ranges from 0.28 to 0.50 ha. There are relevant legal documents in place, like technical passports and land titles. Land ownership belongs to the hospitals and clinics; exception was Shamsiddin Shohin hospital, which used to be the private property before transferring the building to the MOHSPP.

325. No cases of encroachment were observed. There are a few private pharmacies renting rooms in each hospital, as well as a private non-functioning structure/pharmacy located within the territory of Rasht hospital and in adjacent territories of the hospitals. The social team verified that all the private pharmacies have land titles. Depending on the project's decision for rehabilitation and construction works within this hospital and as per preliminary observation and discussions with the hospital and clinic administrations, the project will have no impacts on any properties and income generating activities of other third parties. Construction works are not prohibited in urban/rural areas but reconstruction project needs to undergo state environment expertise of Committee on Environment Protection under the Government of the Republic of Tajikistan.

2. Distance from Reserve Forest/Protected Areas/National Park/Sanctuary

326. The distance from the Hospital / Health Center to the national parks/protected areas/reserve forests are given in the Table 19. Table 20**Error! Reference source not found.** depicts the special protected areas.

Table 19: Distance from Protected Areas for all Sub-projects

No	Sub-Projects	Location	Distance from Protected Areas (km)
1	District Health Center and Central District Hospital	Fayzobod district	20km
2	District Health Center and Central District Hospital	Rasht district	20km
3	District Health Center and Central District Hospital	Sh. Shohin district	25km
4	District Health Center and Central District Hospital	Aini district	20km
5	District Health Center and Central District Hospital	Sangvor district	60km

Note: Protected Areas are National Parks, Sanctuaries and Forest Reserves; Subprojects in district1-3 are currently proposed for funding and 4-5 are on backstop if more funds become available in future.

Table 20: Special Protected Areas in the Vicinity each City

No.	**Special protected areas**	**Area size, hectares**	**City**	**Distance from the sub-project locations**
1	National park Romit	16,200	Vahdat district	20km
2	Reserved area Kamarov		Rasht district	20km
3	Reserved area Doshti Jum	19,700	Sh. Shohin district	25km
4	National Park Zaamin (Uzbekistan Republic)	24,110	Aini district	20km

No.	Special protected areas	Area size, hec-tares	City	Distance from the sub-project locations
5	National park Sari Hisor	3,805	Sangvor district	60km

Subprojects in districts 1-3 are currently proposed for funding and 4-5 are on backstop if more funds become available in future.

3. Distance from Various Receptors in the area

327. Table 21 provides locational details about Hospitals / Health Centers with respect to receptors in the area.

Table 21: Locations of Hospitals / Health Centers and Receptors[52]

No	Hospital / Health Center	Distance from main road /all sides	Setback and type of buildings/distance in meters				Distance of waste collection point from houses	Distance from incinerator to houses on boundary	Distance of hazardous waste collection point from houses
			Front	Back	Left side	Right side			
1	CDH Fayzobod	West main road 50m north 20m, east 5, south 15m	North/ 50m Infectious disease department	20m dwelling houses	10m maternity hospital	10m hospital building	50m	60m	25m
2	DHC Fayzobod	East main road. 10m, north 5m, west 5m, south 5m	South 50m dwelling houses	20m. dwelling houses	20m pharmacy	20m Housing and utilities administration	5m	5m	-
3	CDH Rasht	North main road 100m south 10m, west 10m, east 10m	North / 20m hospital building	15m resuscitation department	20 m. hospital building	5m. playland	15m	10m	40m
4	DHC Rasht	North main road 50m, south 3m, west 10m, east 10m	North/	15m pharmacy	5m pharmacy	10m pharmacy	15m	10m	-
5	CDH Shohin	West main road 10m, south 30m, 40m.	West/ 30m	80m dwelling house	30 m dwelling house	30m Hukumat building	20m	20m	10m
6	DHC Shohin	South main road 30m east 50m, north 50m, west 10m	North, Therapy Department of CDH	40m guard building		100m dwelling house	40m	7m	-
7	CDH Aini	North, main road 100m / west 50m, east 50m, south 20m	East / 100m, infectious disease department	50m Housing department	70m pharmacy	50m psychiatric ward	20m	25m	10m
8	DHC Aini	North, main road 30m, west 150m, east 10m, south 70m	80m infectious disease department	120m the Housing and utilities administration	20m pharmacy	120m psychiatric ward	20m	25m	10m
9	CDH Sangvor	East гл. 30m/ north 50m, south 30m, west 10.	East/ 15 DHC	20 dwelling houses	10m administration building	10m hospital building	20m	20m	20m

[52] NAV: Not available as detailed survey not completed by MOHSPPSPP; Trees Affected– Lopped or cut as detailed survey will be done by construction company; N/A – Not applicable

No	Hospital / Health Center	Distance from main road /all sides	Setback and type of buildings/distance in meters				Distance of waste collection point from houses	Distance from incinerator to houses on boundary	Distance of hazardous waste collection point from houses
			Front	Back	Left side	Right side			
10	DHC Sangvor	East main road 5m north 70m, south 30m, west 60m	West/15 DHC	20m dwelling house	10m hospital building	30m garage	20m	20m	20m

Subprojects 1-6 are currently proposed for funding and 7-10 are on backstop if more funds become available in future.

Table 22: Other Physical Distances

No.	Hospital / Health Center	District	Aerial distance from National parks	Aerial distance from Industrial zones	Aerial distance from gas station	Aerial distance from solid waste site/central dumpsite	Aerial distance from railway/major road	Aerial distance from power station/power line/substation	Aerial distance from any river/water body	Aerial distance from any wastewater treatment facility
1	CDH	Fayzobod	20km	12 km (Poultry Farm)	2km	3km	250m to the main road	100m	2km	2km
2	DHC	Fayzobod	20km	12 km (Poultry Farm)	2 km	3km	200m to the main road	200m	2km	2km
3	CDH	Rasht	20km Reserved area Kamarov	5km (Open pit)	500m	4km	100m to the main road	50m	100m	150m
4	DHC	Rasht	20km Reserved area Kamarov	5km (Open pit)	500m	4km	50m to the main road	30m	150m	200m
5	CDH	Shohin	25km Reserved area Dashti Jum	2 km Asphalt Plant	1km	4km	800m	20	1km	-
6	DHC	Shohin	25km Reserved area Dashti Jum	2km asphalt plant	1km	4km	800m	60m	1km	-
7	CDH	Aini	20km National park Zaamin	600m asphalt plant	700m	5km	70m	40m	200m	300m
8	DHC	Aini	20km National park Zaamin	650m	700m	5km	20m	70m	250m	350m
9	CDH	Sangvor	60km National Park Sari Hissor	1km mini-dairy manufactory; 50 km Gold mining company	3 km	2km	20m	10m	500m	-
10	DHC	Sangvor	60km National Park Sari Hissor	1km mini-dairy manufactory; 50	3 km	2 km	5m	10m	500m	-

No.	Hospital / Health Center	District	Aerial distance from National parks	Aerial distance from Industrial zones	Aerial distance from gas station	Aerial distance from solid waste site/central dumpsite	Aerial distance from railway/major road	Aerial distance from power station/power line/substation	Aerial distance from any river/water body	Aerial distance from any wastewater treatment facility
				km Gold mining company						

Abbreviations:
NP-National Park, SPA-Strictly Protected Area.
Subprojects 1-6 are currently proposed for funding and 7-10 are on backstop if more funds become available in future.

Table 23: Hospital / Health Center Physical Features

No	CDH / DHC	District	Sewage water management facility				Heating supply			Water supply			Incinerator	Hazardous waste disposal		Fire-fighting facilities	Trees to be cut / transferred	Debris / soil disposal required outside premises
			Connected to central Sewage	Soak pit tank	Holding tank	Outside toilets	Connected to central heating system	Heating from an own HOB	Electric heating	From central water supply system	From own water well	From transported water stored in own water reservoir	Wood / coal burning	Inside premises	Disposal outside premises			
1	CDH	Fayzobod	available	Not available	Not available	available	Not available	There is own boilerhouse that does not work	available	available	Not available	Not available	Wood & Coal	Not available	available	Fire hydrant does not work / Fire-fighting pond available	Not available	Available
2	CDH	Fayzobod	available	Not available	Not available	Not available	Not available	Not functioning	available	available	Not available	Not available	Wood & Coal	Not available	available	Fire hydrant works	Not available	Not available
3	CDH	Rasht	Not available	available	Out of service	available 2 pcs.	Not available	There is own boilerhouse that does not work	available	available	Not available	Not available	Wood & Coal and diesel	Not available	available	Fire hydrant out of service Fire-fighting pond available	Not available	Available

No	CDH / DHC	District	Sewage water management facility				Heating supply			Water supply			Incinerator	Hazardous waste disposal		Fire-fighting facilities	Trees to be cut / transferred	Debris / soil disposal required outside premises
			Connected to central Sewage	Soak pit tank	Holding tank	Outside toilets	Connected to central heating system	Heating from an own HOB	Electric heating	From central water supply system	From own water well	From transported water stored in own water reservoir	Wood / coal burning	Inside premises	Disposal outside premises			
4	DHC	Rasht	Not available	Not available, wastes are discharged to the hospital septic tank.	Not available	Not available	Not available	available	available	available	Not available	Not available	Not available, waste are burned in the hospital furnace	Not available	available	Fire hydrant out of service Fire-fighting pond not available	Not available	Not available
5	CDH	Sh. Shohin	Not available	available	Not available	available	Not available	available	available	Not available	available	Not available	Wood and coal	Not available	available	Fire hydrant not functioning, reservoir is available	available	Available
6	CDH	Sh. Shohin	Not available	available	Not available	available	Not available	Not available	available	Not available	Not available	Not available	N.a., waste are burned in the hospital furnace	Not available	available	Fire hydrant not functioning, reservoir available	available	Not Available
7	CDH	Aini	Not available	available	Not available	available	Not available	Own Boiling room which is out of service	available	available	Not available	Not available	woods	Not available	available	Fire hydrant and reservoir not functioning	Not available	Available

No	CDH / DHC	District	Sewage water management facility				Heating supply			Water supply			Incinerator	Hazardous waste disposal		Fire-fighting facilities	Trees to be cut / transferred	Debris / soil disposal required outside premises
			Connected to central Sewage	Soak pit tank	Holding tank	Outside toilets	Connected to central heating system	Heating from an own HOB	Electric heating	From central water supply system	From own water well	From transported water stored in own water reservoir	Wood / coal burning	Inside premises	Disposal outside premises			
8	DHC	Aini	Not available	Not available, wastes are discharged to the hospital septic tank	Not available	available	Not available	Not available	available	available	Not available	Not available	N.a., waste are burned in the hospital furnace	Not available	available	Fire hydrant not functioning	Not available	Available
9	CDH	Sangvor	Not available	available	Not available	Not available	Not available	Not available	available	available	Not available	Not available	Wood and coal	Not available	available	Fire hydrant not available reservoir available	available	Available
10	DHC	Sangvor	Not available	available	Not available	Not available	Not available	Not available	available	available	Not available	Not available	N.a. waste are burned in the hospital furnace	Not available	available	Not available	available	Available

Abbreviations: FFH-Fire Fighting Hydrant, HOB-Heat Only Boiler, HT-Holding Tank, CSS-Central Sewage System, CHS-Central Heating System, CWS-Central Water Supply

Subprojects 1-6 are currently proposed for funding and 7-10 are on backstop if more funds become available in future.

VI. Anticipated Environmental Impacts and Mitigation Measures

328. In the following chapter, impacts and mitigation measures are described. They have been divided into pre-construction phases (location specific and design phases), construction phase, and operation phase impacts. The chapter is structured according to activities.

1. Impacts and Mitigation Measures During Pre-Construction Stage

Impact

329. Potential adverse environment impacts associated with Hospital/Health Center has been avoided or minimized through careful location selection. Subproject location sites have avoided geologically unstable areas, which can also pose foundation related problems. No land acquisition is required for Hospitals / Health Centers as the government public or existing Hospital / Health Center land is available. Shrubs and trees may be uprooted and transported to locations inside the premises[53]. All proposed new Hospitals / Health Centers have been identified to have possession of vacant land area; whereas the Hospitals / Health Centers where expansion is to be done in their existing land, there is no need to acquire land. Current facilities will be shifted to temporary properties for continuous functioning during construction allowing minimal nuisance to the patients and staff.

Mitigation

330. The proposed construction sites are in midst of residential areas. Construction activities are not prohibited within the city zones but it needs to have EIA and EMP approved by CEP. Construction works are not prohibited in urban areas but project of hospital rehabilitation needs to undergo state environment expertise of Committee on Environmental Protection of the Republic of Tajikistan.

331. Linked facilities: The PAG must confirm from concerned authorities of various linked facilities such as landfills to accept solid waste, and power, heating, water, wastewater facilities to each of the Hospitals / Health Centers on their ability to deliver required services and without interruptions. Any underground utilities such as heating pipes, sewage drainage, water pipeline etc. if disconnected to the premises will be restored.

Sanitation Systems

Impact

332. Several Hospitals / Health Centers are using septic tanks or soak pits due to physical limitations which will pollute the ground water.

Mitigation

333. The design improvements in the project require upgrade of sanitation facilities where access to the municipal sanitation system is not possible. A “septic tank system” is a small-scale sewage treatment system common in areas that lack connection to main sewage pipes

53 There are about 17 trees at Sangvor District Hospital that need to be removed or re-planted, among them 13 apple-trees, 1 pear tree, 1 willow tree and 2 spruces. There are about 10 trees at Sangvor District Health Center that need to be removed or re-planted, among them 2 apple–tree, 3 cherry-trees and 5 poplars. There are about 12 apple-trees at Sh. Shohin District Hospital that need to be removed or re-planted, among them 13 apple-trees and there are 9 apple-trees and 20 poplars need to be removed or replanted at Sh. Shohin District Health Center.

provided by local governments or private corporations. The term "septic" refers to the anaerobic bacterial environment that develops in the tank which decomposes or mineralizes the waste discharged into the tank. Septic tanks can be coupled with other onsite wastewater treatment units such as bio filters or aerobic systems involving artificially forced aeration. Periodic preventive maintenance is required to remove solids that remain and gradually fill the tank, reducing its efficiency.

Land Acquisition

334. The proposed project site in the Hospital / Health Center premises doesn't require any relocation of any private property since the project would be implemented at the Hospital / Health Center's own vacant land. No precious ecological issue is involved with this project since the project site is barren land, has no natural habitat and is not immediately adjacent to watercourses. However, following mitigation measures will have to be taken prior to the project activities:

- Ensure existing drainage facilities are maintained in working condition,
- Protect /preserve topsoil and reinstate after construction is completed, and
- Repair /reinstate damaged play areas etc. after construction is completed.

Temporary Use of Land

Impact

335. The mobilization of construction equipment and construction materials will require space for storage and parking of construction vehicles and equipment, construction material storage yards, disposal sites, and labor camps for human resource to avoid environmental impact and public inconvenience.

Mitigation

336. These locations must comply with the local laws and regulations and need approval from authorities to utilize these facilities (access roads, telecommunication, and pipe borne water supply). It is important that selection of temporary lands does not infringe upon adjoining residential areas, water bodies, natural flow paths, and access roads to garages, Hospital / Health Center and other amenities in the area. Removal of trees should be minimized during preparation of construction area, access road and other facilities.

337. Restoration: Associated impacts on any public area and play area outside each Hospital / Health Center building inside its premises used for storage and workmen office will be restricted to the construction phase and will be temporary in nature. After construction is complete, the playground or any other play areas within the premises will be repaired and can be used again.

Demolition

Impact

338. Old buildings that will be rehabilitated have no provision for fire safety, and are dilapidated with no heating and insulations. The outdated buildings, some of which are 35 to 40 years old are risk for patients and staff.

Mitigation

339. Rehabilitation of old buildings: All buildings shall be designed in compliance with relevant Government of Tajikistan's design standards and codes for energy-efficient, safe buildings, including but not limited to: Tajikistan national standards on protection of environment. World Bank's EHS guidelines 2007 standards may apply in-case where the Tajikistan standards are less stringent.

340. Type and scale of insulation to be installed in the building will be designed by the Contractor as per norms followed in Tajikistan. The design must lead to introduction of other energy efficiency elements (heat meters; heat insulation that meets the requirements on Tajikistan Energy Efficiency Regulations; LED lighting; triple glazed windows) etc. Layout details of infrastructure that requires rehabilitation such as installation/provision of modern fire control systems/firewalls, smoke alarms, building insulation, possible plumbing and/or heating systems upgrades. The PAG and the Contractor must ensure proper design for the expansion Hospital / Health Center so that the infrastructure become coherent and complies to national and international health and safety norms.

341. Green Building and Energy Efficiency: The building design must include green building and energy efficiency features as listed in Section 4. Use of more energy efficient smokeless heat only boilers (HOBs) may have to be mandated in bidding documents. Alternatively, the design must include alternatives to HOBs such as electric floor heating that can be controlled using heating control regulators.

Banned Substances

Impact

342. Tajikistan recently banned the use of asbestos building products, but the management of asbestos containing materials remains fairly poor. Presence of asbestos-cement roofing materials on some existing buildings is an issue as most buildings are old. Construction workers can be exposed to asbestos fibers during roofing modification, repair, or replacement. The old building repair and/or demolition raises doubts about buildings with asbestos containing materials and therefore repair/removal/disposal of such material which is carcinogenic in nature is really hazardous for the workers and the like. Demolition of Sangvor District Hospital is planned. Asbestos (asbestos slate) is involved only in Aini District Hospital to be replaced by metal sheet roofing. During site visits, the hospital management assured no hazardous materials would be involved in demolition and disposal of debris to designated waste sites planned.

Mitigation

343. **Asbestos**: The Experts under the guidance of the Agency for Control and Building and Architecture will conduct physical engineering survey to determine existence of asbestos in other buildings of hospitals/policlinics covered by the project. ACM will not be used as a new material in rehabilitation works or new buildings. Existing asbestos-cement roofing sheets will be removed and disposed of following the internationally-recognized *Standard Practice for Maintenance, Renovation and Repair of Installed Asbestos Cement Products* (American Society for Testing and Materials [ASTM] E 2394)54. Normally, the design team will design rehabilitation to reduce impact of asbestos roofing disturbance and removal and adhere to the

54 ASTM International. ASTM E2394-11, Standard Practice for Maintenance, Renovation and Repair of Installed Asbestos Cement Products. West Conshohocken, PA, 2011. http://www.astm.org/Standards/E2394.htm. This standard describes work practices that protect worker and community health within the resources available in developing and industrialized countries. As much as possible it relies on readily-available tools, equipment, and supplies, and techniques that require careful and diligent workmanship but not the services of highly-skilled tradesmen. The standard is written for construction workers and tradesmen, for those involved in the preparation of contracts and tenders, and for government officials involved in developing regulations to protect worker and community health.

applicable IFC (2007) guidelines for asbestos-containing materials (ACM)55 for its removal and disposal. As listed in Annex 9, the Contractor must develop a feasible occupational health asbestos action plan and seek approval from PAG/MOHSPP prior to start of construction.

344. **Volatile Organic Compounds**: Only low or no volatile organic compound (VOC) emitting materials shall be used (including paints, coatings, adhesives, carpet and furniture's) to ensure high indoor air quality. Water-based nontoxic, no allergenic paint for drywall or plaster surfaces shall be preferred to latex or oil-based paints.

345. **Ambient Air Quality:** Given the ambient air quality requirements inside the hospital, it is proposed to introduce Air conditioners, air purifiers inside the Hospital / DHC to provide safe ambient air quality inside the buildings. High Efficiency Particulate Air (HEPA) purifier, Anion Air Purifier etc. can be used. HEPA filters, as defined by the USA Department of Energy (DOE) standard adopted by most American industries, remove at least 99.97% of airborne particles 0.3 micrometers (µm) in diameter. The operation and maintenance costs of HEPA purifier which includes replace of filters periodically which would need to be borne by the Hospital from their own funds.

2. Impacts and Mitigation Measures During Construction Stage

346. The project activities during construction phase will involve construction of Hospital / Health Center buildings, which will involve excavation for building and equipment foundations, concreting, civil works and erection of equipment, clearing of area including transplanting trees wherever required, and restoring top soil in all playground areas within the Hospital / Health Center premises. During the operation phase, most of the construction phase impacts will get stabilized and the impacts will be restricted only to the operation and maintenance of the Hospital / Health Center building. The impacts on the environment from various activities of the project can be categorized as follows:

i. Impact on Physical Resources
   - Impact on Topography
   - Impact on Climate
   - Impact on Environmental Resources
   - Impact on Air Quality
   - Impact on Noise Levels
   - Impact on surface Water Quality
   - Impact on ground Water Quality
   - Impact on Soils and Geology

ii. Impact on Ecological Resources
   - Terrestrial Ecology
   - Wild Life
   - Aquatic Ecology

iii. Impact on Human Environment
   - Health and Safety
   - Agriculture
   - Socio-economics
   - Resettlement and Rehabilitation
   - Cultural sites
   - Traffic and Transport

55 International Finance Corporation. Environmental, Health, and Safety Guidelines, 2007. http://www1.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/sustainability+framework/environmental%2C+health%2C+and+safety+guidelines/ehsguidelines

iv. Interference with other utilities and traffic
- Waste Disposal
- Solid waste disposal
- Liquid waste disposal
- Hazardous waste disposal

347. The impact of project activities on various environmental attributes are discussed in subsequent sections.

a) Impact on Physical Resources

Topography
Impact

348. During the construction of the Hospitals / Health Centers, the most prominent impact on the surface topography will be due to the excavation for foundations, removing of the 68 trees approximately and erection of buildings. The impact will be irreversible as the present feature of the site as well as the land use will change due to construction of new buildings for the Hospitals / Health Centers.

349. The construction phase involves site preparation, clearing of existing vegetation and some earthworks for leveling the surface. These activities may cause some negative impacts such as:
- Change in Landscape;
- Emission of Dust;
- Associated noise; and
- Improper management of debris and solid waste may pose risk to neighbors.

Mitigation

350. Proper EMP measures will be implemented by the Contractor. Further sections discuss the above impacts in greater detail.

Climate

Impact

351. Design and construction of Hospital / Health Center buildings shall consider 'climate proofing design' since the occurrence of earthquakes is gradually increasing in Tajikistan. Earthquake resistant design should be incorporated in design consideration of the building. Alternative solutions and final designs should be subject to expert and community consultation.

Mitigation

352. All facilities shall be properly sited to minimize the risk of scouring that may result from increase intensity of precipitation as a result of climate change.

b) Impact on Environmental Resources

Air Quality
Impact

353. Projects (hospitals/health centers) are located in populated areas. As such there is relatively little industrial activity that may produce air quality impacts. One of the main sources of air pollution in the region relates to the burning of fossil fuels for heating, cooking and power

within the urban areas, incinerator for hospitals etc. Although this impact is being reduced as more portions of the population become powered by hydroelectricity from Tajikistan's vast hydro resources. The other temporary source of emissions is from construction vehicle movements within the hospital and construction material supply vehicles. These emissions which can be classified in two categories; emissions from the combustion engines, and dust related impacts from the movement of vehicles.

354. During the construction phase, the activity would involve excavation for the erection, movement of transporting vehicles carrying the construction materials etc. along the access road. All these activities would give rise to emission of dust particles thereby affecting air quality marginally at the site which although will be transitory in nature. Though the emissions are temporary and not expected to contribute significantly to the ambient air quality and will be within prescribed limits for industrial regions by national ambient air quality standards, necessary measures are to be taken.

355. The air quality in the project area may slightly deteriorate for the time being during construction mostly due to dust emission. Dust produced will potentially negatively affect the following:

- Patients, staffand general public; and
- Adjoining apartment dwellers and other buildings in the vicinity
- Community areas – playgrounds, waiting and parking areas etc.
- Construction workers.

Mitigation

356. Regular sprinkling of water on open surface and dust emitting grounds should be done regularly until paving is done during dry season and keeping all soil, sand, and aggregate piles covered (whether on the site, or on trucks) to minimize the air pollution during the construction stage. If there is any complain of dust emission from patients, staff and neighbors, should be given proper attention.

Noise Levels

Impact

357. During the construction phase, the major sources of noise pollution are movement of vehicles transporting the construction material and equipment within and outside the construction site. Most of the access roads along the location are wide enough and can be used to bring construction material without obstructing the neighborhood roads. All the construction work will be carried out during the day time including the movement of trucks and concreting during the day time. There residents living nearby will be exposed to noise generated during the construction phase.

358. Construction works may cause objectionable noise nuisance to workers, patients or staff. Hospital / Health Center authority and patients must be notified in writing on the date of commencement of construction work at least one month in advance. Following measures will help to keep noise and vibration in acceptable level during construction phase:

Mitigation

359. Contractor shall equip their heavy construction equipment and plants with exhaust silencers to limit the engine noise not to exceed 75 db(A) (compacters/rollers, loaders and cranes) and regularly maintain all construction vehicles and machinery that should meet the Tajikistan national standards for noise emission.

360. Contractor shall preferably limit working time for activities that create noise within normal waking hours of the public except for construction site near public sensitive receptors. Construction related activities closer to sensitive receptors have to be scheduled in coordination with the residents and relevant authorities.

361. Contractor and its suppliers of construction materials should strictly implement noise control regulations stipulated for Noise pollution for all construction vehicles and equipment. All machines will be fitted with noise reduction devices. Depending on noise attenuation and proximity to the construction works, careful monitoring will be required. Annex 8 lists the methodology to be adopted by the Contractor while reporting the noise levels. World Bank EHS Guidelines 2007 and Tajikistan noise standards are same in their limits.

362. For managing noise nuisance, construction works should be limited to daytime hours and all employees likely to be exposed to ear noise must use ear protectors. However, the noise impacts will be local limited to the premises and very short term. Loud noise may disturb the local resident apartment dwellers during normal hours of waking as well. Due consideration must be given by the Contractor in consultation with local residents. Noise barriers may be installed by the Contractor to ensure residents are not inconvenienced.

363. During the operation phase of the project, the ambient noise level meets the World Bank EHS Guidelines for residential areas (55 dB(A) during daytime and 45 dB(A) during night time). During normal work hours, noise from construction may also disturb some residents, but they have been consulted prior to the start of construction.

Surface Water Quality

Impact

364. The construction and operation of the Hospital / Health Center will not have any major impact on the surface and ground water quality in the area. Contamination of water bodies, if any in that area, may result due to spilling of construction materials and surface runoff from the construction site adjoining the water body. There may be increase in the turbidity levels temporarily where the surface runoff during construction meets the drainage of the area. This can be avoided by careful selection of the raw material and waste material storage at the construction site.

365. Proposed activities will create temporary impacts to the existing drainage system in the area including in earthen and line drains. Thus, it will create temporary inundation closer to the above locations during rainy season. Stagnation of water will create direct impact on public health.

Mitigation

366. Incorporation of following measures will minimize anticipated impact due to obstruction of natural flow paths and existing drainage:

- Provisions of temporary drainage facilities to the particular locations if existing drains are obstructed due to construction activities.
- Maintenance of all drainage paths by avoiding blockages at all times.
- Contractor should minimize excavation of drainage systems in project affected areas.
- If any Hospital / Health Center is situated in immediate vicinity of the water body/river, adequate reinforcement of embankment will be done to ensure no surface runoff gets discharged into the water body/river.

367. Care shall be taken to locate the temporary construction worker sheds away from the drainage/water bodies. Adequate drinking water facilities, sanitary facilities and drainage in the temporary sheds of the construction workers should be provided to avoid the surface water pollution. Provision of adequate washing and toilet facilities should be made obligatory. This should from an integral component in the planning stage before commencement of construction activity.

Ground Water Quality

Impact

368. Ground water pollution can take place, if chemical substances and oily waste get leached by precipitation of water and percolate to the ground water table. For Hospitals / Health Centers construction activity, no chemical substance or oil is used hence there is no impact on ground water quality. The silt discharge from the earth work around drains, water bodies, oil, grease and fuel release from the construction vehicles / equipment and spoil from construction and other construction related activities such as raw sewerage from worker accommodation sites will mix with runoff water. This situation will increase during the rainy season and have a critical impact on surface and ground water.

Mitigation

369. Following measures will be required in order to prevent deterioration of water from the construction and construction related activities:

- All construction vehicles and equipment should be maintained in proper conditions without any leakages,
- Contractors shall use silt traps to avoid entering of cement particles, rock, rubbles and waste water to the surrounding drains and ultimately into water bodies in the district,
- Construction activities requiring digging should be preferably done in the dry season,
- Waste oil should be collected properly and disposed to the approved location.

Soil and Geology

Impact

370. Project activities including excavation, cut and fill operations, removal of trees and green cover vegetation etc. will enhance the soil erosion during the rainy season. The excavation activity and land clearance in the erosion prone areas have been minimized. Levelling and stabilization of construction sites will be done after completion of construction activity. Also, increased acceleration of surface runoff will damage the topsoil.

Mitigation

371. The impacts associated with excessive erosion and other civil works can be avoided or minimized by following mitigation measures:

- Effort should be taken to minimize removal of trees and green cover vegetation.
- Minimize obstruction or destruction to natural drainage pattern of the surrounding area.
- Proper treatment of clearing and filling areas against flow acceleration.
- Contractors shall restrict cut and fill operation around sharp/deep slope areas.
- Top soils which are removed during construction must be stored separately for future utilization.

Ecological Resources

372. Since Hospitals / Health Centers are constructed in government lands, there is no displacement of people or animals. It is also not causing any disturbance to the life of people and local animals and birds movement. There is no dynamic equipment and moving machinery causing noise pollution, water and air pollution. There is no national wildlife park, bird sanctuary, wetland in the location of the proposed Hospitals / Health Centers. The ecological impacts are briefly described in the following sections.

Effect on Flora and Fauna

Impact

373. Noise, vibration and emission from construction vehicles, equipment may occur during construction and pre-construction stages in temporary manner which may affect the local flora and fauna.

Mitigation

374. None of the declared environmentally sensitive areas is located within the project area. It is not expected that any flora and fauna that are rare, endangered, endemic or threatened will be affected - no migratory paths of small mammals and reptiles are being affected due to construction activities. The impacts related to above activities any flora and fauna are temporary and can be mitigated through following measures:

- Poaching etc. - Strict attention on worker force regarding disturbance to surrounding areas.
- Labor camp - Selection of approved locations for material storage yards and labor camps away from the environmental sensitive or populated areas.
- Waste streams - Avoid entering of construction waste (cement particles, rock, rubbles and waste water) and sanitary waste to the surrounding water bodies.

Impact on Terrestrial Ecology

375. There is no sensitive ecological area / protected forest area such as national wildlife park, bird sanctuary crossing the proposed sub-project locations. The removal of herbaceous vegetation from the soil and loosening of the top soil generally causes soil erosion. However, such impacts would be primarily confined to the project site during initial periods of the construction phase and would be minimized through adoption of mitigation measures like paving and surface treatment and water sprinkling.

Removal of Trees

Impact

376. On visual inspection, it seems that small number of trees (68 in number) will need to be removed at only a few Hospitals / Health Centers. Around 11 (13 apple trees, 1 pear tree, 2 pine spruces) trees to be removed from Sangvor Hospital project site, around 10 (2 apple trees, 5 poplars and 3 cherry trees) trees to be removed from Sangvor Policlinics project site, around 12 apple trees to be removed from Sh. Shohin Hospital project site and around 29 (9 apple trees and 20 poplars) to be removed from Sh. Shohin Policlinics project site. All enlisted trees do not have any protected status both domestically and internationally.

Table 24: Trees to be Cut or Transplanted

No	Location/Hospital	Tree Nos	Tree Type	Tree to be cut or trans-planted
1	Fayzobod Central District Hospi-tal	0		
2	Fayzobod District Health Center	0		
3	Rasht Central District Hospital	0		
4	Rasht District Health Center	0		
5	Sh Shohin Central District Hos-pital	12	apple-tree,	12 Apple-tree
6	Sh Shohin District Health Center	29	apple-tree, poplar	9- Apple-tree, 20- poplars
7	Aini Central District Hospital	0		
8	Aini District Health Center	0		
9	Sangvor Central District Hospi-tal	17	Apple-tree, pear-tree и fur- trees	13- Apple-trees, 1-pear-tree 1 и 2- fur- trees
10	Sangvor District Health Center	10	Apple-tree, poplar, cherry-tree	2-apple-trees, 5- poplars, 3 – cherry-trees
	TOTAL	**68**		

Subprojects 1-6 are currently proposed for funding and 7-10 are on backstop if more funds become available in future.

Mitigation

377. The exact number of trees affected will be known during the final location survey and construction. This will be an irreversible impact. However, any tree that will be cut may be transplanted depending on its type and its suitability for transplantation within the premises. This will minimize the tree loss.

378. It is highly recommended to establish a tree replanting program which should be undertaken e.g. where two trees will be planted when a single tree is cut at each hospital. The Contractor would be responsible for replantation of trees cut from the construction area within the planned green areas of the Hospital / Health Center premises.

Effect on Local Road Network

Impact

379. Iron bars, concrete materials, piling equipment, etc. will be transported through the local road network to the project site. Transporting of large quantities of materials using heavy vehicles could exceed the carrying capacity of the road. This would lead to physical damages to local road network. Thus, it will be necessary to obtain consent from the road/highway authorities to use local/national highway roads prior to transportation.

Mitigation

380. The Contractor should properly maintain all road sections, install road signs warning of patients, pedestrian crossing etc. which will be utilized for the construction related activities. As construction sites are situated inside the Hospital / Health Center sites, the Contractor will ensure free and safe access roads to each Hospital / Health Center and install appropriate road safety signs as necessary in the area.

Effect on Visual Aesthetics

381. The proposed project sites have small gardens and fruit/non-fruit trees that will be affected due to the land development. But with completion of the Hospital / Health Center building and replanting of new vegetation and trees around the building, the Hospital / Health Center building site should recover the visual aesthetics.

Disposal of Debris

Impact

382. As a result of construction related activities, spoil and debris will be generated during the construction stage. Improper disposal of the debris will have an impact on the surrounding ecology, public health and scenic beauty.

Mitigation

383. Following measures will minimize the impacts associated with disposal of debris:

- Spoil materials (soil, sand, rock etc.) generated from construction activities shall be used wherever possible for site levelling, back-filling etc. Any dismantled and demolished structural materials, if any, should be dumped in accordance to government norms.
- Preparation of Disposal Management Plan for the project and selection of the disposal site by excluding locations, which are closer to residential, commercial and public sensitive areas, is necessary by the Contractor. Prior approval should be obtained for linked facilities such dumping grounds / land fill sites from relevant local authorities.
- Dumped materials will interfere with the drainage pattern of the area, any water bodies, agricultural lands, marshlands and down slope or any environmental sensitive areas if not planned properly.

Wild Life

384. For all selected the sub-project locations, no wild life locations will be affected as observed during field visits. National Parks or Protected Areas are around 7-80 km away from the nearest project Hospital / Health Center.

Aquatic Ecology

385. There are no major rivers or tributaries in the location of subprojects. No significant impacts on aquatic ecology of the river are envisaged and will not have any impact due to subproject activities.

c) Human Environment

Traffic and Transport

Impact

386. During the construction phase, traffic disturbance needs to be minimized by avoiding heavy traffic hours, ensuring proper access roads and avoiding road blockage. Increase in vehicular traffic in the area is likely to be experience during construction phase of the Hospital / Health Center building because of trucks ferrying in off construction material and carrying waste material from site.

387. Following are the impacts likely to occur due to increased traffic:

- Slightly more congestion near the main entrance to the Hospital / Health Center.
- Increased number of vehicles on local roads will result in increased wear and tear of local roads thus reducing lifespan of affected roads.
- Pedestrians and cyclists using local roads will have to exercise more care with increase of vehicular traffic on the said roads.

- There will be an increase of exhaust emission from vehicles, which will pollute local atmospheric air. Constant movement of vehicles that transport construction materials will cause increased level of dust and noise during the construction period.

Mitigation

388. Effective traffic management and accident management plan by Contractor needs to be prepared. Slightly more congestion near the main entrance to the Hospital / Health Center could exist at the gates due to limited entry available at the site until entire construction is complete. The Contractor will post traffic managers at all access roads at of the Hospital / Health Center sites and will ensure parking places are not encroached by placing any construction/waste material or parking of construction vehicles.

Worker and Community Health and Safety - Construction

Impact

Health and safety impacts will be in terms of risk of accidents and exposure to electric shock at the construction site. In addition, when construction work takes place in a public environment, safety measures are often lacking to protect the public. Project activities may create accidental damage to general public and the construction workers.

Mitigation

389. Necessary training regarding safety aspects to the personnel working at the Hospital / Health Center will be provided by the Contractor. The workers should wear PPE (Personal Protective Equipment), safety goggles, and other necessaries during construction period and during the maintenance work. First aid facilities will be made available with the labor gangs and doctors called in from the hospital. Article 16 of the National Constitution of Tajikistan states that every employee has the right to 'suitable conditions of work'. The government adopted national standards such as the National Standard on Occupational Health and Safety GOST and SanPin.

390. Therefore, Contractor should take necessary action to enhance personal safety during the construction through following measures:

- Organize awareness programs relevant to personal safety of the workers and general public in the area;
- Installation of warning signs to particular locations such as transverse points of local road network by Hospital / Health Center;
- Provide protective safety belts, footwear, helmets, goggles, eye-shields and clothes to workers depending on their duty; and
- Arrangement of proper first aid unit and transport facilities to take injured people to the hospitals.

391. Health and safety issues due to construction activities will be an issue for workers, patients, staff and others. Accident can happen occur during earth cutting, casting, construction works and installation of heavy machinery if care is not taken in their operation.

392. The whole work site will have to be fenced off and marked, so as to prevent the access of Hospital / Health Center patients and public to the construction site. When land clearing is complete, the work area is finished, and facilities are in place, all of the above impacts and risks will be neutralized.

393. Construction area is limited within existing boundaries and there are no tenants or persons who use land unofficially in the construction area. During construction, the EA and the PAG through the Contractor will engage in public consultations and EMP trainings to improve worker and community members' knowledge, attitudes and practices on health and safety.

Community Health

394. The Contractor must adopt internationally and nationally adopted safety regulations during the construction of various sub-project near houses, neighboring community. Risks to community health and safety (CHS) and occupational health and safety (OHS) are highest during the construction stage as project activities can affect various environmental, social and behavioral determinants of health. Risks to CHS and OHS can be inter-related, as interactions between construction workers and local community members are unavoidable.

395. The increase in construction traffic, especially of heavy goods vehicles, along the road local networks will affect road safety and the risk of road traffic accidents and injuries. This risk is higher for pedestrians and cyclists and near vulnerable receptors such as hospitals / Health Centers and other social services. The Contractor must focus the traffic safety awareness campaigns to communities that lives and communes along transportation corridors, imposing speed limitations with zero tolerance clauses in the worker codes of conduct for non-compliance, traffic signs on entry and exit points of the construction site, signs of caution about movement of transportation machinery.

396. Construction traffic and construction works on the various sites will generate noise. Construction-related day-time noise, as well as annoyance and other health effects in the general population around the various construction sites. Night-time noise associated with night-time construction traffic and offloading can cause sleep disturbance and therefore will be limited and as per agreement with local community. Mitigation measures can address community health and safety risks and impacts associate with increased air pollution, noise and traffic during the construction phase.

Occupational Health and Safety

Impact

397. The objective of occupational health and safety is to provide workers with safe and healthy working conditions and prevent accidents, injuries, and disease. It also covers the establishment of preventive and emergency preparedness and response measures to avoid, and where avoidance is not possible, to minimize, adverse impacts and risks to the health and safety of local communities. It is therefore a combination of occupational health and safety of staff/workers at the subproject facilities and community health and safety of people living nearby or potentially affected by failures or poor operation of facilities.

Mitigation

398. The contractors will also implement precautions to protect the health and safety of construction workers. The occupational health and safety risks will be managed by applying measures in the following order of preference: avoiding, controlling, minimizing hazards, and providing adequate protective equipment. All workers will undergo a site induction/orientation that will highlight expectations on minimizing impacts to the physical and social environment. There will be an on-site and off-site code of conduct established that will outline roles, responsibilities and consequences for non-compliance. Prior to construction, the site specific Environmental Management Plan will be finalized to include the following components:

- Public Health Management Plan
- Waste and Hazardous Material Management

- Worker accommodation Management (if there are workers' camps)
- Traffic Safety Management component during construction
- Dust, Noise and Vibration Management
- Occupational Health and Safety Management

399. In addition, each contractor's Site Specific Environmental Management and Supervision Plan will include measures for health and safety for personnel. The plan will be submitted to the PAG for review and appraisal and will include the following provisions for health and safety:

i. Personal protection. Provide personal protection equipment (PPE) appropriate to the job, such as safety boots, helmets, gloves, protective clothing, goggles, and ear protection, in accordance with relevant health and safety regulations, for workers.
ii. Worker Accommodation Plan which will conform to International worker accommodation standards to prevent health, safety, security and environmental risks to workers and community members alike.
iii. Emergency Preparedness and Response. An emergency response plan to take actions on accidents and emergencies, including environmental and public health emergencies associated with hazardous material spills and similar events will be prepared, and submitted to the PAG for review and appraisal. A fully equipped first-aid base in each construction site will be provided.
iv. Records Management. A Records Management System will be established to document occupational accidents, diseases, and incidents, that: (a) includes a tracking system to ensure that incidents are followed-up; (b) can easily retrieve records; and (c) can be used during compliance monitoring and audits. The system will be backed up on at least one external hard drive to protect records against loss or damage.
v. Safety communication. Ensure that safety, rescue and industrial health matters are given a high degree of publicity to all persons regularly or occasionally on the site. Posters drawing attention to site safety, rescue and industrial health regulations will be made or obtained from the appropriate sources and will be displayed prominently in relevant areas of the site.
vi. Training, awareness and competence. Train all construction workers in basic sanitation and health care issues, general health and safety matters, and on the specific hazards of their work.

Sanitation Hazard & Drinking Water

Impact

400. The health of the project personnel, construction workers and laborer at the site could be impacted if arrangement of sanitation and drinking water is not ensured adequately and properly. The project activities shall make higher demand on the local utilities and service facilities particularly construction and drinking water, health and sanitary facilities.

Mitigation

401. Most workers will be local residents at the project sites but some of the workers might come from other regions and may stay in nearby accommodation planned by the Contractor. The Contractor to develop occupation health and safety plan for those workers from other regions as per EMP.

Emergency Response During Construction

402. The Contractor must train its project personnel, construction workers and laborers, and staff to have knowledge of sufficient emergency response systems put in place. Fire safety management training and mock drill should be practiced periodically and emergency equipment and facilities like fire extinguisher/water hose, first aid etc. must be available to manage fire hazard or any medical emergency.

Socio Economics

Agriculture

403. There will not be any land acquisition for the Hospital / Health Center projects as all land used for the project as government lands and free from encroachments.

Local Employment

404. Construction of Hospitals / Health Centers will generate local employment, as number of unskilled laborers (both men and women) will be required at the time of construction activities. Local employment during this period will increase socio-economic standards.

Resettlement and Rehabilitation

405. For the construction of Hospitals / Health Centers, no land acquisition is required, hence there is no resettlement and rehabilitation involved in the project.

Cultural Sites

406. There are no archaeological, historical or cultural important sites along the location; hence the impacts on these sites are not envisaged.

Waste Disposal
Solid Waste Disposal

Impact
407. The solid waste generation will be at the location of the construction site which will include metal scraps, wooden packing material etc.

Mitigation
408. Wooden waste and metal scrap will be collected and disposed of in compliance with applicable regulations and rules.

Sanitary Waste Disposal at Construction Sites and Labor Camps

Impact
409. The labor camps at the site of construction will be temporary in nature and the human excreta will not be significant to cause contamination of ground water. Those places where most labor will be staying will be near apartments which may use some community or Hospital / Health Center facilities for solid waste, water and sanitation. Adequate drinking water facilities, sanitary facilities and drainage in the temporary sheds of the construction workers should be provided to avoid the surface water pollution.

410. There should be proper solid waste disposal procedure to enhance sanitation of workers who stay in camps. Thus, possibilities of infecting water borne diseases or vector borne diseases (Parasitic infections) will be eliminated by adopting proper solid waste disposal procedure. Unacceptable solid waste disposal practices such as open dumping of solid waste and poor sanitation facilities will lead to pollution of surrounding environment, contamination of water bodies and increase adverse impact to the general public inhabited in the area. Surrounding of labor camps, garbage disposal sites and material storage yards provide favorable habitats for diseases. Improper dumping of spoil materials and solid wastes may cause environmental degradation of the Hospital / Health Center area and patients, staff and neighboring people will face problems like: bad smell, aesthetically unpleasant environment, diseases etc.

Mitigation

411. Following measures are needed to protect and enhance the quality of environment during the construction stage:

412. A better way to overcome garbage disposal as mentioned above by reducing or avoiding the construction of labor camps, thus the selection of majority of skilled and unskilled workers from the project influence area will be a proper measure in this regard.

413. Proper sanitation system should be provided and at the same time, regular, proper and safe disposal of human waste should be ensured. Contractors and workers should obey appropriate means of waste removal and sanitation measures. Adequate number of toilets and bathrooms should be made for the workers, and proper disposal system (septic tank) of sewage waste should be implemented for sanitation purpose and the workers should be aware to use those facilities. Contractor should provide adequate facilities to manage its wastes in accordance with the guidance given by the Tajikistan law on solid waste and law on construction, and related regulations.

414. Provision of the solid waste disposal, sanitation and sewage facilities at all site of the construction/labor camps to avoid or minimize health hazards and environmental pollution.

415. Contractor should handle and manage waste generated from the construction/labor camps without contamination to natural environment and it will reduce risk to general public who stay close to sites. Also, Contractor should be responsible to enhance the quality of environment.

416. Adequate supply of water should be provided to the urinals, toilets and wash rooms of the workers' accommodation.

417. Contractor should provide garbage bins to all worker's accommodation and construction sites, for dumping wastes regularly in a hygienic manner in the area.

Liquid Waste Disposal

418. There will be no oil or chemical waste generated during the construction of Hospitals / Health Centers, hence no mitigation is required.

Hazardous Waste Disposal

Impact

419. During the Hospitals / Health Centers construction generation of any hazardous waste generation is not expected. Any Asbestos, batteries, and solar panels (if used) would constitute hazardous waste material that needs to be disposed of as per Tajikistan law (as per Chapter II) on solid waste and regulations and guidelines related to hazardous wastes.

420. The hospitals have existing contaminated sites that contain human waste – placenta pits, ash from incinerator waste and sewage pits that also contain chemicals.

Mitigation

421. Site remediation would be done by the Contractor to remove old unlined placenta pits, incinerator ash pits, sewage pits. The process would require collection of waste and storage in close containers; cleaning the site of hazardous soil and erect leakproof concrete lining with hard cover. If there is a suitable place to transfer and dispose of the hazardous waste in Tajikistan, then the Contractor will dispose it to such a location. Otherwise, this lined site will be refilled with waste and used until it is completely filled. Once it is filled, the pit shall be sealed to protect leakage (leaching through pores in concrete to the ground) of the contaminant. None

of the hospital areas being repaired or refurbished do not have any hazardous medical equipment that needs to be disposed off.

3. Impacts and Mitigation Measures During Operational Stage

Hospital / Health Center Environment

Impact

422. During operations, the Hospital / Health Center building must ensure a better quality of Hospital / Health Center infrastructure for patients (both interior and outside) besides better quality of health care facilities. Improper heating, washrooms, inconvenient classroom arrangement, poor condition of classrooms, unsatisfactory teacher-student ratio, absence of separate washrooms for boys and girls, suffocation problem etc. are possible adverse impacts that will eventually lead to a poor Hospital / Health Center environment.

Mitigation

423. The building would be designed to ensure the suitable heating, water, lighting, storage areas, proper ventilation, sufficient toilets & washrooms and support infrastructure. Also, There are no topographical changes envisaged during the operation phase of the Hospitals / Health Centers.

Disadvantaged Patients/Children

424. The Hospitals / Health Centers would incorporate certain design improvements required for the disadvantaged patients including children. These would include: (i) disabled access, sanitation and signage (wheelchair access ramps to be included above ground level if deemed appropriate by MOHSPP; wheelchair access to one toilet cubicle per sanitation block (male and female) to be included; Dual handrails on stairs for small children and adults; Brightly colored and braille signage to be included). The Contractor will ensure proper design to ensure that these are free from any encumbrances, obstruction and defect free in their installation.

Increased Demand of Utilities - Electricity, Heating, Sewage and Drinking Water

425. The new/expansion buildings will require services (notably sewage, water, heating and electricity), which could cause additional demand during periods of low water availability and load-shedding. The proposed building design features that address water and energy conservation would help considerably in this regard.

426. The Hospitals / Health Centers must design a management procedure in coordination with PAG to maintain the septic tanks, individual heat only boiler, water heater, electricity generators (if any) on the premises. They also need to ensure proper funds are available for regular upkeep and maintenance of these facilities.

Increase in Greenhouse Gas emissions

Impact

427. The project would install about heat only boilers in locations (Aini district Hospital, Fayzobod district Hospital and Rasht district Hospital) where the district heating is not available. Given that the hours of operation would be for 24 hours for 210 days (1 October to 1 May) at the emission rate of 2500 g for 3 boilers would lead to 5.4 tons/annum approximately.

428. The project would install onsite small-scale incinerator[56] each at Aini district Hospital, Fayzobod district Hospital, Sangvor district and Sh. Shohin district Hospital. The defunct incinerator at Rasht will be repaired or replaced.

Mitigation

429. The overall impact on the climate conditions from the proposed sub-projects both during operation phases will not be significant.

430. The World Bank's EHS guideline states that GHG emission limit for project should not exceed 25,000[57] tons/annum is well within limits. However, hospitals will install electric floor heating and electric boilers for hot water to avoid handling of coal, ash and its related impacts of using Heat only Boiler.

431. The small scale incineration or open burning of the waste was modelled under a 70 % (by mass) combustion efficiency, with the remaining 30 % (by mass) becoming residual ash requiring disposal. 5 incinerators would be installed at these hospitals. This combustion efficiency was applied to correspond to the lower bound combustion efficiency of a typical municipal incinerator. Small scale incineration and open burning may not provide optimal oxygen conditions for efficient combustion to take place thereby producing a higher percentage of ash than if optimal oxygen conditions were present. With the composition and mass of the waste is known, carbon dioxide emissions were calculated based on the complete combustion of its constituents. Other products of combustion were assumed to have negligible climate change impact. The CO2e emissions relating to the combustion of the packaging materials were calculated using data from the life cycle assessment tool, GaBi (version 4.0). The CO2e emissions relating to the disposal of the residual ash in an ash pit were modelled as inert material being disposed of via landfill.

432. The standard solution of advanced incineration has the highest carbon emissions associated with it at 159.6 kgCO2 e. The onsite small incineration strategy has emissions of 97.6 kgCO2 e which is 39% lower than that of the standard solution /advanced incineration strategy. The lowest carbon emissions level comes from the standard solution / encapsulation strategy at 47.8 kgCO2 e, which is just over 50% lower than the onsite small incineration strategy and 70% lower than the standard solution /advanced incineration. However, the GHG emissions will be controlled effectively by using a well-designed small incinerator at each hospital / health center.

Emergency Response during Operations

Mitigation

433. The Hospital management will have sufficient emergency response systems in place. The stairs of the building will be well designed and adequate for easy passage of the occupants. Fire safety management training and mock drill should be practiced periodically and emergency equipment and facilities like fire extinguisher/water hose, first aid etc. must be available to manage fire hazard or any medical emergency.

434. Some risks expected during construction (for hospital personnel, patients and nearby residents), but can be addressed through sound construction site management such as sound proofing noise, construction yard protection fencing, proper traffic management during construction material movements. The Contractor and Hospital / Health Center sites will plan and

56 UNDP funded Climate change impact of waste management - A study based on Tajikistan's pharmaceutical waste, Authors: Devni Acharya | Dr. Kristian Steele | Dr. Christoph Hamelmann| Tedla Mezemir Dante

57 EHS Guideline, Guidance Note 3 Resource Efficiency and Pollution Prevention, 2012

implement disaster management plan, emergency site accident remedial measures and information disclosure etc. No significant risks are anticipated during operation.

Electric Shock

Impact

435. This may lead to death or injury to the hospital staffs, patients and public in the area if facilities are not constructed properly.

Mitigation

436. This can be minimized or avoided by providing security enclosures, establishment of warning signs, and careful design using appropriate technologies to minimize hazards.

Noise Generation

437. There will be minimal nuisance to the community around the Hospitals / Health Centers due to operations.

Health Care Waste (HCW) Management

Impact

438. According to WHO, around 15% of HCW is considered hazardous material that may be infectious, toxic or radio-active. Inadequate HCW management can cause environmental pollution, growth and multiplication of vectors like insects, rodents and worms and may lead to the transmission of diseases like typhoid, cholera, hepatitis and AIDS through injuries from syringes and needles contaminated with human waste. Attachments A and B1-B5 in Annex 11 lists all existing and proposed health care waste management issues noticed at the ten sub-project sites.

439. **Solid Waste**. Operation of the Hospital / Health Center building will result in production of solid waste, which will require careful storage, segregation and handling.

440. **Disposal of Medical Solid Waste**. Hospitals and Health Centers will generate hazardous, infectious and chemical waste during their operations that can be managed properly following to EMP.

441. **Non-medical Wastewater**: The Hospital / Health Center building will create non-medical wastewater discharge that will be mainly water used for domestic and toilet uses.

Mitigation

442. All **solid waste** will be segregated properly, disposed to the safe places carefully. The Contractor contracted by the project will provide training on solid waste management to both staff/patients to segregate waste by placing separate containers stating waste type. The complete hospital waste would be segregated and sharps, needles, pathological waste, incineration waste must be stored in properly marked waste containers at each floor and outside the building. Medical waste such as syringes, bandages, etc. must be collected on regular intervals once or twice a day. Currently there is no autoclave or microwave facility for disinfection. Therefore, after incineration of pathological waste, bandages etc. the waste needs to be collected and disposed into pits constructed at the hospital until a facility for handling such waste is developed in Tajikistan. Annex 10 consists of all details for types of wastes and treatment methods.

443. **Medical/Chemical wastewater**: Hospitals / Health Centers have some chemicals and they need to manage chemical wastes according to the legislation of the Republic of Tajikistan. Currently, all Hospitals / Health Centers dispose of the chemicals into drains. This and the domestic liquid waste will be treated through an onsite waste treatment system now being setup in the hospital facility. After the treatment is complete, the treated water will be discharged to drainage system.

444. Sweeping and washing should be done to provide patients a waste free healthy environment. It is important that solid waste and **sewage** from the Hospital / Health Center building should not be nuisance to the community.

a) Cumulative and Induced Impacts

445. The **Cumulative Impacts**[58] are defined as the combination of multiple impacts from existing projects, the proposed project, and anticipated future projects that may result in significant adverse and/or beneficial impacts that cannot be expected in the case of a stand-alone project. The **Induced Impacts** are the adverse and/or beneficial impacts on areas and communities from unintended but predictable developments caused by a project, which may occur later or at a different location.

446. There are currently no other construction projects happening in the vicinity of these proposed sub-projects. Besides, these sub-projects are located in different geographical locations and therefore there are no cumulative or induced impacts arising from these subprojects.

58 Environment Safeguards- A Good Practice Sourcebook on Draft Working Document (December 2012).

VII. Analysis of Alternatives

MOHSPP Approach for Planning of a Sub-project

447. At the planning stage itself, one of the factors that govern the establishment of the Hospitals / Health Centers is the availability of scarce land available in the cities concerned. Preliminary location selection is done by MOHSPP based on the interpretation and walk over survey.

A. Alternatives for Sub-project Components

a) No "Build" Alternative

448. The 'No Build' alternative in the present case would mean there would be shortage of health care facilities at proposed Hospitals / Health Centers and hence, the development of health sector in Tajikistan will be hampered. Hence, the 'No build' alternative is unacceptable, and the potential socioeconomic benefits of implementation of such a project far outweigh the adverse impacts, all of which can be controlled and minimized to an acceptable level.

449. Health Sector Development. New building construction for Hospitals / Health Centers will ensure more access of health care to patients and availability of such facilities at affordable prices. Thus, it will help in development of health sector in Tajikistan and will contribute in building of a healthier nation.

450. The no-action alternative is defined as a decision not to undertake the proposed Project. The no-action alternative would result in the continued deterioration of the physical infrastructure of the selected hospitals / Health Centers, and continued exposure of staff and students to those existing environmental hazards at these Hospitals / Health Centers that project civil works and environmental management would mitigate. All the positive benefits of the Project would be foregone.

451. The no-action alternative would result in avoidance of the Projects relatively minor, less than significant environmental impacts, such as noise and short-term air quality impacts during construction, and increased traffic near hospitals / Health Centers during operation.

b) To "Build" Alternative

452. The project has been designed to provide extra space to hospitals at its own vacant space adjacent to existing Hospital / Health Center building, thus involved no resettlement issues. So, there is no logic to find alternative site for the project since it is in the existing Hospital / Health Center premises.

453. A total of 10 health facilities were selected for inclusion in the project. These hospitals / Health Centers were selected through an analytical and consultative multi-criteria process that considered and integrated how well each hospital/health centers would perform in terms of (i) treatment/health; (ii) economic return on training investments; (iii) contribution to poverty alleviation;(iv) geographic distribution among Tajikistan's regions; and (iv) acceptable environmental and resettlement outcomes. Selection of one or more alternative hospitals / Health Centers instead of those chosen for the Project therefore represents a risk of overall lower project performance on these objectives.

B. Methodology for Sub-project Site Selection: Environmental View

454. Site selection among alternatives consider requirements of environmental parameters, availability of logistic support during construction, operation and maintenance of Hospital /

Health Center and specific feasible locations that were identified based on the relevant site maps and walkover surveys. For selection of appropriate site for Hospitals / Health Centers, the following points are taken into consideration:

(i) Site selection should consider seismicity and geography of the local area; the area should not be prone to landslide or be unstable.
(ii) Construction activities do not adversely affect the population living near the proposed Hospital / Health Center and does not create any threat to the survival of any community with special reference to tribal (herder) community etc.
(iii) The location of Hospitals / Health Centers does not affect any monument of cultural or historical importance.
(iv) No resettlement of households by the Hospitals / Health Centers site, no loss of livelihoods, siting of Hospital / Health Center away from sensitive receptors with due consultation with the community and local government units concerned.
(v) Construction techniques and machinery selection shall be made with a view to minimize ground disturbance.
(vi) While planning for Hospital / Health Center, all underground infrastructure – drainage, sewage heating etc. shall be marked and to avoid seepage/leakages and pollution of water sources.
(vii) Contractor to ensure that noise will not be a nuisance to neighboring properties. Provision of noise barriers near Hospitals / Health Centers sites will be made if required.
(viii) Security fences will be erected around Hospital / Health Center construction sites. Warning signs shall be displayed at site and road signs to be installed at appropriate locations.
(ix) MOHSPP shall ensure that Contractor must incorporate the best technical practices to deal with environmental issues in its working.
(x) Design of Hospital / Health Center shall be made so as to include modern fire control systems/firewalls. Provision of fire-fighting equipment would be made at locations easily accessible etc.
(xi) The location of Hospitals / Health Centers does not affect any public utility services like power, heating and gas lines, sewage and drainage pipes other underground structures such as hydrocarbon pipelines and unstable ground feature (permafrost etc.). etc.
(xii) Minimum cutting of trees and safety of people and property and favorable ground profile.
(xiii) Avoidance of rocky stretches and areas reserved for planned and future development, marshy low-lying areas, river beds and earth slip zones.

a) Sub-project Site Selection

455. Keeping above in mind, various rehabilitation sub-projects proposed by MOHSPP officials for funding to be taken up for rehabilitation and construction, there are no alternate sites available inside the hospital boundaries. Similarly, MOHSPP has selected available government lands that were available inside the Hospital / Health Center locations. The documents for lands, their passports, their sizes etc. were collected as part of Social Due Diligence reporting and made available separately as Social Safeguard Due Diligence Report for this project. The same sites have been used to conduct initial assessment for environmental impacts listed in previous sections.

VIII. Information Disclosure, Consultation and Participation

A. Consultation Process

456. During the project formulation stage, MOHSPP has conducted a scoping exercise and reconnaissance survey of the existing system. Accordingly, during public consultation sessions, considerable dialogue had been held between MOHSPP representatives, individuals, and groups from the community to make them aware of the proposed project.

457. The project-affected community residing beside the proposed Hospitals / Health Centers has already gained a reasonable knowledge about the potential grievances, which may arise in the future. The community were also informed about the Grievance Redressal Mechanism (GRM), which will be followed by MOHSPP as per ADB SPS 2009 guidelines.

B. Consultation Details

458. During the site visits, the officials and consultants made numerous observations and held discussions with Hospital / Health Center managements concerned which would be helpful for project design: (i) location of proper access roads, laydown area for materials to be used by the construction companies to use without disturbing the Hospital / Health Center working and minimizing utilization of public/playground areas, (ii) avoidance of underground existing pipes for water, heating, sewage etc. at these proposed work sites, (iii) right of way for construction vehicles and provide traffic safety during construction to local residents living adjoining these Hospital / Health Center, (iv) traffic caused by construction of new buildings/expansion projects by use of concrete, dump trucks etc. transporting materials inside Hospital / Health Center premises; traffic safety for patients during operations of Hospital / Health Center in normal work hours, (vi) lack of safety equipment such as smoke alarms in most old buildings and the need for adequate firefighting extinguishers and imparting evacuation drills and emergency response procedures training, (vii) distances of these Hospital / Health Center from non-sensitive biodiversity areas and cultural heritage sites to ensure no impact, (viii) dust and noise emissions from the construction subprojects and their impacts on patients and apartment dwellers adjoining the hospital area, (ix) noises from any surroundings areas during construction and operations, (x) avoid any shadow projection onto adjoining buildings due to new structures to be constructed as part of this project, (xi) any banned substances generated as part of any expansion project such as asbestos etc., (xii) emissions from coal based heating and water boilers (some cases), (xiii) if insulation works are required in Hospital / Health Center to ensure energy efficiency, i.e. Loss of heat due to old walls (xiv) if any linked or associated facilities are present, and (xv) check climate change vulnerability of the location.

459. The team along with district officials and Hospital / Health Center shall also conduct group discussions with the public residing in these subproject areas to sensitize them about project activities, their impacts and get their suggestions between. Annex 7 indicates a summary of public consultations conducted during the field survey along with socio economic profile in the project affected area.

460. Consultations were carried out with various stakeholders such as MOHSPP officials, Government of Tajikistan officials, relevant land departments and the sub divisional magistrate of the project area. As part of the assessment, approximately 75 representatives from surrounding households, entities, apartments/buildings have been surveyed/interviewed to collect the data during the months of June-July 2018. These discussions were carried out at almost at nearby apartments/buildings that were situated in the vicinity of Hospital / Health Center.

461. Annex 7 gives the names of all participants of the public consultation conducted by the team. Consultation details for the 5 sites is also attached. Table 25 provides a summary of location and number of participants for the consultations.

Table 25: Location and Number of Participants of Consultations[59]

No	Sub-Project components	Date	Number of Participants at Consultations Meetings			Number of people filled in questionnaire
			Total	Male	Female	
1	2	3	4	5	6	
1	Fayzobod	25.06.2018	17	5	12	7
2	Rasht	25.06.2018	19	4	15	7
3	Sh, Shohin	26.06.2018	12	5	7	6
4	Aini	24.06.2018	14	6	8	7
5	Sangvor	26.06.2018	13	3	10	6
Total			**75**	**23**	**52**	**33**

Subprojects 1-36 are currently proposed for funding and 4-5 are on backstop if more funds become available in future.

462. Consultation meetings were held at 5 sites in total out of them 3 sites will be under new construction where the administrations, directors of the existing Hospitals / Health Centers assisted the team.

463. Communities were informed that they have right to express their propositions, grievances and issues, seek solutions and report on alleged violations of the adapted policies established for the implementation of the proposed medical facilities reconstruction/rehabilitation works. The responsible person from Hukumat, a member of the local government, is nominated to receive, file and process further issues raised by community and/or individuals.

464. Further, the local people were made aware of the proposed project and its intended scope. Re-construction impacts in these sites would be generation of noise and dust from civil works which are temporary and of short duration. Qualitatively, the beneficial impacts from the project will outweigh the temporary disturbance during construction. Nonetheless, these impacts will be considered in the Environmental Management Plan during construction including the mitigation measures such as in construction work schedule, spraying of water to minimize dust, etc.

465. A wide range of questions were asked to prompt discussion on concerns or wishes relating to the project, expected effects on presence of sites of cultural or religious significance, concerns about construction phase. Impacts, suggestions of people have been considered in preparing the DDR.

466. From the discussions it was found that community people and health workers agreed on the proposed medical facilities rehabilitation and they will support the project. Local residents have some concerns over safety and property and wish to see safety issues addressed by sound engineering design. Health workers are committed to temporary moving of wards to the remaining old buildings and to temporary inconveniences caused by the project.

467. Table 26 provides summary of public consultations. Table 27 summarizes some follow-up actions recommended by the consultees.

Table 26: Summary Findings of Public Consultations

#	Issues Discussed	Summary Responses and Suggestions from the Participants
1	Do you support for the construction at Hospital / Health Center?	We support rehabilitation of Hospital / Health Center
2	Do you have sufficient access to health services in your community now?	We have the access to health services of these Hospitals/Policlinics but in view of the fact that not

59 *A total of 75 people attended consultation meetings at 5 sites. Of which, 33 people filled out questionnaire sheets

#	Issues Discussed	Summary Responses and Suggestions from the Participants
		all the departments (wards) have water and sewerage they suffer the inconvenience.
3	Will this construction at Hospital / Health Center give any negative impact to your apartment complex?	We think relevant construction norms will be considered during rehabilitation of Hospital/Policlinics and negative impact will be at minimum
4	What benefits do you perceive from this construction?	We hope Hospital/Policlinics will meet necessary requirements. Favorable conditions are being organized (lighted and spacious wards, water supply, sewerage, heating etc.).
5	Would you have any problem with Hospital / Health Center if Contractor makes access road in your parking area, dig any pipeline etc. for repair for diversion?	Some problems may arise but we hope relevant norms will be considered during the construction works
6	Would you be having trouble if construction causes some dust during digging and storing in the Hospital / Health Center premises?	We hope to have minimum troubles during the construction. The Contractor must condition soil with water spraying,
7	Will you have a problem if the Contractor required to work during the night to bringing construction material and have earthworks that would cause noise?	We hope construction works will be implemented during the daytime. Bringing of construction material during the night will not cause any inconvenience. Bringing of construction material during the night will not cause any inconvenience.
8	Will you have a problem if the construction activity generates extreme vibration and noise such as concreting, cutting, digging etc.?	Yes, we will but we hope construction works will be implemented during the daytime with minimum impact.
9	Are you concerned about Health & Safety of patients, residents and staff during the construction?	We hope dangerous areas will be fenced and the builders will follow safety requirements
10	Would you like to participate in safety monitoring and controlling activities? And Would you be willing to form a Committee to help to Hospital / Health Center c during the construction period?	If necessary, we are ready to participate in the activities.
11	Any other critical environment related issue and concern by the residents for the during construction and operation stage?	No other critical issues.
12	If you have any problem caused by this Hospital / Health Center construction, whom would you like to contact? (Contractor, Hospital / Health Center, urban department etc.)	If we have any problem, we would like to contact a Contractor Representative in the presence of Hospital Chief Doctor.
13	What would you expect to improve at current building (such as changing coal heating to electric heating etc.)	First of all we hope Hospital/Policlinics will meet all modern requirements and all departments will have water supply, operational sewerage, heating during the winter period and Hospital negative impact will be at minimum.
14	Any shops/commercial establishments and industrial activity disturbed by this construction?	No other establishments (shops, pharmacies) disturbed by rehabilitation of Hospital/Policlinics. Some pharmacies will be disturbed due to noise and air pollution.
15	What other organizations of environment & nature conservation (NGOs/CBOs/ Civil Society) active in the area? Name these organizations	None
16	Any other issues or comments?	None

Table 27: Summary of Recommendations by the Consultees

#	Issue	Responsible Party
1	Air Pollution: The Contractor must spray water on soil and stacked material during construction to avoid dust as well ensure proper vehicles to ensure less construction vehicle pollution	Contractor, Hospital supervisor
2	Noise Pollution: Ensure less noise is emitted during construction. The works should only be done during day time.	Contractor, Hospital supervisor
3	Health and safety: Dangerous areas must be fenced, and Contractor follow safety norms.	Contractor, Hospital supervisor
4	Livelihoods: No establishments – shops and pharmacies should be negative affected during construction.	Contractor, Hospital supervisor
5	Adequate facilities: that new building of Hospital and Policlinics will meet all the requirements, all wards will have water supply, operational sewerage, heating during the winter period, normal waste water plant.	MOHSPP, Hospital management

C. Information Disclosure

468. MOHSPP will make the environmental assessment and other environment-related documents available in accordance with Tajikistan's and ADB requirements for disclosure. Timing for disclosure is scheduled immediately after obtaining of the SEE (State Ecological Expertise) m which is the clearance (environmental permit) from the Committee of Environmental Protection.

469. In line with ADB's Public Communications Policy, MOHSPP is required to ensure that relevant project information about environment safeguard issues is made available during the initial stages to affected people and other stakeholders, including the general public at Hukumat/district headquarters where it is publicly accessible in Tajikistani language and any other vernacular local language. ADB and MOHSPP will also upload and display the IEE documents for their respective websites.

470. Incorporation of the environmental concerns of affected persons (APs) through the public consultation in the decision-making process will avoid or minimize conflict situations during the implementation process as well as enable them to provide meaningful inputs into the project design and its implementation. During implementation period, MOHSPP through the Hospital / Health Center / Contractor can conduct public consultation and information disclosure through public meetings and notice.

471. After finalization the IEE reports documenting the mitigation measures and consultation process will be submitted to MOHSPP and ADB and will be disclosed on ADB website. In line with ADB's Public Communications Policy, MOHSPP is required to ensure that relevant project information about environment safeguard issues is made available during the initial stages to affected people and other stakeholders, including the general public at Hukumat/district headquarters where it is publicly accessible in Tajikistani language and any other vernacular local language. ADB and MOHSPP will also upload and display the IEE documents for their respective websites.

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473. After finalization the IEE reports documenting the mitigation measures and consultation process will be submitted to MOHSPP and ADB and will be disclosed on ADB website.

IX. Grievance Redress Mechanism

A. Grievance Channels (Framework)

474. During public consultation sessions of the IEE study, the discussions with dweller groups and individuals were conducted to make them aware of the proposed project. Thus, the project-affected community residing beside the proposed Hospitals / Health Centers has already gained a reasonable knowledge about the potential grievances, which may arise in future.

475. The public was informed that there will be no involuntary acquisition of land, or involuntary restrictions on land use which result in physical displacement and economic displacement. After construction of Hospital / Health Center, the area used for construction will be restored back to its original use.

B. Time Frame

476. A community awareness program must be conducted one month prior to construction by the Project Administration Group (PAG) of MOHSPP regarding the scope of the project, procedure of construction activities, utility of resources, identified impacts and mitigation measures. These awareness program s will help the community to resolve problems, clarify their distrusts related to the proposed project at initial stage. The Community should be informed about the Grievance Redress Mechanism (GRM), which is already established as per MOHSPP and Government of Tajikistan procedure for making complaints, including the place and the responsible person to contact in practical way in this regard. Almost all the stakeholders related to the GRM will also be aware of the established grievance process, the requirement of grievance mechanism, goals, benefits, relevant laws regulations etc.

C. The Grievance Redress Mechanism

477. MOHSPP does not have any specific Environment or Social Safeguards Policy currently. ADB procedures require MOHSPP to establish a Grievance Redressal Mechanism (GRM) for Environment having suitable grievance redress procedure for the project affected persons. The GRM would address affected persons' concerns and complaints promptly, using an understandable and transparent process that is gender responsive, culturally appropriate, and readily accessible to the affected persons at no cost.

478. For the purposes of the MOHSPP and ADB, the Grievance Redress Mechanism used will be identical for the environment and social aspects of the project. The project will establish a National Grievance Redress Committee (NGRC) at the MOHSPP /PAG level according to ADB's SPS 2009 requirements. Local Grievance Redress Committees (LGRC) will be established in each district and will report to the NGRC. The LGRC members of each district shall visit the sites regularly to meet the local residents and workers at construction site. Local communities and individuals can contact the LGRC in case of any appeals, requests or claims. No claims have been registered so far, as no works were done at the site.

a) Establishment of National Grievances Redress Committee (NGRC)

479. The National Grievance Redress Committee will register and follow up on any issues and/or complaints directly raised by any individual or community members in a group or via LGRC. The NGRC consists of representatives of the MOHSPP , PAG project coordinator and social and environmental safeguards staff, the local Hukumat representative, and appropriate local NGOs to allow voices of the affected communities to be heard and to ensure a participatory decision-making process. The NGRC decisions will be made by majority of members and will be publicized among the local communities and directly to the complainant(s). If the

complainants are not satisfied with the National GRC decisions, they can always file their cases with ADB or in court. The MOHSPP /PAG will maintain the complaint register. This will include a record of all complaints for regular monitoring of grievances and results of services performed by the GRCs for periodic review by the ADB.

b) Establishment of Local Grievances Redress Committees (LGRC)

480. The Local GRCs will be established in each district at the Hukumat level. They will register and follow up on any issues and/or complaints raised by any individual or community members in a group at the local level. They will be established by the Head of Hukumat Resolution and will include the following professionals needed to solve specific cases:

481. The committee has the following constitution as listed in Table 28:

Table 28: Constitution of Grievance Redress Committee

1	Deputy Head of Hukumat	Chairman
2	Head of Shahrak Jamoat	(focal point to accept and register grievances);
3	District land management and geodesy department representative	
4	District architecture department representative	
5	District environment and forestry representative	
6	Head of housing and communal services enterprise	
7	A professional engineer	
8	Community leaders and NGO leaders	
9	Other specialized organizations as necessary	

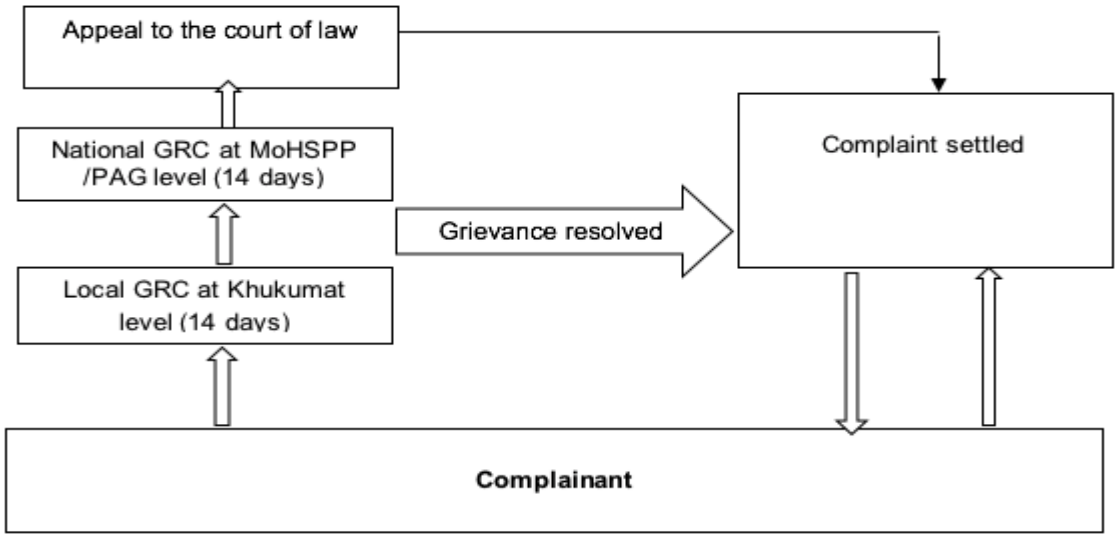
482. One of the above-mentioned professionals will be nominated to serve as the LGRC Secretary to register complaints in the database, to convene LGRC meetings, to process relevant paper work, keep records and to share summary of complaints with NGRC on monthly basis.

Grievance Mechanism during the Implementation Phase.

483. Complaints and grievances received during the construction work addressed through the following steps and actions:

i. Step 1: Complaints will be lodged at the district level where the responsible and Hukumat officers, as well as representatives of the affected person, will attempt to resolve the issue. Each complaint will be registered, signed by the affected person and a representative of the Local Grievance Redress Committee. The period fixed for resolution of complaints is 14 calendar days.
ii. Step 2: If a grievance is not resolved during a 14-day period, the affected person (or her/his representative, if chosen) may lodge the complaint to the National Grievance Redress Committee at the MOHSPP. The National GRC has an obligation to attempt to resolve the issue within 14 calendar days.
iii. Step 3: Affected persons (APs) have right to appeal to the court of law at any time if they wish to do so.

484. Procedures and timeframes for the grievance redress process are as follows and shown in Figure 74.



* Affected Person can approach the court of law at any time of the GRM.

Figure 74: Flow Chart Showing Grievance Redress Mechanism for Environment60

485. GRM proceedings may need one or more meetings for each complaint and may require field investigations by specific technical or valuation experts. Grievance cases shared by more than one complainant may be held together as a single case.

486. For appeals lodged directly to the MOHSPP, the National GRC at PAG will review the case together with the respective. Project Administration Group (PAG) shall formulate procedures for implementing the GRM and PAG's engineering staff shall undertake GRM's initiatives that include procedures of taking/recording complaints, handling of on-the-spot resolution of minor problems, taking care of complainants and provisions of responses to distressed stakeholders etc. paying particular attention to the impacts on vulnerable groups.

487. Local GRC at Hukumat level and attempt to find a resolution together with the aggrieved person. The GRC decisions will be made by majority of members and will be publicized among the local communities and directly to the complainant(s). If the complainants are not satisfied with the National GRC decisions, they can always file their cases in court.

488. If APs want to register a complaint with the ADB, the Focal Person will provide the complainants the following contact information:

- ADB National Environment and Social Safeguards Focal Point
  Resident Mission of Asian Development Bank in Republic of Tajikistan
  45 Sovetskaya Street, Dushanbe, Tajikistan
  Tel: 992 372 210558

  Or/And

- ADB Special Project Facilitator
  Asian Development Bank

60 (Affected person can take the matters to Court of Law at any point of GRM); PAG-Project Administration Group; (Same structure as per the Social due diligence report for the project)

Email: to be access from www.adb.org/site/accountability-mechanism/contacts
Fax number: (63-2) 636-2490

- ADB Office of the Compliance Review Panel
  Asian Development Bank
  6 ADB Avenue, Mandaluyong City, Metro Manila, Philippines
  Tel. +63 2 632 4336, Fax + 63 2 636 2088, E-mail: crp@adb.org

c) GRC Complaint Register, Records and Documentation and Linkages

489. The ESS of the MOHSPP will maintain the complaint register. This will include a record of all complaints for regular monitoring of grievances and results of services performed by the GRCs for periodic review by the ADB. A sample of the GRC Grievance Registration Form can be found in Annex 6.

490. The GRM will be in place for the first year of operations; and will utilize the above mentioned GRM procedure for grievance redressal. The GRM will be linked to the Citizen Service Center of the Office of the Mayor of District / Hukumat for a centralized system of receiving, referring, solving and responding to public grievances).

X. Environmental Management Plan

A. Emergency Preparedness and Response Plan

491. An emergency response plan to take actions on accidents and emergencies, including environmental and public health emergencies associated with hazardous material spills and similar events will be prepared, and submitted to the PAG for review and appraisal. A fully equipped first-aid box in each construction site will be provided.

492. A site-specific emergency response plan will be prepared. This will define protocols to be followed in the event of emergencies or disasters in order to limit the impact on the employees and the local community. The plan will address both on-site and off-site emergency situations due to the operation of the project. The plan will disclose potential disasters and potential risks during construction and operations to the local community as well as the plan of action on emergency protocol in the event of any such eventuality. This will also include awareness programs for the hospital personnel, local community and local administration.

493. A training and rehearsal of the emergency response by emergency team members and personnel on site will be done regularly.

B. Disaster Management

494. Though major earthquake in recent years, small to moderate earthquake have been felt in Tajikistan. The flood risk in project districts is lower than that of the other parts of country. Committee on Emergency and Civil Defense under the Government of the Republic of Tajikistan has been designated to take care of disaster management issues. Disaster resilient features[61] will be built into new and expanded Hospitals / Health Centers. The facilities will have sound seismic design to withstand earthquakes, winter snow storms, improved flood control and precipitation resistant features for all the proposed Hospital / Health Center.

C. Health and Safety Issues Management

495. To avoid/ minimize inherent risks during construction, operation and maintenance, the Contractor will follow national and international Environment, Health and Safety Procedure for construction and expansion of Hospitals / Health Centers and the operations and maintenance (O&M) period. Some other implications and mitigations from safety point of view are listed in Table 29 below:

Table 29: Safety Implication and Mitigation

No	Implication	Mitigation
1	Falling object accidents	Proper signs to avoid areas where falling objects can hurt passer-byes, patients, etc.
2	Open construction boundary	Contractor to install metal sheet barriers that are high enough to make a boundary so that patients, residents, others cannot get unauthorized access into construction sites.
3	Electrical shock/fire due to any open wiring at construction site	Ensure all access points to the Hospital / Health Center do not have any open electrical connections/wires lying in open
4	Accidents at Hospital / Health Center gates due to	Alighting area for patients from cars, ambulance etc.

61 The ability of a system, community, or society exposed to hazards to resist, absorb, accommodate to, and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions (UNISDR Terminology on Disaster Risk Reduction. https://www.unisdr.org/we/inform/terminology) Source: Reducing Disaster Risk by Managing Urban Land Use, Guidance Notes for Planners, ADB, 2016

No	Implication	Mitigation
	congestion caused during construction	

D. Training Programs

496. The training program will be developed by PAG team comprising of Environment and Social Safeguard (EASS) Specialist who will be contracted with PAG during project implementation. Each of training should last 1 day with specific program and should include interactive problem-solving tasks.

497. Trainings on EMP implementation for Contractor, Emergency Response systems for all emergency situations, Occupational Health and Safety etc. are proposed to be held as per training program as shown below in Table 30. The costs for all the training programs are included in the ADB funding for the project.

Table 30: Training Program - Summary of Training Needs

Training topic:	Summary of training purpose and content	Recipients/ Participants	Frequency or target date
Induction to EMP	Overview of EMP including site information, pollution risks and controls, and programs. Preparation of site specific EMPs and training on implementation to staff of Contractor (s)	All PAG engineers / contractors	At beginning of project
Review of EMP, Refresher training on EMP	Review of EMP including new changes and updates		One year after project start, or more frequently if required
Training on specific pollution risks and controls			
Emergency case response planning	To identify on-site “potential accident scenario” and how to plan potential emergency response actions.	All PAG Engineers /contractors/Local residents	During the project implementation
Air Quality Monitoring	Ambient Air Quality, Volatile Organic Compounds (VOCs), Particulate Matter (PM), Ozone Depleting Substances (ODS), Greenhouse Gases (GHGs)	All PAG Engineers /contractors	During the project implementation
Water Conservation	Water Monitoring and Management, Process Water Reuse and Recycling, Heating Systems	All PAG Engineers /contractors	During the project implementation
Waste water and Ambient Water Quality	Liquid Effluent Quality, Discharge to Surface Water, Discharge to Sanitary Sewer Systems, Land Application of Treated Effluent, Septic Systems, Wastewater Management	All PAG Engineers /contractors	During the project implementation
Hazardous Materials Management	General Hazardous Materials Management, Hazard Assessment, Management Actions	All PAG Engineers /contractors	During the project implementation
Fire safety	Fire, and Explosion Prevention, Control Measures,	All PAG Engineers /contractors	During the project implementation
Occupational Safety, Health and Safety	Occupational Health and Safety Emergency Preparedness and Response, Community Involvement and Awareness	All PAG Engineers /contractors	During the project implementation

Training topic:	Summary of training purpose and content	Recipients/ Participants	Frequency or target date
Waste Management	General Waste Management, Waste Management Planning, Recycling and Reuse, Treatment and Disposal, Waste Storage, Transportation, Treatment and Disposal, Commercial or Government Waste Contractors, Health Care Waste	All PAG Engineers /contractors	During the project implementation
Monitoring and evaluation			
Participatory M&E of impacts.	Simple methods for recognizing adverse impacts on environment Methodology of monitoring and evaluation on the water quality	Local residents, Hospital / Health Center management /Contractor	During the project implementation
Energy Efficiency and Green Buildings	Introduction to energy efficiency, heat loss, green concept	Local residents, Hospital / Health Center management	During the project implementation
Project management and implementation	M&E, Implementation assessment the program. Principle of donor organizations' support to local beneficiaries.	All PAG Engineers /contractors	At the beginning of the project

E. Environmental Management Plan

498. The EMP included in this IEE together with the Construction EMP that need to be prepared by the contractor provides the overall Project environmental management framework.

499. The Construction EMP must be submitted within 30 days of the contract award and Preconstruction and Construction cannot commence until the Construction EMP is approved by the PAG and the Engineer.

500. The Bid Documents for the potential Contractor(s) shall contain two sections relating to environmental issues, firstly a basic clause indicating that the Contractor will be responsible for following the requirements of this IEE/EMP and that he should prepare his own Construction EMP for the Project. Secondly, the EMP of the IEE shall be repeated in its entirety as an Annex to the Bid Documents so as the bidder is aware of his environmental requirements under the Project (both Pre-construction, Detailed Design and Construction) and help him put costs to his proposal (such as costs for noise monitoring, etc.).

501. The Contract Documents should follow a broadly similar pattern to the Bid Documents. It is not considered necessary to repeat the mitigation measures. The Contract should specify that the Contractor(s) is responsible for implementation of the EMP via his Construction EMP. Again, the EMP should be included at an Annex to the Contract so the Contractor(s) is liable for any non-conformance with the EMP, and thereby this IEE.

502. The Contractor(s) will be responsible for the preparation of the Construction EMP. The preparation of the Construction EMP requires a qualified environmental person. The work will need to be fully compliant with the EMP and will need to be prepared within 30 days of Contract award.

503. During the Construction phase the Contractor must retain the expertise of an Environment and Social Officer (ESO) to update the site specific EMP (S-EMP) and to oversee and report on the operation throughout the contract period. The ESO should be full-time member of contractor's staff.

504. The Design and Construction Supervision Consultant team will include a national Environmental Specialist to ensure that the Contractor is compliant with his environmental obligations. Specifically, the Engineer should be responsible for preparing a monthly environmental report outlining the Contractors environmental performance during that period. The national specialist shall be engaged on a full time basis to undertake day to day monitoring of the contractors activities.

505. The EMP describes the various measures proposed under this Project, which were designed to avoid, mitigate, or compensate the adverse environmental impacts that may result from the Project. As such the EMP considers all phases of the Project cycle, namely the detailed design, construction and operational phases of the Project.

506. To ensure that the proposed mitigation measures will be carried out by the contractors during the construction stage, the design consultant will clearly set out in the tender and contract documents the contractor's obligation to undertake the respective environmental mitigation measures.

507. IEE investigations and other project reports have shown that potential project impacts will occur that will need to suitably mitigated through the implementation of the EMP. An effective environmental management system is a dynamic, continuous process initiated by management and involving communication between the project proponent, the workers, and the local communities directly affected by the project.

508. The Environmental Management Plan (EMP) for the project is attached asTable 31, which identifies feasible and cost - effective measures to be taken to reduce potential significant, adverse, impacts to acceptable levels. Here, proper mitigation measures are proposed for each potential impact, including details on responsible parties for implementation of mitigation measures and supervision. The EMP also discusses the anticipated impacts, monitoring requirements, and development of mitigation measures with respect to the following stages: (i) pre-construction, (ii) construction, and (iii) operation and maintenance.

509. Proposed mitigation measures will be incorporated into tender documents, construction contracts, and Environmental Management Plans. Both Contractors and PAG will implement the measures and their effectiveness will be evaluated on the basis of the results of the environmental monitoring to determine whether to continue them or to make improvements. Detailed, site-specific EMP and mitigation measures and monitoring plans will be developed by the Contractor based on the EMP presented in Table 31.

Health Care Waste Management

510. Based on site observations and information from hospital and district administration, the following actions can be drawn to implement proper health care waste management at the hospitals / health centers concerned:

- Availability of drinking water for Hospitals / Health Centers connected to central water supply system should be repaired. As transportation of drinking water requires intensive utilization, and Hospitals / Health Centers should have a safe and secure water source;
- All Hospitals / Health Centers need to connect to the sewage system or install onsite wastewater treatment and/or disposal systems. Onsite wastewater treatment and disposal systems should include septic tanks or other facilities due to the absence of central wastewater treatment systems in the districts.
- HOB based heating to be replaced with Electric Floor heating to remove coal handling, ash and other pollution load;
- Solid waste collection facilities need to be upgraded. Sitting should be defined carefully, and storage facilities should be covered. Burning should be prohibited;

- All hazardous waste such as needles, syringes, bandages, waste medical vials etc. must be handled in proper manner instead of just burning in Incinerator. Incinerator should be used only for hospital waste and not for burning of boxes and paper etc.

511. Annex 10 provides an inventory of all HCW related aspects as well as the proposed systems for betterment of facilities at these hospitals. It contains brief explanation on

- Construction waste and medical waste disposal plan during construction,
- Hospital medical waste management during operation, and
- Recommendations to be followed for each aspect.

Table 31: Environmental Management Plan (EMP)

MITIGATION MEASURES DURING DESIGN, CONSTRUCTION AND OPERATION

	Project Activity	Potential Environmental Impact	Mitigation Measures	Institutional Responsibility	
				Implement	Monitor
A	**Pre-construction and Design**				
1	Location of Hospitals / Health Centers location and design.	Exposure to safety related risks.	Setback of dwellings to designed in accordance with permitted safety distances	Design Consultant	PAG
2	Building specifications and design parameters.	Release of effluents in receptors (air, water, land).	Maintain adequate clearance, construction of retaining structures; minimize digging close to the dwellings. Avoid all underground utilities during design	Design Consultant	PAG
3	Rehabilitation of old infrastructure in Hospital / Health Center	Decayed infrastructure will damage new installations. Loss of heating and seepage etc. in building	Install modern fire control systems/firewalls, building insulation, plumbing and heating system upgrades	Design Consultant	PAG
4	Dismantling of portions of buildings for connectivity of expansion section	Asbestos present as insulation in some section of the building	Asbestos shall be handled carefully during dismantling, storage and disposal	Design Consultant	PAG
5	Disturbance to adjacent lands and the people due to digging and construction operations. Interference with drainage patterns	Impact to the existing surface water environment.	Appropriate siting. Construction facilities should be placed at suitable distance from drainage, natural flow paths, important ecological habitats and residential areas. Careful site selection to avoid existing settlements	Design Consultant	PAG
6	Noise generation	Noise generation Exposure to noise, Nuisance to neighboring properties.	Noise screens location/designed to ensure noise will not be a nuisance to neighboring properties.	Design Consultant	PAG
7	Removal of Trees	Loss of trees.	Avoid siting of structures to avoid any permanent loss of trees wherever possible. Implement tree replantation or transplantation as the case may be	Design Consultant	PAG
8	Explosions/Fire	Hazards to life	Design of Hospital / Health Center to include modern fire control systems/firewalls. Provision of firefighting equipment to be located close to electrical/heating installations.	Design Consultant	PAG
B	**Construction Phase**				
1	Construction site clearance	Air Pollution due to removal of topsoil and loose soil storage at site may lead to dust emission. Vehicular movement will spread dust.	Sprinkle water at site and cover soil dump against air pollution Use of well trained and experienced machinery operators to reduce accidental damage to the public utilities	Contractor through contract provisions	Construction Supervision, PAG

	Project Activity	Potential Environmental Impact	Mitigation Measures	Institutional Responsibility	
				Implement	Monitor
2	Mechanized construction	Noise, vibration equipment wear and tear and operator safety, efficient operation.	Construction equipment to be well maintained. Construction techniques and Machinery selection to minimize ground disturbance. Proper maintenance and turning off plant not in use. Noise barriers will be installed to reduce incidence of noise to local residents.	Contractor through contract provisions	Construction Supervision, PAG
3	Access road for ingress into premises	Increased land requirement for temporary accessibility.	Existing separate gates used for construction and maintenance access to the site wherever possible.	Contractor through contract provisions	Construction Supervision, PAG
4	Surplus earthwork/soil	Runoff to cause water pollution, solid waste disposal	Storage of excess soil near drainage and settlement areas stored in restricted area and construction work should be carefully designed to minimize obstruction or destruction to natural drainage. Excess soil from foundation excavation to be reused on site or disposed of in accordance to construction site management plan by contractor.	Contractor through contract provisions	Construction Supervision, PAG
5	Construction schedules for Hospitals / Health Centers.	Noise nuisance to neighboring properties.	No construction activities undertaken during the night and local communities informed of the construction schedule. Noise barriers will be installed to reduce incidence of noise to local residents.	Contractor through contract provisions	Construction Supervision, PAG
6	Temporary use of land.	Losses to neighboring land uses/ values.	Contract clauses specifying careful construction practices; Land will be reinstated following completion of construction.	Contractor through contract provisions	Construction Supervision, PAG
7	Transportation and storage of materials.	Nuisance to the general public.	Transport loading and unloading of construction materials should not cause nuisance to the people by way of noise, vibration and dust. Use dust suppressing water sprays on paths and stored demolished material/sand/gravel at the site.	Contractor through contract provisions	Construction Supervision, PAG
8	Storage of construction material	Air emission from the construction activity during stacking/storage of soil, construction material at site, .	Construction materials should be stored in covered areas to avoid dust emissions and materials should be bundled in environment friendly and nuisance free manner; Avoid storage of construction materials beside the road, around water bodies, residential or public sensitive locations.	Contractor through contract provisions	Construction Supervision, PAG

	Project Activity	Potential Environmental Impact	Mitigation Measures	Institutional Responsibility	
				Implement	Monitor
9	Electrical/fire safety Equipment layout and installation	Sparks and fire hazard during construction	Record of all Hospitals / Health Centers electric fittings and fire safety devices located within secure casings	Contractor through contract provisions	Construction Supervision, PAG
10	Asbestos is found during construction	Lead to inhalation and long term health impact on workers and occupants	Record all instances at Hospitals / Health Centers and report to Tajikistan authorities. Process as per Tajikistan laws	Contractor through contract provisions	Construction Supervision, PAG
11	Use of Volatile organic compounds	Toxicity and air contamination inside building	Use of low or no volatile organic compounds – water based nontoxic etc.	Contractor through contract provisions	Construction Supervision, PAG
12	Provision of facilities for construction workers at work site	Contamination of receptors (land, water, air).	Construction workforce facilities to include proper sanitation, water supply and waste disposal facilities at work site.	Contractor through contract provisions	Construction Supervision, PAG
13	Trimming/cutting of trees within Hospital / Health Center boundary.	Loss of trees.	Trees that can survive pruning to comply should be pruned instead of cleared. Felled trees and other cleared or pruned vegetation to be disposed of as authorized by the statutory bodies. Contractor will replant or transplant trees to be cut within the Hospital / Health Center premises.	Contractor through contract provisions	Construction Supervision, PAG
14	Health and safety	Injury and sickness of workers and members of the public.	Contract provisions specifying minimum requirements for construction camps. Contractor to prepare and implement a health and safety plan and provide workers with required PPE. Contractor to arrange for health and safety awareness program s including on AIDS and sexually transmitted diseases (STD).	Contractor through contract provisions	Construction Supervision, PAG
15	Community Health and Safety	Injury and accidents caused to residents in the area	Installation of proper warning signage, installation of sheet barriers to avoid people, children, animals falling into trenches, or projectile material hitting the residents walking by or damaging property	Contractor through contract provisions	Construction Supervision, PAG
16	Construction worker camp waste	Domestic waste from construction site	Provide appropriate waste storage containers; Trash collection bins are regularly sprayed with pesticides to reduce flies; Wastes are stored away from water bodies and regularly hauled to a designated dumping site.	Contractor through contract provisions	Construction Supervision, PAG

	Project Activity	Potential Environmental Impact	Mitigation Measures	Institutional Responsibility	
				Implement	Monitor
17	Debris from demolition, cutting filling and refurbishment	Construction wastes causing adverse impacts on surrounding environments.	Construction wastes that cannot be reused will be regularly transported off-site for disposal, and not be allowed to accumulate on site over long periods.	Contractor through contract provisions	Construction Supervision, PAG
18	Asbestos Containing Material (ACM) waste – asbestos slates etc.	Carcinogenic to workers and public if not handled and disposed of safely	Conduct occupation health Asbestos action plan and adhere to the applicable IFC (2007) guidelines for asbestos-containing materials (ACM):62 Existing asbestos-cement roofing sheets will be removed and disposed of following the internationally-recognized Standard Practice for Maintenance, Renovation and Repair of Installed Asbestos Cement Products (American Society for Testing and Materials [ASTM] E 2394).63 Identify landfill area in coordination with environmental departments for asbestos waste. Timely disposal of construction waste.	Contractor through contract provisions	Construction Supervision, PAG
C	**Operation and Maintenance Phase**				
1	Segregation of solid waste, medical waste, wastewater, needles, sharps,	All waste is thrown into rivers basins, burnt and is a nuisance to local community	Implementation of proper segregation, storage and waste disposal systems at hospital	Hospital / Health Center, part of O&M costs	PAG
2	Health Care Waste management	Risk of infectious diseases to community, staff	Proper disposal of waste such as needles, sharps, bandages, medical wastewater and other aspects as listed in Annex 10.	Hospital / Health Center, part of O&M costs	PAG
3	Effluent Management from Hospital / Health Center	Chemicals, pathological waste from laboratories, medical equipment washing, cleaning, sewage flowing into pits and drains	Hospital / Health Center to ensure that chemical waste, pathological waste effluent is collected and disposed of. Maintenance and regular upkeep of sanitation system to avoid surface discharge.	Hospital / Health Center, part of O&M costs	PAG

62 International Finance Corporation. Environmental, Health, and Safety Guidelines, 2007. http://www1.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/sustainability+framework/environmental%2C+health%2C+and+safety+guidelines/ehsguidelines

63 ASTM International. ASTM E2394-11, Standard Practice for Maintenance, Renovation and Repair of Installed Asbestos Cement Products. West Conshohocken, PA, 2011. http://www.astm.org/Standards/E2394.htm. This standard describes work practices that protect worker and community health within the resources available in developing and industrialized countries. As much as possible it relies on readily-available tools, equipment, and supplies, and techniques that require careful and diligent workmanship but not the services of highly-skilled tradesmen. The standard is written for construction workers and tradesmen, for those involved in the preparation of contracts and tenders, and for government officials involved in developing regulations to protect worker and community health.

	Project Activity	Potential Environmental Impact	Mitigation Measures	Institutional Responsibility	
				Implement	Monitor
4	Management of emissions from HOB, Incinerators	Low ambient air quality inside premises	Monitoring of HOBs/Incinerator operations to ensure the air emissions, incinerator ash handling etc. are within permissible limits	Hospital / Health Center, part of O&M costs	PAG
5	O&M of building equipment-heating, building insulation and generators etc.	Loss of heating, high operational costs	Insulation to ensure efficient operations	Hospital / Health Center, part of O&M costs	PAG
6	Electric shock or accidents	Death or injury to the staff and public.	Security warnings around fittings. Careful design using appropriate technologies to minimize hazards.	Hospital / Health Center, part of O&M costs	PAG
7	Operation of Electrical safety systems, fire safety systems.	Electric sparks, fire and explosion	Record of all Hospitals / Health Centers electrical switchbox located within secure casings.	Hospital / Health Center, part of O&M costs	PAG
8	Replanted Trees	Replanted trees die	Proper upkeep, water etc. for ensuring tree regenerate	Hospital / Health Center, part of O&M costs	PAG
9	Training on Health and safety and emergency response	Lack of awareness for health and safety procedure.	Training of personnel on safety and emergency response in compliance with District's Emergency Management Agency requirements	Hospital / Health Center, part of O&M costs	PAG
10	Capacity Building	Improve standards of implementation and monitoring.	Training of MOHSPP.	Contractor through contract provisions	Construction Supervision, PAG

F. Environmental Monitoring Plan (EMoP)

512. Environmental monitoring is an important aspect of environmental management during construction and operation stages of the project to safeguard the protection of environment.

513. In addition to the EMP, to ensure that project would not be generating a negative impact to the overall environment quality, an Environmental Monitoring Plan (EMoP) will be prepared. The parameters to be monitored are outlined in the Environment Monitoring Plan (EMoP). EMoP provides the periodicity of the measurements of environmental parameters – air, noise, soil and water at the various Hospitals / Health Centers to be implemented by the Contractor during the construction phase. The monitoring activities of the project include site supervision, verification of permits, monitoring of water quality, soil, noise and air. Monitoring of the quality of water, soil, air and noise during the construction stage is a responsibility of civil works contractors. PAG engineers (who are contracted by PAG) will supervise civil works contractors. Monitoring of sanitary waste treatment should be done periodically to avoid water pollution. Other environmental good practices include noise abatement, maintaining hygienic conditions, maintenance of fire and safety equipment etc. Monitoring report should be prepared once in six months with the corrective action plan for the problem areas.

514. The main objective of environmental monitoring is:

- to evaluate the performance of Contractor in mitigating negative impacts vs. the proposed measures in the EMP;
- to provide information on unanticipated adverse impacts or sudden change in impact; to determine if any impacts are irreversible in nature which required remedial measures and monitoring;
- to suggest improvement in environmental mitigation measures, if required.

515. Implementation of environmental mitigation measures will be ensured through both routine and periodic monitoring. The parameters to be monitored are outlined in the following plan in Table 32. The PAG shall supervise the project regularly, and submit half yearly reports based on the monitoring data and laboratory analysis report.

516. The mitigation measures suggested requires monitoring of environmental attributes both during construction and operational phase of the project by the PAG. During the construction and operation phase of this project, the monitoring of the environmental aspects shall be done at the project sites by the PAG's Environment Safeguards specialist and Design and supervision environmental consultants.

Monitoring Methodology for Baseline Measurements
Air Quality

517. Air measurements need to be conducted by the Contractor at the construction sites location, populated areas, other hospital departments. Air quality measurements would done once during day-time at the construction location, the boundary where the housing etc. is located near the boundary. In addition, there need to be air quality measurements near the entrance roads. Baseline measurements are to be taken prior to construction start. Regular monitoring measurements required during construction phase will be conducted. However, the dust emissions can be easily mitigated with appropriate mitigation measures that will be proposed as part of the IEE and EMP.

518. The only source of air pollution at the hospital during the operations will be the incinerator and boiler house which would have standard emission rates if new equipment is supplied in the project.

Noise Measurements

519. Sensitive receptors concerning noise emissions are populated areas, hospitals departments or other social infrastructure facilities. They are located around the Project area. Baseline measurements for noise at identified sensitive hotspots and sensitive receptors need to be measured before construction activities start. Noise level standards in Tajikistan are shown in Annex 1.

520. EMP will include Noise monitoring by the Contractor as a requirement - to be undertaken prior construction as pre-construction survey and to be monitored after. The baseline noise information will be collected according to existing receptors and their distance to the sites.

521. Noise monitoring should be collected at the receptors location using a Class 1 Sound Level Meter capable of measuring LAeq averaged over time (properly calibrated). Noise levels would be monitored for daytime hours. Annex 8 gives the methodology for measurement for the Contractor.

522. Noise measurements need to be conducted at the locations indicated in the Appendix. Baseline measurements are to be taken prior to construction start. Than regular monitoring measurements during construction phase will be conducted. Initial measurements were undertaken during the conducted site surveys.

Table 32: Environment Monitoring Plan

#	issue	What parameters is to be monitored	Where is the parameter to be monitored (Sampling Location)	How is the parameter to be monitored?	When is the parameter to be monitored? Frequency?	Institutional Responsibility
	Construction Stage					
1	Air Quality Deterioration	PM10, PM2.5, SO2, NOx, SPM, CO (Visible dust)	Boundary of Hospitals / Health Centers	By means of suitable portable measurement device	Prior to construction and during construction activities. Establishment of baseline conditions before construction start. Monitoring measurements on a monthly basis during construction stage.	Contractor as part of contract provisions
2	Noise/ Vibration Rehabilitation works within hospitals at locations close to sensitive receptors such as schools, other hospitals, mosques, bazars or other sensitive socioeconomic infrastructure.	Noise level [dB(A)]	Boundary of Hospitals / Health Centers	By means of portable noise measurement device	Establishment of baseline conditions before construction start. Than monitoring measurements on a quarterly basis during construction stage.	Contractor as part of contract provisions
3	Soil	Visible spills and/or soil staining, Oil & grease	At respective new building locations.	Inspections; observation	One time	Contractor as part of contract provisions
4	Potential tree losses because of building construction.	Trees located within the Hospital area	At respective new building locations.	Inspections; observation. Decision is to be made by the construction supervision engineer.	Baseline measurements before construction activities commence	Contractor as part of contract provisions
5	Worker's safety and health	Official approval for worker's camp; Availability of appropriate PPE; Organization of traffic on the construction site	Job site and worker's camp	Inspection; interviews; comparisons with the Contractor's method statement	Weekly site visits by the hired Health and safety expert. Unannounced inspections during construction and upon complaint.	Contractor as part of contract provisions

#	issue	What parameters is to be monitored	Where is the parameter to be monitored (Sampling Location)	How is the parameter to be monitored?	When is the parameter to be monitored? Frequency?	Institutional Responsibility
		Provision of safety training to the staff according to the requirements of the individual work place Safe transportation of construction material; Stockpiling of excavated materials and appropriate disposal				
B	Operation Stage					
1	Air Quality Deterioration	PM10, PM2.5, SO2, NOx, SPM, CO (Visible dust)	Boundary of Hospitals / Health Centers	By means of suitable portable measurement device	One time during commissioning	Hospitals / Health Centers as part of O&M costs
2	Soil	Visible spills and/or soil staining, Oil & grease	1 location inside Hospitals / Health Centers	Inspections; observation	One time during commissioning	Hospitals / Health Centers as part of O&M costs
3	Hospital Care Waste	Medical solid waste and medical wastewater management system	Inside the hospital	Inspections; observation	Everyday recording waste management	Hospitals / Health Centers as part of O&M costs
4	Implementation of training programs	Number of orientation and trainings on safety, facility usage to patients, staff	Number of orientation and trainings conducted	PAG to develop scoring system	Regular	Hospitals / Health Centers as part of O&M costs

Abbreviations:SO2- -Sulphur Dioxide; NO2- - Nitrogen Dioxide; CO- Carbon Monoxide; Pb – Lead; PM2.5 - Particulate Matter <2.5; PM10 - Particulate Matter <10; EC – Electric Conductivity; TSPM- Total Suspended Particulate Matter; DO - Dissolved Oxygen; TSS - Total Suspended Solids; BOD - Biological Oxygen Demand; ORP – Oxidation Reduction Potential; NAAQS - National Ambient Air Quality Standards specified by CEP

G. Development of Site-specific Environmental Management Plan (S-EMP)

523. The construction contractor shall prepare a site-specific environmental management plan (SEMP) prior to the commencement of construction works in consultation with EASS of the PAG and Design and Supervision environment consultants and shall submit the same for review and approval. The plan shall include construction method statements on the implementation of pollution control and mitigation measures, adherence to energy-and resource- efficient construction practices, as well as an emergency spill contingency plan for containing and cleaning up accidental chemical spills on construction sites. The SEMP shall be updated as needed as and when environmental issues not covered by the plan arise. Annex 4A gives the SEMP related Standard Construction Contract Environmental Management Clauses for preparation of the SEMP.

524. Prior to construction works, the contractor shall provide a comprehensive Construction EMP covering the following aspects:

- Dust management which shall include schedule for spraying on hauling and access roads to construction site and details of the equipment to be used.
- Layout of the work camp and details of the proposed measures to address adverse environmental impacts resulting from its installation.
- Sewage management including provision of sanitary latrines and proper sewage collection and disposal system to prevent pollution of watercourses.
- Waste management covering provision of garbage bins, regular collection and disposal in a hygienic manner, as well as proposed disposal sites for various types of wastes (e.g., domestic waste, used tires, etc.) consistent with appropriate regulations.
- Description and layout of equipment maintenance areas and lubricant and fuel storage facilities including distance from water sources and irrigation facilities. Storage facilities for fuels and chemicals will be located away from watercourses. Such facilities will be bounded and provided with impermeable lining to contain spillage and prevent soil and water contamination.
- Soil Management Plan detailing measures to be undertaken to minimize effects of wind and water erosion on stockpiles of topsoil and excess materials, measures to minimize loss of fertility of top soil, timeframes, haul routes and disposal sites for excess materials.
- Emergency response plan (in case of spills, accidents, fires and the like) prior to operation of the asphalt plant.
- Method statement or plan for the execution of construction works including measures that will be undertaken to address adverse environmental impacts such as air and noise pollution that may result from such activities.

525. The Construction EMP shall be submitted by the contractor for approval to the Construction Supervision Consultant. SEMP must be prepared by the Contractor and approved by the PAG at least 15 days before start of construction. Construction works cannot start until the SEMP are prepared and approved.

H. Monitoring and Reporting

1. Responsibilities

526. MOHSPP will be responsible for implementing internal monitoring systems for EMP implementation and will forward semi-annual progress reports to the Government and ADB. The reports will cover EMP implementation with attention to compliance and any needed corrective actions. On-going consultation measures will be incorporated in the EMP. A template of the Environment Monitoring Report is attached as Annex 5, which will be required to submit bi-annually by MOHSPP to ADB.

2. Monitoring of Site-specific EMPs

527. The PAG Environment Safeguards Specialist will monitor the Contractor's implementation of site-specific environmental management mitigation measures. To this end, the training program has provision for training of the Contractor's staff. The PAG's Environment and Social Safeguards (EASS) Specialist[64] will be the key person reviewing the implementation of EMP.

3. Construction Contracts

528. The Contractor will adhere and comply with all measures and procedures identified in the EMP. The EMP and EMoP which are endorsed by the EA and Government of Tajikistan, will be monitored in accordance to ADB Safeguard Policy 2009 requirements. Mitigation measures related to construction as specified in the EMP will be incorporated into civil works contracts, and their implementation will be primarily the responsibility of civil works contractors. In addition, civil works contractors will be requested to submit monthly progress reports on the implementation of EMP measures to EA/PAG.

529. The Annex 4 also lays down the following checklist/clauses for the Contractor to adhere to.

- Annex 4B: Environmental Safeguard Clauses for Civil Works Contracts.
- Annex 4C: Environmental Site Inspection and Monitoring Checklist, and

4. External Monitoring

530. The PAG will be responsible for internal monitoring of the EMP implementation and will develop semi-annual progress reports with details of activities and progress made during EMP implementation. The PAG will submit annual monitoring reports to ADB. If project activities are noticed to have significant adverse environmental impacts, ADB requires MOHSPP to retain qualified and experienced experts65 or qualified Non-Government Organization (NGO) or Community Based Organization (CBO) to verify the report. If required, these external experts / NGO or CBO will report on a semi-annual basis directly to ADB to verify if sound environmental management practices were followed during implementation. In case the implementation of EMP measures is not satisfactory, the external experts / NGO or CBO will recommend actions to enhance environmental compliance.

5. Reporting

531. The EA in turn will be expected to report to the ADB on progress achieved against the EMP activities and milestones on a semi-annual basis. Progress reports will include a description of implementable activities and their status; identify the responsible party (ies) involved in their implementation; and provide project management schedules and timeframes for doing so, along with their associated costs. Format for Monitoring reports for Environment is shown in Annex 5.

I. Environmental Management Plan Budget Costs

532. The main benefits of the environmental mitigation plan are (i) ensuring that environmental standards are met during design, construction, and operation of the project; (ii) providing offsets to negate project impacts especially ecological impacts. Without such expenditures,

64 The TOR for Environment Safeguards Specialist lists this requirement and is attached to the Project Administration Manual (PAM)

65 External expert who is not involved in day-to-day project implementation or supervision

the project might generate significant environmental impacts, causing the biophysical environment in the area to deteriorate and indirectly depressing the economies of local communities.

533. The compliance with the EMP has been prepared based upon optimum and reasonable costs that are derived upon minimization of mitigation measures on a “least-cost” basis. The estimated budget for implementing the EMP is USD (approx. 1% of the total budget) of USD 32 million as shown in Table 34.

Table 33: Estimated Costs for Implementing EMP

#	Type of expenses	Cost Estimates US$
1	Promotion and advertisement of the EMP*	5,000
2	Support the implementation of mitigation activities** (Based on Table 34 below)	122,300
3	Reviewing and revising of EMP***	30,000
4	Environment Parameters testing (regularly quarterly) Included in civil works contract (based on Table 36below)	23,800
5	Training and Consultancy ****	20,000
6	Budget for the Monitoring activities (based on Table 35 below)	81,000
7	Budget for public consultation and feedback	10,000
	TOTAL	292,100
	* “Promotion and advertisement of the EMP” include activities to provide awareness on EMP to relevant stakeholders and public communities in surrounding areas of construction sites as well as informing them of the roles and responsibilities of various parties involved. Costs may include development of promotional materials, advertising etc. ** Mitigation activities are approximately 0.5% for individual package *** Revision of IEE/EMP, if major scope of project activities change during implementation **** Training costs for items	

Table 34: Cost Estimate for Mitigation Measures (USD)

Description	Unit	Quantity	Rate USD	Amount USD
Included in Civil Works Contract				
Planting, maintenance and Watering (during construction stage) of trees	Pieces	50	22	1100
Preparation of Construction EMP	Lumpsum			6,000
Clearing of Construction Area	Lumpsum			12,000
Removal and Storage of Topsoil	Lumpsum			12,000
Protection of Land/Water Resource	Lumpsum			6,000
Management of Solid Waste and Sewage Waste from the Construction Camp	Lumpsum		3 sites/day for 24 months	7,200
Potential restoration of Work and Storage Site	Lumpsum			12,000
Dust suppression measures during dry period (water spraying)	Periods	3 (daily during dry summer period)	1000no.s x $10	10,000
Securing of Storage and Equipment Maintenance Areas.	Lumpsum			10000
Contractor’s Safeguard Specialist	month	24	2,000	48,000
Noise protected windows at Hospitals (double glass windows). Delivery and installation.	m²	100	100 USD per m²	10,000
Total Mitigation Measures(A)				122,300

Table 35: Cost Estimate for Design and Supervision Consultant’s Monitoring (USD)

Included in Design and Supervision Consultant's Contract				
Supervision Consultant's National Environment Safeguard Specialist	month	24	3,000	72,000
HIV/AIDS Seminar	Every 4 months during construction time	9	1,000	9,000
Total Monitoring Measures (B)				81,000

Table 36: Cost Estimate for Baseline Monitoring (USD)

Description	Unit	Quantity	Rate USD	Amount USD
Baseline Included in Civil Works Contract				
Noise Monitoring. Baseline measurement (as per TOR in Annex 8	Number	6: 5 locations each multiplied by 13. (1 baseline measurement and12 construction period measurements)	100	6,500
Vibration Monitoring over construction period,	Number	As above	100	6,500
Dust and air pollutants Measurement over construction period	Number	6x12	150	10,800
Total Monitoring Measures (C)				23,800

534. The cost components include items such cost towards promotion, advertisement and implementation of mitigation activities (Contractor's civil works scope), review and revision of IEE/EMP is scope changes, Training and consultancy, monitoring of EMP and support implementation of mitigation activities etc. in entire location of Hospital / Health Center and future public consultations required. These activities will be coordinated by the PAG Coordinator, Environment Supervision Specialist, Design and Supervision environment consultants and the Contractor.

J. Institutional Arrangements

1. Project Implementation Organizations: Roles and Responsibilities

535. The MOHSPP will be the **executing agency** (EA) of the project. It will be responsible for overall management and coordination of the project including: (i) Exercise project supervision; (ii) Provide policy coordination and guidance in the implementation of the project; (iii) Monitor implementation of the project; (iv) Coordinate and submit timely and accurate reports to ADB. The MOHSPP will constitute a Project Administration Group (PAG) will be implementing entity for implementation of the ADB grant which will be manage day-to-day activities of the project.

536. The implementing agency will be the project implementation group (PAG), which will be reporting to MOHSPP. The **PAG** will be responsible for project coordination and day-to-day implementation of project. Tasks of PAG will include procurement, disbursement, accounting, logistics management, reporting, monitoring, supervision, developing programs for training, and coordinating with MOHSPP and development partners, and consultants. The project will be implemented from March 2019 to February 2025.

537. MoF (Ministry of Finance) is the responsible government body for coordination with ADB and other Development Partners for foreign assistance and oversight of grant disbursements and ensuring these are properly accounted for. The MOHSPP will form the Project

Steering Committee that will be co-chaired by the MOHSPP and MOF Ministers and will comprise project manager of the PAG, representatives of MOF; MOHSPP department heads and development partners. It will be responsible for providing overall policy guidance to the project.

538. The Initial Environment Examination (IEE) report specifies the roles and responsibilities of institutions involved in project implementation (Ministry of Health and Social Protection, the Project Administration Group (PAG), Contractor, and design and supervision environment consultants (DSEC) in overall environmental management.

539. Environmental permitting and monitoring of Project implementation is within the responsibility of the State Ecological Review Committee and its regional offices. Furthermore, according to the 2012 Law on State Ecological Expertise, all civil works, including rehabilitation ones, should be assessed for their environmental impacts and the proposed mitigation measures should be reviewed and monitored by the CEP (Committee for Environmental Protection under the Government of Tajikistan).

540. The PAG will ensure compliance with assurances, including preparation, finalization, and implementation of the EMP for each sub-project. It will be staffed with at least one environmental safeguard specialist (an environmental engineer/scientist). ADB requires one PAG Environment Safeguards specialist (ESS) who supervises Environment and Social/Resettlement activities until project completion report is issued. The Design and Supervision team would hire required national environment experts for reporting during construction to prepare SEMP, monitoring reports, testing reports, public consultations, Grievance redress. The DSEC would also update the IEE/EMP; conduct training; quarterly environmental quality monitoring (air, and noise); prepare semi-annual[66] project EMP implementation reporting; identifying environment-related implementation issues and undertaking site visits as required.

541. The PAG environment and social safeguard specialist will be responsible for coordination and supervision of the implementation of the IEE and EMP, Resettlement Plan (RP) including (but not limited to)

- setting up baseline ambient air quality, noise and vibration levels, and other baseline in concerned districts;
- updating IEE and EMP, RP after detailed project design is approved;
- overseeing incorporation of EMP recommendations into the bidding documents;
- ensuring the procurement of environmentally responsible contractors;
- ensuring that approval by CEP has been secured prior to the awarding of civil works contract;
- setting up, coordinating, and reporting on the grievance redress mechanism (GRM);
- monitoring contractors to ensure adherence to the EMP and the contractor SEMPs;
- preparing semi-annual reports on project EMP implementation to the PAG;
- coordinating consultation with local stakeholders as required, informing them of imminent construction works, updating them on the latest project development activities, GRM, etc.; and
- supporting the Design and Supervision environment consultants in conducting training, EMP compliance reviews, annual report.

542. Contractors will be required to formulate contractor SEMPs with complete management systems for adverse impacts, e.g., dust control, noise control, traffic management, health care

66 SPS 2009 states: “The borrower/client will submit at least semiannual monitoring reports during construction for projects likely to have significant adverse environmental impacts, and quarterly monitoring reports for highly complex and sensitive projects. For projects likely to have significant adverse environmental impacts during operation, reporting will continue at the minimum on an annual basis. Such periodic reports will be posted in a location accessible to the public. Project budgets will reflect the costs of monitoring and reporting requirements.”

waste management addressing as minimum the requirements of the EMP. The contractor SEMPs will be reviewed and cleared by the PAG. To ensure that the contractors comply with the EMP provisions, the PAG will prepare and provide the following specification clauses for incorporation into the bidding procedures:

- a list of environmental management requirements to be budgeted by the bidders in their proposals;
- environmental clauses for contractual terms and conditions; and
- the full EMP and IEE in both languages.

543. PAG will monitor and measure the progress of implementation of the EMP. In this regard semiannual monitoring reports during construction stage will be prepared by the DSEC and submitted to Responsibilities for the implementation of the environmental mitigation measures and monitoring measures during construction phase will be taken over by the Design and Supervision Environmental Consultant (DSEC) who will report to the PAG on a regular basis. The tender and contract documents will clearly set out the contractor's obligations to undertake environmental mitigation measures set out in the Environmental Management Plan within 1 month after the reporting period.

2. Project Organizational Structure

544. The interactions between steering committed, MOHSPP and the PAG at the project level are shown in Figure 75. Additional third-party services may be employed by the MOHSPP as necessary. Further details on person/agencies responsible for EMP activities are in Table 37.

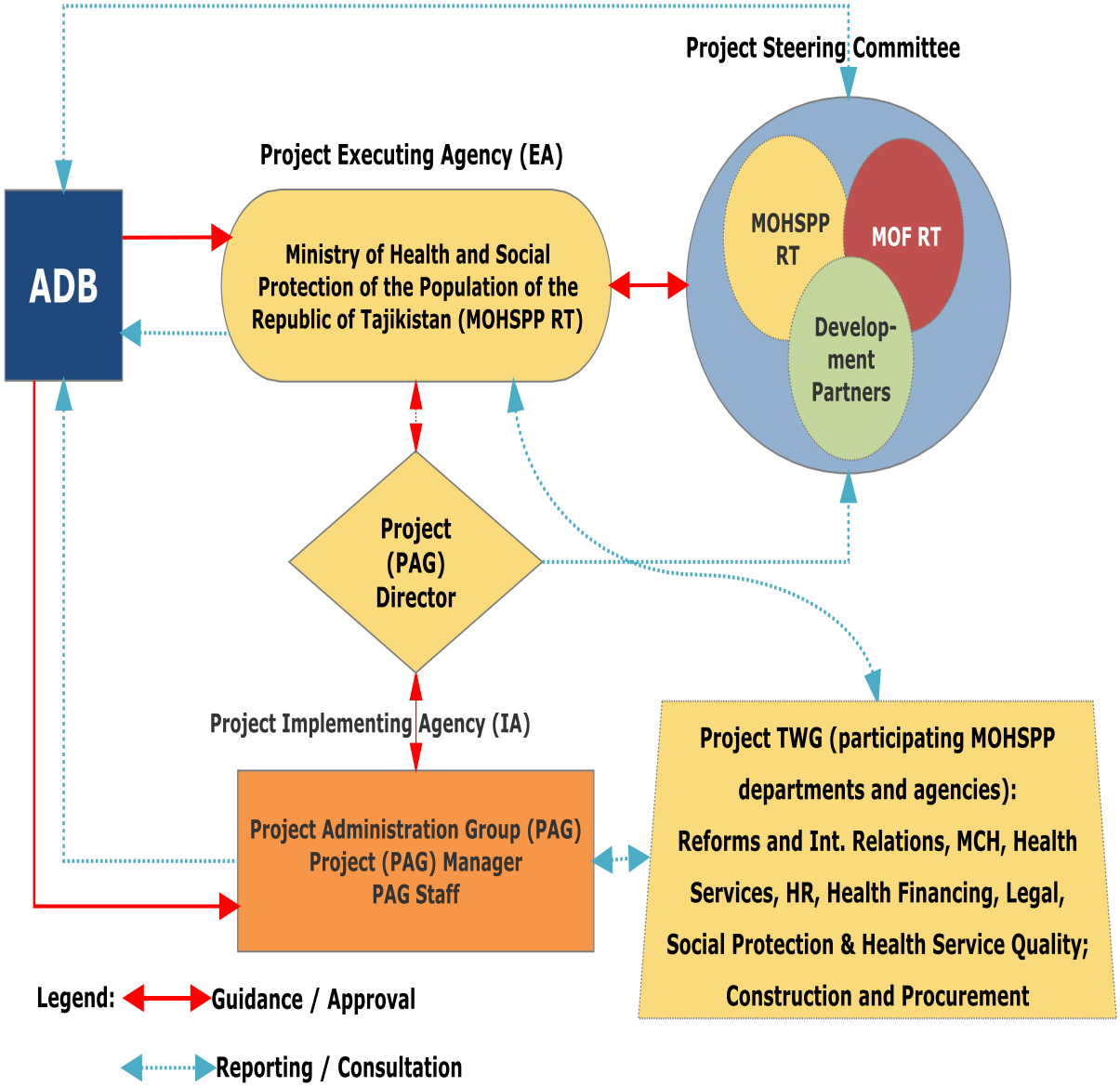


Figure 75: Project Organizational Structure

Table 37: Institutional Roles and Responsibilities for EMP Implementation Activities

Activity	Responsible Person/Agency
Sub-project Initiation Stage	
Establish PAG and award contracts	MOHSPP
Clearances/approvals from relevant Government of Tajikistan agencies-urban, water, power etc.	PAG, MOHSPP
Disclosure of subproject EMP details on MOHSPP website	PAG, MOHSPP
Conducting discussions/meetings/workshops with APs and other stakeholders	ESS and other Specialists at PAG
Updating of EMP mitigation measures based on discussions	ESS, PAG
EMP Implementation Stage	
Meetings at community/household level with APs	ESS, Contractor
Implementation of proposed EMP mitigation measures	ESS, Contractor
Consultations with APs during EMP mitigation measures implementation	ESS, Contractor
Grievances Redressal	PAG/District Administration

Activity	Responsible Person/Agency
Internal monitoring	PAG/ MOHSPP
External monitoring*	External Experts

ADB-Asian Development Bank; AP-Affected Persons; EA-Executing Agency; EMP-Environmental Management Plan; MOHSPP – Ministry of Health and Social Protection of the Population of the Republic of Tajikistan; PAG-Project Administration Group, ESS – Environment Safeguards Specialist, *Note –External monitoring only required when projects are noticed to have significant adverse environmental impacts. Normally not required for Environment Category B project.

K. Implementation Plan

545. The proposed project involves rehabilitation and construction of health care facilities in 3 districts on government owned land. The project will involve survey work, land clearance, design and engineering of plant equipment, floating tenders for procurement, civil work and testing and commissioning of buildings. Total project budget is USD 32 million (including IDCs and contingencies). The overall draft project implementation schedule for the project is attached as Table 38.

Table 38: Overall Project Implementation Schedule

	Output/Activity	Year 1				Year 2				Year 3				Year 4				Year 5				Year 6			
		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	**MCH Service delivery rationalized, Infrastructure improved and equipped and case-based financing piloted**																								
2.1	**Rationalization and Infrastructure improvement**																								
2.2.1	Design of health facilities and detailed cost estimates for works and equipment			*	*	*	*																		
2.2.2	Procurement of civil works							*	*																
2.2.3	Development of facility specific environmental management plan (EMP)							*	*																
2.2.4	Construction and Equipment of health facilities									*	*	*	*	*	*	*	*	*	*				*		
2.2.4	Supervision of the civil works and EMP									*	*	*	*	*	*	*	*	*	*				*		
2.2	**Procurement of medical equipment and furniture**																								
2.2.1	***Procurement of medical equipment***																								
2.2.1.2	Procurement of basic Equipment							*	*																
2.2.1.3	Equipment Installation															*	*	*	*				*		
2.2.1.4	Staff training in use of new equipment															*	*	*	*						
2.2.2	***Procurement of medical furniture***																								
2.2.2.1	Procurement of medical furniture							*	*																
2.2.2.3	Delivery of medical furniture to the health facilities															*	*	*	*				*		
2.3	**Equipment Maintenance System Development**																								
2.2.3.1	Development of tender documents for equipment maintenance tools								*																
2.2.3.3	Inventory of available medical equipment in project targeted districts			*	*																				
2.2.3.4	Capacity building of equipment maintenance specialists at project facilities										*		*			*		*	*	*					

NOTE - This schedule is tentative and will be finalized based on each site as well as estimated schedule indicated by bidders for each contract.

XI. Conclusion and Recommendation

546. This report assessed various existing environmental parameters in and around the sub-project and the actions planned to minimize any significant negative impact. The project will support physical construction, expansion, and rehabilitation of education facilities.

547. The sub-project sites are not located near any sensitive areas as well no significant historical and cultural areas. The project will not cause any significant adverse environmental impacts during construction and expansion of Hospital / Health Center buildings. Rather, the project activity will have a positive impact as indicated earlier.

548. Impacts are manageable and can be managed cost effectively - Environmental impacts are likely to result from the proposed construction of buildings. Careful mitigation and monitoring, specific selection criteria and review/assessment procedures for subprojects have been specified to ensure that minimal impacts take place. The detailed design would ensure inclusion of any such environmental impacts that could not be specified or identified at this stage are taken into account and mitigated where necessary. Those impacts can be reduced through the use of mitigation measures such as correction in work practices at the construction sites, or through the careful selection of sites and access locations.

549. The project impacts are associated with drainage congestion/water logging, dust and noise pollution, occupational health hazards, waste management, risk from poor sanitation system, improper lighting and ventilation system in Hospital, and management of labor at the site. Moreover, most of the associated impacts are expected to be limited to the construction phase and will therefore be temporary in nature. Regular monitoring of the recommended mitigation measures shall also be carried out during the implementation phase of the project and a number of mitigation measures and management plans will be followed to mitigate the impacts:

550. The Hospitals and Health Centers need to establish sound Health Care Waste Management processes (documented in Annex 10). Based on site observations and information generated through the questionnaire survey, the following conclusion can be drawn for betterment of HCW at these hospitals:

- Availability of drinking water for Hospitals / Health Centers connected to central water supply system should be repaired. As transportation of drinking water requires intensive utilization, and Hospitals / Health Centers should have a safe and secure water source;
- All Hospitals / Health Centers need to connect to the sewage system or install onsite wastewater treatment and/or disposal systems. Onsite wastewater treatment and disposal systems should include septic tanks or other facilities due to the absence of central wastewater treatment systems in the districts;
- HOB based heating to be replaced with Electric Floor heating to remove coal handling, ash and other pollution load;
- Solid waste collection facilities need to be upgraded. Siting of waste facilities should be defined carefully, and storage facilities should be covered. Burning should be prohibited;
- All hazardous waste such as needles, syringes, bandages, waste medical vials etc. must be handled in proper manner instead of just burning in Incinerator. Incinerator should be used only for hospital waste and not for burning of boxes and paper etc.

551. The proposed medical facilities rehabilitation works will not have any adverse impact on people and community lands, structures and properties as the construction works will be carried out within the existing boundaries. During engineering design of the hospital facilities by the Engineers, potential impacts on structures and lands will be avoided since the existing

territories are sufficient. If any adverse impacts are identified during the detailed design stage or construction, adequate mitigation measures will be taken following the ADB SPS 2009 for smooth implementation of the project. No endangered or protected species of flora or fauna are reported at any of the subproject sites.

552. The proposed project will have number of positive impacts and negative impacts to the existing environment as follows:

- Construction of state of the art new building for Hospital / Health Center in Tajikistan is the main positive impact. Depending on the project's decision for rehabilitation and construction works within this hospital and as per preliminary observation and discussions with the hospital and clinic administrations, the project will have no impacts on any properties and income generating activities of other third parties.
- Environment pollution due to cut and fill operations, transportation of construction materials, disposal of debris, disturbance to the Hospital activities, nuisance from dust, noise, vehicle fumes, black smoke, vibration etc. due to construction activities are the temporary negative impacts due to proposed project.
- About 68 fruit and non-fruit trees will be cut at the Hospitals / Health Centers, which is a negative impact from construction in the proposed project area.

553. Proper GRM will have to be implemented by MOHSPP to overcome public inconvenience during the proposed project activities.

554. EMP and Environment Monitoring Plan has been prepared and attached as Table 31 and Table 32 respectively. One round of public consultations was conducted. The results indicate broad support for the project based on perceived economic and social benefits. Most impacts are expected to occur during the construction phase and are considered to be of a temporary nature. The construction sites were carefully selected after undergoing an options assessment. These construction drawings for each building will be designed to bypass important underground utilities water supplies and resources nearby any sensitive ecological areas.

555. Hospitals / Health Centers will generate hazardous (potentially infectious and chemical) waste during operation that can be managed properly following to EMP. Health Care Waste (HCW) that contains potentially harmful microorganisms, which can lead to infection of patients, staff, and the public, will need to be managed by the hospitals during operations. Proper segregation of waste and its disposal needs to be done as per Annex 10 to implement proper hospital care waste management. An Emergency Response Program (ERP) will be prepared by the Contractor in consultation with the Environmental Safeguards specialist of the PAG. ERP training will be provided to all stakeholders involved in construction activities and operations.

556. Environmental impact analysis has been done using various criteria including demographic factors, climate and natural habitat, community and employee health and safety etc. It was found that there is no adverse impact on any of the existing natural resources nor will the project affect the regular life of people resident in the subproject area.

557. The environmental impact associated with Hospitals / Health Centers projects is limited to the duration of the construction phase and can be mitigated through a set of recommended measures including monitoring, measuring and mitigation. The main project impacts are associated with excavation, movement, and clearing of soils and of building rubble during construction and with waste management during operations of the facilities.

558. The IEE performed is adequate for purposes of project implementation. Based on the environmental assessment and surveys conducted for the project, the potential adverse

environmental impacts can be mitigated to an acceptable level by adequate implementation of the mitigation measures identified in the EMP. Adequate provisions are being made in the project to cover the environmental mitigation and monitoring requirements, and their associated costs.

Annexes

Annex 1: Relevant Environmental Quality and Health and Safety Standards

Table 39: Environmental Standards or Ambient Air

	National Standards / Requirements Tajikistan standards[67]	IFC/World Bank Guidelines / Standards	General IFC Environmental, Health, and Safety Guidelines (Wastewater and ambient air quality)	Adopted Project Standard (mg/m^3)/ supplementary standards are marked blue	Rationale
Air Quality - Human population protection (at receptors)	mg/m3: PM 0.15 NO 0.06 NO2 0.04 SO2 0.05 Ammonia 0.06 Benzopyrene 0.1 Benzene 0.1 Acetone 0.35 Petrol 1.5 V2O5 0.002 Vinyl acetate 0.15 HCl 0.2 HF 0.005 Fe2O3 0.04 HNO3 0.4 H2SO4 0.1 Xylol 0.2 Manganese and its oxides 0.001 Copper oxides 0.002 Magnesia 0.05 Nickel oxide 0.001 Inorganic dust(SiO270 %)0.05 SiO2= 70%-20%0.1 SiO2 is less than 20% 0.15 Lead and its compounds 0.0003 Lead sulfur 0.001 Hydrogen sulfide, H2S 0.008 Turpentine 1 Ethyl alcohol (ethanol) 5.0 Butyl alcohol (butanol) 0.1 Propane alcohol (propanol) 0.3 Methyl alcohol (methanol) 0.5 Styrene 0.003 Soot 0.05	Where set, national air quality standards apply. If no national standards are set, then apply WHO standards WHO guidelines, µg/m3: PM2.5 10(1 yr) PM2.5 25 (24 h) PM10 20 (1 yr) PM10 50 (24 h) Ozone 100 (8 h) NO240 (1 yr) NO2200 (1 hr) SO220 (24 h) SO2500 (10 min)	Emission concentrations as per General EHS Guidelines, and: 3 H2S: 5 mg/Nm	mg/m3: PM 0.15 NO 0.06 NO2 0.04 SO2 0.05 CO 3.00 Ammonia 0.06 Benzopyrene 0.1 Benzene 0.1 Acetone 0.35 Petrol 1.5 V2O5 0.002 Vinyl acetate 0.15 HCl 0.2 HF 0.005 Fe2O3 0.04 HNO3 0.4 H2SO4 0.1 Xylol 0.2 Manganese and its oxides 0.001 Copper oxides 0.002 Magnesia 0.05 Nickel oxide 0.001 Inorganic dust (SiO270 %) 0.05 SiO2= 70%-20%0.1 SiO2 is less than 20% 0.15 Lead and its compounds 0.0003 Lead sulfur 0.001 Hydrogen sulfide, H2S 0.008 Turpentine1 Ethyl alcohol (ethanol) 5.0 Butyl alcohol (butanol) 0.1 Propane alcohol (propanol) 0.3 Methyl alcohol (methanol) 0.5 Styrene 0.003 Soot 0.05	Tajikistan and supplemented by WHO where necessary to achieve most comprehensive suite 68

67 Annex 3 to Procedure of Environmental Impact Assessment accepted by Resolution No 464 of the Government of the Republic of Tajikistan dated 3 October 2006

68 The IFC cites WHO ambient air quality guidelines typically apply only in jurisdictions where there are no national standards in place.

	National Standards / Requirements Tajikistan standards67	IFC/World Bank Guidelines / Standards	General IFC Environmental, Health, and Safety Guidelines (Wastewater and ambient air quality)	Adopted Project Standard (mg/m^3)/ supplementary standards are marked blue	Rationale
	CO 3.0 Phenol 0.01 Formaldehyde 0.003 Fluoride (HF, SiF4) 0/05 Freon (all brands) 10 Chromium trioxide 0.0015 Chlorine 0.03 ZnO 0.05 Ethylene oxide 0.03			Phenol 0.01 Formaldehyde 0.003 Fluoride (HF,SiF4) 0/05 Freon (all brands)10 Chromium trioxide 0.0015 Chlorine 0.03 ZnO 0.05 Ethylene oxide 0.03	

Table 40: Environmental Standards for Water Quality & Discharges to Water 69

	National Standards/ Requirements	IFC/World Bank Guidelines/Standards	Adopted Project Standard	Rationale
Topic	Tajikistan	IFC Environmental, Health, and Safety General Guidelines		
Discharge to surface water: Effluent water	List of MPC quality of water at surface water bodies(Requirements to water quality in fishery water bodies)70 pH 6.5-8.5 Aluminum(Al) 0.04 Iron(Fe)0.1 Cadmium(Cd)0.005 Copper (Cu)0.001 Nickel(Ni)0.01 Lead(Pb) 0.006 Zinc(Zn) 0.01 Chromium(Cr+6)0.02 Chromium(Cr3+)0.07 Oil andpetrochemicals0.05 Arsenic(As) 0.05 Calcium(Ca)180 Silicon(SiO32-) 1.0	Temperature of wastewater prior to discharge does not result in increase greater than 3°C of ambient temperature at the edge of a scientifically established mixing zone which takes into account ambient water quality, receiving water use and assimilative capacity among other considerations. For treated sanitary wastewater: pH 6-9 BOD 30 COD 125 Total nitrogen10 TotalPhosphorus2 Oil andgrease10 TSS 50 Total coliformbacteria400/100ml	pH 6.5-8.5 BOD 30 COD 125 TitalNitrogen10 TotalPhosphorus2 TSS 50 Total Coliform bacteria 400/100ml Aluminium(Al) 0.04 Iron(Fe)0.1 Cadmium(Cd)0.005 Copper (Cu)0.001 Nickel(Ni)0.01 Lead(Pb) 0.006 Zinc(Zn) 0.01 Chromium(Cr+6)0.02Chromium(Cr3+)0.07 Oil and petrochemicals 0.05 Arsenic(As) 0.05 Calcium(Ca)180 Silicon(SiO32-) 1.0	Tajik MPC as most stringent standard supplemented by IFC where needed for comprehensive suite
Water quality-freshwater	List of MPC above (mg/l)	No numeric standards	Tajik MPC for surface water bodies	Tajik as only relevant

69 For drinking water see Table.50

70 Annex 3 to Procedure of Environmental Impact Assessment accepted by Resolution No 464 of the Government of the Republic of Tajikistan dated 3 October 2006

Table 41: Drinking Water Standards[71]

DRINKING WATER GENERAL ANALYSIS CONTENT AND LIMITS						
Parameter	Units	Tajikistan Standard 5)	WHO Stand-ard	3 EU Standard	Project Standard 8 (mg/l unless stated otherwise)	
Physical Quality						
pH	---	6-9	6–9	6.5-9.5	TS	6-9
Total Dissolved Solids	mg/l	1000	---		TS	1000
Hardness	Mg-eqv/l	7.0	---		TS	7.0
Turbidity	EMF (forma-sine) or mg/l (caoline)	1.5	---	Acceptable to consumers and no abnormal change	TS	1.5
Inorganic Chemical Quality						
Aluminium(Al)	mg/l	0.5	---	0.2	EU	0.2
Ammoni-umion(NH4)	mg/l		---	0.5	EU	0.5
Antimony(Sb)	mg/l	0.05	0.02	0.005	EU	0.005
Arsenic(As total)	mg/l	0.05	0.01	0.01	EU	0.01
Barium(Ba)	mg/l		0.7	---	TS	0.7
Beryllium(Be)	mg/l		---	---	TS	
Boron(B)	mg/l		0.5	1.0	WHO	0.5
Cadmium(Cd)	mg/l	0.001	0.003	0.005	TS	0.001
Chloride ion(Cl-)	mg/l	350	---	250	EU	250
Chlorine(Cl)	mg/l	0.3-0.5(free) 0.8-1.2(bounded)	5	---	TS	0.3-0.5(free) 0.8-1.2(bounded)
Chromium(Cr+6) (Cr+3)	mg/l	0.05 0.5	0.05	0.05	TS	0.05 0.5
Copper (Cu)	mg/l	1.0	2	2.0	TS	1.0
Cyanide(CN)	mg/l		0.07	0.05	EU	0.05
Fluoride ion(F=)	mg/l		1.5	1.5	EU	1.5
Hydrogen Sul-phide (H2S)	mg/l		---	---	TS	
Iron(Fe)	mg/l	0.3	---	0.2	EU	0.2
Lead(Pb total)	mg/l	0.03	0.02	0.01	EU	0.01
Manganese(Mn)	mg/l		0.4	0.05	EU	0.05
Mercury(Hg)	mg/l		0.001	0.001	EU	0.001
Molybdenum(Mo)	mg/l		0.07	---	WHO	0.07
Nickel(Ni)	mg/l	0.1	0.02	0.02	EU	0.02
Nitrate ion(asNO3-)	mg/l	45	50	50	TS	45
Nitrite ion(asNO2-)	mg/l		3 or 0.2	---	TS	3.0
Phosphate ion(PO42+)	mg/l	3.5	---	---	TS	3.5
Selenium(Se)	mg/l		0.01	0.01	TS	0.01
Silicon(Si)	mg/l	10	----	----	TS	10
Silver (Ag)	mg/l		---	---	TS	0.05
Sodium(Na)	mg/l		---	200	TS	200
Sulphate ion(SO42+)	mg/l	500	---	250	EU	250
Strontium(Sr)	mg/l		---	---	TS	---
Uranium(U)	mg/l		0.015	---	WHO	0.015
Vinyl Chloride	mg/l		0.0003	0.0005	WHO	0.0003

71 The project has set numeric standards for the following waters:

DRINKING WATER GENERAL ANALYSIS CONTENT AND LIMITS						
Parameter	Units	Tajikistan Standard 5)	WHO Stand-ard	3 EU Standard	Project Standard 8 (mg/l unless stated otherwise)	
(C2H3Cl/H2C)						
Zinc(Zn)	mg/l	5.0	---	---		5.0
Other quality parameters						
Petrochemicals	mg/l	0.1		0.1-5	TS	0.1
Surfactants(anionic)	mg/l	0.5		----	TS	0.5
COD	mg/l	----		150-400	EU	150-400
Permanganate oxizability	mg/l	5		----	TS	5
Specific electrical conductivity	-3 2x10			----	TS	2x10-3

Project standard represents most stringent for each parameter

Note:

1. This table shows upper limit values, unless indicated otherwise as a range or lower limit value.
2. This table does not include organic chemicals, detergents, pesticides or disinfection by-products. Refer to WHO Guidelines for Drinking Water Quality for Chemical Lists and Guideline Values, the most stringent of which will also form the project standard.
3. EU Council Directive 98/83/EC of 3rd November 1998
4. EU Standard for radioactivity expressed as Tritium 100 Bq/l with a total indicative dose of 0.1 mSv/year
5. SanPin 2.1.4.1074-01.
6. **) – for climatic region III

Table 42: Environmental Standards for Waste

Topic	Tajikistan Standards / Requirements	IFC Environmental, Health, and Safety General Guidelines	Adopted Project Standard	Rationale
Waste treatment and disposal onshore)	No numeric standards stated in the source documents. All waste produced must be handled and disposed of in accordance with national law on waste of production and consumption.	No relevant numeric standard.	No relevant numeric standard.	All waste produced must be handled and disposed of in accordance with national law on waste of production and consumption.
Secondary containment of liquid wastes	No numeric standards stated in the source documents. No numeric standards stated in Tajik legislation.	Secondary containment (SC) is included wherever liquid wastes are stored in volumes greater than 220 liters. The available volume of SC should be at least 110% of the largest storage container, or 25% of the total storage capacity (whichever is greater).	No relevant numeric standard.	IFC Environmental, Health, and Safety General Guidelines Secondary containment (SC) is included wherever liquid wastes are stored in volumes greater than 220 liters. The available volume of SC should be at least 110% of the largest storage container, or 25% of the total storage capacity (whichever is greater).

Table 43: Environmental Standards for Noise Emissions

	National Standards / Requirements	International Guidelines / Standards	Adopted Project Standard	Rationale
Topic	Tajikistan 9	IFC Environmental, Health, and Safety General Guidelines		
Night time noise limits for human protection	Noise emissions at the night time (23:00-07:00) should not exceed the following levels (SanPin 2.2.4/2.1.8.562-96): Inside residential and public buildings: – Hospital and sanatorium's wards, and operating rooms: 25 dB(A); – Residential rooms in apartments, rest houses, boarding houses, houses for the elderly and disabled, sleeping rooms in kindergartens, and residential schools: 30 dB(A); – Rooms in hotels and hostels: 35 dB(A); In residential and other areas: – Recreational areas immediately adjoining hospital buildings and health centers: 35 dB(A) – Areas immediately adjoining residential buildings, policlinics, dispensary, rest houses, homes for the elderly and	Noise emissions should not exceed the following levels or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site: Outdoor: Residential; institutional, educational: Night time (22:00-07:00): 45 dB(A) Industrial, commercial:	Tajik standards apply with night time defined as 22:00 – 07:00 in line with IFC EHS General Guidelines. Exception 1: IFC standard will prevail from 22.00 to 23.00 Exception 2: areas adjoining hotels and	Most stringent and provides more comprehensive measurement criteria

	National Standards / Requirements	International Guidelines / Standards	Adopted Project Standard	Rationale
Topic	Tajikistan 9	IFC Environmental, Health, and Safety General Guidelines		
	disabled, kindergartens, schools and other educational institutions, libraries; 45 dB(A); – Areas immediately adjoining hotel and dormitory's buildings: 50 dB (A)	Night time (22:00-07:00): 70 dB(A)	dorms where IFC standard is more stringent 45 dB (A)	
Day time noise limits for human protection	Noise emissions at the day time (07:00-23.00) should not exceed the following levels (SanPin 2.2.4/2.1.8.562-96): Inside residential and public buildings: – Hospital and sanatorium's wards, and operating rooms: 35 dB(A); – Consultation rooms of policlinics, ambulant clinics, dispensers, hospitals, and sanatoria 35 dB(A). – Classrooms, teachers' common room, school and other educational organization's auditoriums conference halls, and public reading rooms 40 dB(A). – Residential rooms in apartments, rest houses, boarding houses, houses for the elderly and disabled, sleeping rooms in kindergartens, and residential schools: 40 dB(A); – Rooms in hotels and hostels: 45 dB(A); – Halls of cafes, restaurants, eating rooms: 55 dB(A); – Shops trade halls, passenger halls in airports and stations, consumer services centers: 60 dB(A); In residential and other areas: – Recreational areas immediately adjoining hospital buildings and health centers: 45 dB(A) – Areas immediately adjoining residential buildings, policlinics, dispensary, rest houses, homes for the elderly and disabled, kindergartens, schools and other educational institutions, libraries: 55 dB(A);	Noise emissions should not exceed the following levels or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site: Outdoor Residential.; institutional, educational.: Daytime (07:00-22:00): 55 dB(A) Industrial, commercial: Night time (22:00-07:00): 70 dB(A).	Tajik standards with daytime defined as 07:00 – 22:00 in line with IFC EHS General guidelines. Exception: areas adjoining hotels and dorms where IFC standard is more stringent 55 dB (A)	Most stringent and provides more comprehensive measurement criteria
	– Areas immediately adjoining hotel and dormitory's buildings: 60 dB (A) – Rest areas at the territory of hospitals and sanatoria 35 dB (A) – Recreation areas at the territory of micro-districts, and residential areas, rest houses, houses for the elderly and disabled, children's playgrounds in kindergartens, schools and other educational institutions: 45 dB (A)			
9 According to International Sanitary Norms adopted by CIS countries (SanPin 2.2.4/2.1.8.562-96) Vibration Standards				

	National Standards / Requirements	International Guidelines / Standards	Adopted Project Standard	Rationale
Topic	Tajikistan 9	IFC Environmental, Health, and Safety General Guidelines		
In Tajikistan, there are no state standards for vibration. However vibration levels will be monitored during construction phase within settlements. Baseline levels will be established before construction starts.				

Table 44: Selected GOST (Russian: ГОСТ) Technical Standards

NO	STANDARD	DESCRITPION	DATE/REMARKS
	31431—2011	Protection of nature. Air. Set of Maximum Allowable Emissions (MAE).	29 November 2011
	31434—2011	Protection of nature. Air. Determination of parameters of efficiency of dust collection systems	29 November 2011
	IEC 61241-0—2011	Electrical equipment used at areas containing flammable dust. Part 0. General requirements	29 November 2011
	GOST 17.0.0.01-76 (ST SEV 1364-78) (in edition of 1987)	System of standards for environmental protection and improvement of natural resources usage. General provisions	
	General provisions		
	GOST 17.0.0.04-80 (1998)	Protection of nature. Environmental passport (certificate) of industrial facility. General provisions	
	GOST R ISO14001-98	Environmental management systems. Requirements and guidelines.	
	GOST 17.0.0.02-79 (1980)	Protection of nature. Provision of metrological control of air, surface water and soils pollution.	
	GOST 17.1.1.01-77 (ST SEV 3544-82)	Usage and protection of water. General terms and definitions.	
	GOST 17.2.1.01-76	Classification of emissions (content).	
	GOST 12.1.014-84 (1996) SSBT.	Air at workplace. Methodology of measuring of pollutants concentration using indication tubes.	
	GOST 12.1.005-88 (1991) SSBT.	General sanitary and hygiene requirements to air at workplace.	
	GOST 17.2.2.05-97	Norms and methods of emissions measuring containing diesel gases, tractors and self- propelled agricult. machines.	
	GOST 21393-75	Diesel motorcars. Exhaust gas opacity. Norms and methods of measurement.	
	GOST 17.2.2.03-77	Concentration of carbon monoxide at exhaust gases of motorcars with gasoline engines.	Norms and measurements methodology.
	GOST 17.2.2.03-87	Norms and methods of measurements of carbon monoxide at exhaust gases of motorcars with gasoline engines.	
	GOST 17.4.2.01-81	Nomenclature of sanitary condition parameters	
	GOST 17.4.1.02-83	Classification of chemical substances for monitoring of contamination. GOST 12.1.003-83 (1991) SSBT.	Noise. General safety requirements
	GOST 12.1.023-80 (1996) SSBT.	Noise. Methods of threshold noise levels for stationary machinery. GOST 12.1.029-80 (1996) SSBT.	Means and methods of noise protection. Classification.
	GOST 12.1.036-81 (1996) SSBT.	Noise. Allowable levels of noise within residential and public buildings. GOST 12.1.007-76 (1999) SSBT.	Harmful substances. Classification and safety requirements.
	GOST 12.4.119-82 SSBT.	Means of respiratory PPE. Methods of protective features assessment for aerosols.	
	GOST 12.4.125-83 (1985) SSBT.	Means of collective protective equipment from mechanical factors.	

	Classification. SanPiN 2.1.4.559-96	Drinking water. Hygienic requirements to water quality from centralized systems of drinking water supply. Quality control	
	CH 2.2.4/2.1.8.562-96	Noise at working places, indoors of residential and public buildings and the territories of residential areas	

Table 45: Environmental Standards for Emissions to the Atmosphere

	National Standards / Requirements	Adopted Project Standard			Rationale
Topic	Tajikistan	IFC Environmental, Health, and Safety General Guidelines (or IFC PS)	IFC Environmental, Health, and Safety Guidelines for Onshore Oil and Gas Development		
Emissions of Ozone Depleting Substances	No relevant numeric standard	No relevant numeric standard (Although 'no new systems or processes should be installed using CFCs, halons, 1,1,1- trichloroethane, carbon tetrachloride, methyl bromide or HBFCs').	No relevant numeric standard.	Consistent with applicable international conventions apply the principle that the will be no utilization of ozone depleting substances (halons, PCBs, CFCs, HCFCs) and IFC	Good practice
GHG emissions	No relevant numeric standard		No relevant numeric standard	Numeric standards do not apply. GHG will be quantified and reported annually if >25,000 tons CO2 equivalent per year are expected (as per IFC PS3, 2012)	Most relevant

Table 46: Maximum Acceptable Level and Measuring of Toxic Elements in Exhaust Gases of Heating Boilers and Home Stoves[72]

	Boiler installed capacity (Q), MW	(NOx)				(SO2)			
		Emitted by burning 1kg fuel equivalent, g/kg f.e.	Emitted by 1 MJ heat produced, g/MJ	Concentration in the exhaust gases mg/m3	Emitted in unit of time, g/s	Emitted by burning 1kg fuel equivalent, g/kg f.e.	Emitted by 1 MJ heat produced, g/MJ	Concentration in the exhaust gases mg/m3	Emitted in unit of time, g/s
1	Q ≤ 0.8	6.75	0.23	450	0.3	12.0	0.4	800	0.4
2	0.8 ≤ Q ≤ 3.15	6.0	0.2	400	0.25	9.0	0.3	600	0.5

	Boiler installed capacity (Q), MW	(CO)				Ash			
		Emitted by burning 1kg fuel equivalent, g/kg	Emitted by 1 MJ heat produced, g/MJ	Concentration in the exhaust gases mg/m3	Emitted in unit of time, g/s	Emitted by burning 1kg fuel equivalent, g/kg	Emitted by 1 MJ heat produced, g/MJ	Concentration in the exhaust gases mg/m3	Emitted in unit of time, g/s
1	Home stove			4000				2500	
2	Q ≤ 0.8	37.5	1.28	2500	1.8	6.0	0.15	400	0.34

[72] Source – International standards

3	0.8 ≤ Q ≤ 3.15	30	1.02	2000	1.5	4.5	0.2	300	0.23

(CO, SO2, NOx, ash)

Annex 2: General Environmental, Health and Safety Guidelines – IFC-EHS

Table 47: WHO Ambient Air Quality Guidelines

Table 1.1.1: WHO Ambient Air Quality Guidelines[7,8]		
	Averaging Period	**Guideline value in µg/m³**
Sulfur dioxide (SO_2)	24-hour 10 minute	125 (Interim target-1) 50 (Interim target-2) 20 (guideline) 500 (guideline)
Nitrogen dioxide (NO_2)	1-year 1-hour	40 (guideline) 200 (guideline)
Particulate Matter PM_{10}	1-year 24-hour	70 (Interim target-1) 50 (Interim target-2) 30 (Interim target-3) 20 (guideline) 150 (Interim target-1) 100 (Interim target-2) 75 (Interim target-3) 50 (guideline)
Particulate Matter $PM_{2.5}$	1-year 24-hour	35 (Interim target-1) 25 (Interim target-2) 15 (Interim target-3) 10 (guideline) 75 (Interim target-1) 50 (Interim target-2) 37.5 (Interim target-3) 25 (guideline)
Ozone	8-hour daily maximum	160 (Interim target-1) 100 (guideline)

[12] US EPA Prevention of Significant Deterioration Increments Limits applicable to non-degraded airsheds.

Table 48: Small Combustion Facilities Emissions Guidelines

Table 1.1.2 - Small Combustion Facilities Emissions Guidelines (3MWth – 50MWth) – (in mg/Nm³ or as indicated)				
Combustion Technology / Fuel	**Particulate Matter (PM)**	**Sulfur Dioxide (SO_2)**	**Nitrogen Oxides (NOx)**	**Dry Gas, Excess O_2 Content (%)**
Engine				
Gas	N/A	N/A	200 (Spark Ignition) 400 (Dual Fuel) 1,600 (Compression Ignition)	15
Liquid	50 or up to 100 if justified by project specific considerations (e.g. Economic feasibility of using lower ash content fuel, or adding secondary treatment to meet 50, and available environmental capacity of the site)	1.5 percent Sulfur or up to 3.0 percent Sulfur if justified by project specific considerations (e.g. Economic feasibility of using lower S content fuel, or adding secondary treatment to meet levels of using 1.5 percent Sulfur, and available environmental capacity of the site)	If bore size diameter [mm] < 400: 1460 (or up to 1,600 if justified to maintain high energy efficiency.) If bore size diameter [mm] > or = 400: 1,850	15
Turbine				
Natural Gas =3MWth to < 15MWth	N/A	N/A	42 ppm (Electric generation) 100 ppm (Mechanical drive)	15
Natural Gas =15MWth to < 50MWth	N/A	N/A	25 ppm	15
Fuels other than Natural Gas =3MWth to < 15MWth	N/A	0.5 percent Sulfur or lower percent Sulfur (e.g. 0.2 percent Sulfur) if commercially available without significant excess fuel cost	96 ppm (Electric generation) 150 ppm (Mechanical drive)	15
Fuels other than Natural Gas =15MWth to < 50MWth	N/A	0.5% S or lower % S (0.2%S) if commercially available without significant excess fuel cost	74 ppm	15
Boiler				
Gas	N/A	N/A	320	3
Liquid	50 or up to 150 if justified by environmental assessment	2000	460	3
Solid	50 or up to 150 if justified by environmental assessment	2000	650	6

Notes: -N/A/ - no emissions guideline; Higher performance levels than these in the Table should be applicable to facilities located in urban / industrial areas with degraded airsheds or close to ecologically sensitive areas where more stringent emissions controls may be needed.; MWth is heat input on HHV basis; Solid fuels include biomass; Nm^3 is at one atmosphere pressure, 0°C.; MWth category is to apply to the entire facility consisting of multiple units that are reasonably considered to be emitted from a common stack except for NOx and PM limits for turbines and boilers. Guidelines values apply to facilities operating more than 500 hours per year with an annual capacity utilization factor of more than 30 percent.

Table 49: Indicative Values for Treated Sanitary Sewage Discharges

Table 1.3.1 Indicative Values for Treated Sanitary Sewage Discharges[a]		
Pollutants	Units	Guideline Value
pH	pH	6 – 9
BOD	mg/l	30
COD	mg/l	125
Total nitrogen	mg/l	10
Total phosphorus	mg/l	2
Oil and grease	mg/l	10
Total suspended solids	mg/l	50
Total coliform bacteria	MPN[b] / 100 ml	400[a]

Notes:
[a] Not applicable to centralized, municipal, wastewater treatment systems which are included in EHS Guidelines for Water and Sanitation.
[b] MPN = Most Probable Number

Table 50: Noise-Level Guidelines

Table 1.7.1- Noise Level Guidelines[54]		
	One Hour L_{Aeq} (dBA)	
Receptor	Daytime 07:00 - 22:00	Nighttime 22:00 - 07:00
Residential; institutional; educational[55]	55	45
Industrial; commercial	70	70

Annex 3: Document Checklist for Environmental Safeguards Due Diligence

Company Name: _____
Country of Operation: _____
Nature of Business: Health Care
Existing Establishment: _____

Table 51: Document Checklist for Environmental and Safeguards Due Diligence

Documents		Y	N	Remarks
Environment, Health and Safety Management				
(i)	Environmental and Impact Assessment (EIA) report including Environmental Management Plan (EMP)			
(i)	Copy of the approval letter from Committee of Environment Protection			
(ii)	Previous environmental audit reports			
(iii)	Health and Safety Policy and Manual			
(iv)	EHS Organization Structure and Role and Responsibilities			
(v)	EHS Training and Awareness Schedule			
(vi)	Safety Plan of Activities			
(vii)	Safety Meetings			
(viii)	Safety Trainings			
(ix)	Safety Inspections			
(x)	Other standards and/or certificates			
(xi)	OSHAS guidelines on Occupational, Health and Safety			
(xii)	Joint Commission International (JCI) (patient safety and quality of health care international accreditation and certification)			
(xiii)	Safety principles and procedures			
(xiv)	Proper signage, flooring/walls, lighting, layout and monitoring (sight lines), physical support (grab rails), hygiene facilities and design for patient independence			
(xv)	Health and safety records			
	1. Record of personnel trained in first aid			
(xvi)	Safety Notice (sample)			
(xvii)	Working days and hours			
	1. Accident register			
(xviii)	Accident and Incident Investigation Report Form			
(xix)	Accident / Fatality Record (Rate)			
	1. Risk assessment for major risk area			
(xx)	Emergency Evacuation Plan			
(xxi)	Fire Extinguisher Layout Plan			
(xxii)	Hazard Analysis (including fire and explosions)			
	1. EHS-training records Health and Safety Committee Minutes of the Meeting Training Report Form Fire drill document Mock drills exercise report			
	2. Inspection report for fire extinguishers			
(xxiii)	Emergency Planning and Response			
(xxiv)	Emergency Preparedness and Response (EPR) Plan			
(xxv)	Fire-fighting Principles, Procedures			
(xxvi)	Internal and External Responses			
(xxvii)	Investigation, Corrective Action, Follow-up			
(xxviii)	EPR Team			
(xxix)	EPR contact information			
(xxx)	Environmental monitoring report/ data and monitoring protocol			

Documents	Y	N	Remarks
10.1 Emission Monitoring (xxxi) Air emissions from hospital waste incinerators 1. Permit to operate incinerator 2. Air emission monitoring of flue gas (particulate matter, SOx, NOx) 3. Ash management 4. Heat management (xxxii) Exhaust air emissions (xxxiii) Noise monitoring and control (xxxiv) Policies for noise control 10.2 Water Quality Monitoring (xxxv) Drinking water source 1. Source of drinking water supply 2. If in-house water treatment, copy of the monitoring report (xxxvi) Wastewater 1. Copy of the discharge license for wastewater treatment 2. Copy of the monitoring report			
(xxxvii) Solid Waste Management (including health care waste) (xxxviii) Existing waste segregation system being implemented on site (xxxix) Code of wastes forms			
(xl) Hazardous Waste Management (xli) Inventory of wastes (hazardous health care wastes) include infectious, pathological, radioactive, pharmaceutical, and genotoxic/cytotoxic waste, sharp items, pressurized containers, products containing heavy metals (e.g. mercury, cadmium) or persistent, bio-accumulative toxic (PBT) compounds, and chemical waste from laboratories and cleaning/disinfecting operations, such as formaldehyde and halogenated solvents, which requires precise segregation and special handling and treatment (xlii) Segregation of medical waste and general wastes (xliii) Registration of the qualified third party contractor that collects and transports hazardous materials and authorization of disposal sites			
(xliv) Leakages and spills management plan (xlv) From storage tanks for compressed gases (oxygen, nitrogen, LPG) (xlvi) Other materials stored in bulk (boiler, generator and vehicle fuels)			
Occupational Health and Safety (OHS)			
(i) OHS Management Policy			
(ii) OHS Management Manual (iii) Nosocomial (hospital acquired) infections among patients and staff (iv) Needle-sticks, surgical cuts, and other injuries posing transmission risk of blood-borne diseases such as Hepatitis C, HIV-AIDS, etc. (v) Environmental services (sanitation) workers' exposure to infectious and communicable diseases. (vi) Occupational dermatitis and allergic reactions due to workplace exposures (e.g. disinfectants and cleaning agents or latex).			

Documents		Y	N	Remarks
(vii)	Negative impacts on mental health, due to high levels of stress.			
(viii)	High rates of fatigue, gastrointestinal, psychological and cardiovascular conditions, and increased injury rates due to long working hours and shift work.			
(ix)	Injuries from repetitive manual work (e.g. improper patient movement or cleaning activities).			
(x)	Exposure to violence, including verbal or physical assaults, from patients and their attendants.			
(xi)	Exposure to hazardous substances such as cytotoxic drugs, anesthetic gases, and substances used for sterilization (e.g. ethylene oxide, formaldehyde, and glutaraldehyde).			
Labor Standards				
(i)	Human resource policy manual/ procurement manual			
(ii)	Lack of oversight of recruitment agencies for nurse staffing, with associated risk of forced labor			
(iii)	Lack of protection of migrant workers (e.g. in-home nurses or caretakers)			
(iv)	Inefficiently planned work schedules leading to excessive working hours, inadequate rest periods, and insufficient time off			
(v)	Excessive overtime not properly compensated			
(vi)	Exposure to violence and sexual harassment			
(vii)	Lack of awareness or due diligence of supply chain labor risks in hospital procurement processes due to focus on cost minimization (e.g. risk of child labor or forced labor in factories that produce hospital linens			
(viii)	Sample of the handbook (Company policies) distributed to workers			
(ix)	Workforce profile			
The remaining documents wherever available:				
(x)	Appointment letter/Terms of employment/contract letter			
(xi)	Employee personnel file			
(xii)	Copy of agreements signed with subcontractor			
(xiii)	Age proof documents			
(xiv)	Leave application copy			
(xv)	Monthly consolidated attendance record			
(xvi)	Copy of contract signed with security guards			
(xvii)	Compensation, benefits and hours of work:			
(xviii)	a. Payroll pages			
(xix)	b. Time sheets			
(xx)	c. Job classification wage rate			
(xxi)	d. Over time attendance and payment			
(xxii)	e. Payment record for journey allowance and displacement allowance (wherever available)			
(xxiii)	f. Salary slips/wage slips (wherever available)			
(xxiv)	g. Welfare fund membership card (wherever available)			
(xxv)	h. Advance/loan records			
(xxvi)	Monthly employment returns			
(xxvii)	Minimum wage notification			
Land acquisition				
(i)	Classification of the land			
(ii)	Copies of land title/s			
(iii)	Any other land use rights of the company related to its operations (lease contracts, easements, rights of ways or others)			

Documents		Y	N	Remarks
Grievance Redress Mechanism (GRM)				
(i) (ii) (iii) (iv)	Complaint Management Complaint Management in the Manual of Operations (MOO) Complaint handling rules and regulations for employees Complaint record			
(v)	Communication manual			
Community Health, Safety and Security				
(i)	Record of design, construction, and maintenance of the facilities to assure life and fire safety in health care facilities to which the public has access			
(ii) (iii) (iv) (v)	Record of design, construction, and maintenance detection and suppression systems, smoke control, and facility egress for patients, attendants and visitors with compromised maneuverability and mobility			
(vi)	Emergency potable water reserves for the community			
(vii)	Air handling procedure that could lead to cross contamination and pathogen transmission			
(viii)	Vehicle traffic management around health care facilities			

Annex 4A: Standard Construction Contract Environmental Safeguard Clauses

A. Environmental Protection and Control of Pollution

a. General

1. The Contractor shall observe and comply with all National Laws, Government Regulations, Presidential Decrees, and Ministerial Regulations pertaining to environmental protection, pollution control, waste management, and biodiversity protection. In conducting his/her construction activities, the Contractor shall take all necessary precautions to minimize environmental disturbance to the project area and surroundings and to prevent the escape of polluting substances into drains, streams, water courses, and ground water. The Contractor shall also utilize all necessary practicable methods and devices as are available to prevent and otherwise minimize atmospheric emissions or discharges of air contaminants.

2. Except where otherwise agreed or provided for by the Employer or expressly stipulated in Particular Specifications or Technical Specifications forming part of the Contract Documents, no separate payment will be made for complying with the provisions of this Clause and attendant sub-clauses; and all costs shall be deemed to be included in the prices for the Contractor's mobilization for construction, and the various rates and lump sum items for the works included in the priced Bill of Quantities.

b. Pollution of Water Courses and Streams

3. The emission of polluting liquids or other waste into drains, water courses, or ground water shall not be permitted.

4. No concrete or cement washings from the works or drainage from the Contractor's concrete batching and mixing areas, asphalt (hot mix) plants, or other manufacturing or production facilities shall be allowed to discharge into streams or drains without passing through an adequate system of settling ponds.

5. Storage of fuels, fueling and maintenance of plant and vehicles, etc. shall take place only on sites and under conditions that that do not allow spilt fuels to be discharged to water bodies. Fuel storage and fueling areas shall be equipped with adequate protective measures to confine and retain accidental spillages. No drainage from fuel store and plant maintenance depots shall be allowed to be discharged without passing through an adequate arrangement of oil traps and separators.

6. Washing of vehicles shall not be permitted in streams but only in specially designated and equipped areas.

7. Adequate sanitary waste control facilities shall be provided in site offices and workers camps, and sewage waste shall be collected regularly and disposed in accordance with relevant environmental legislation.

8. The Contractor shall accordingly be responsible for the installation, operation and maintenance of a comprehensive drainage system to all areas of the Works. The system shall be constructed such that no discharges of oil, cement, silt or other liquid or solid waste matter can enter the streams and water courses at the site; and it shall have all necessary solid waste and sediment traps, settling ponds, oil separators, etc., required to ensure that pollution of drainage, streams watercourses and natural bodies of water does not occur. The Contractor shall be responsible for maintaining the system to the satisfaction of the Employer's Construction Supervisor and all costs of providing the system shall be deemed to be included in the various rates and lump sum items for the works included in the priced Bill of Quantities.

c. Air Pollution

9. The Contractor shall take all necessary steps to minimize air pollution resulting from his/her operations.

10. Except where stipulated in these Specifications for the disposal of vegetation and organic materials from clearing operations, the burning of waste materials for disposal, particularly oil and petroleum wastes, rubber, plastics and similar materials will not be permitted.

11. During the performance of the work required under the Contract or of any operations appurtenant thereto, whether on the Project Site or elsewhere, the Contractor shall take all steps necessary, and shall furnish all labor, equipment, materials and means, required to reduce dust nuisance from the Works, and to prevent dust originating from his/her operations from damaging orchards, and dwellings; or causing a nuisance to persons. The Contractor shall be held liable for any damage resulting from dust originating from his operations including on Government roads, rights-of-way or elsewhere.

12. The emission of dust into the atmosphere shall not be permitted during the manufacture, handling and storage and handling of cement and of concrete aggregates, and the Contractor shall use such methods and equipment as are necessary for the prevention, or the collection and disposal, of dust during such operations. All truckloads of loose materials shall be covered during transportation.

13. Concrete batching and mixing areas, asphalt (hot mix) plants, or other manufacturing or production facilities shall be sited at least 500m from the nearest habitation. Emission outlets shall be fitted with pollution control devices in compliance with relevant current Government emission control legislation.

14. The cost of spraying water on access roads, aggregate stockpiles, etc.; or of any other methods of reducing the formation of dust; and the cost of furnishing and applying materials to maintain the works areas, adjacent areas, and roads, in a dustless condition, shall be deemed to be included in the various rates and lump sum items for the works included in the priced Bill of Quantities.

d. Noise Pollution

15. The Contractor shall take all necessary precautions to minimize the amount of noise and vibrations coming from construction activities.

16. The Contractor shall ensure that all plant and equipment is properly maintained in good operating condition, and that noisy construction activities shall be effectively sound reduced by means of silencers, mufflers, acoustic linings or shields, acoustic sheds or screens or other means, to avoid disturbance to any nearby noise sensitive receivers. All plant and equipment shall comply with relevant Government legislation covering sound emissions.

17. Operation of trucks and heavy vehicles and machinery shall be restricted to the hours of 06:30 to 19:00. No blasting or crushing is allowed inside hospital premises.

18. All necessary measures shall be undertaken to protect hospitals / health centers and other adjacent noise sensitive receptors, including the use of noise barriers.

e. Damage to Property and Vegetation

19. The Contractor shall limit the movement of his/her employees and equipment within the project area and on adjacent land, including access routes approved by the Employer's

Construction Supervisor, so as to minimize damage to natural vegetation and property, and shall endeavor to avoid any damage to land.

20. The Contractor shall strictly ensure employees and equipment do not enter any sensitive environmental areas that are demarcated as “no-entry” zones.

21. The Contractor shall preserve existing trees, plants and other vegetation that are to remain within or adjacent to the Works and shall use every precaution necessary to prevent damage or injury thereto. Trees or shrubs shall only be felled or removed where such impinge directly on the permanent works or necessary temporary works areas; and where such is approved by the Employer’s Construction Supervisor.

22. On completion of the Works all areas disturbed by the Contractor’s construction activities shall be restored by the Contractor to their original condition, or as may be acceptable to the Employer.

23. The Contractor shall be responsible directly to the Employer for any excessive or unnecessary damage to crops or lands arising from his/her operations, whether within the project area, on lands adjacent thereto, or adjacent to approved access roads: and deductions will be made from the payment due to the Contractor to cover the cost of such excessive or unnecessary damage, as determined by the Employer.

f. Asbestos Containing Materials (ACM) Management

24. The following measures and activities are briefly described in Annex 9 and would include the following steps and requirements for proper mitigation:

a. Determine if any sub-project would require the replacement, maintenance or demolition of: (a) Roofing, siding, ducts or wallboard; (b) Thermal insulation on pipes, boilers, and ducts; and (c) Other potentially asbestos-containing materials.
b. Once the presence of ACM in the existing infrastructure has been presumed or confirmed and their disturbance is shown to be unavoidable, incorporate the following requirements in the civil works to be performed:

    (i) containment of interior areas where removal will occur;
    (ii) protection of walls, floors and other surfaces with plastic sheeting;
    (iii) providing decontamination facilities (showers) for workers and equipment;
    (iv) removal of the ACM using wet methods and promptly placing the material in impermeable containers;
    (v) final clean-up with special vacuums and dismantling of the enclosure and de contamination facilities in a careful manner;
    (vi) disposal of the removed ACM and contaminated materials in an approved land fill, burying it;
    (vii) inspection and air monitoring during the civil works by an entity independent of the contractor removing the ACM (might be done by environmental and/or sanitary inspectors).

B. Reporting

25. The Contractor shall maintain a record of all emissions and spills of liquid, solid and gaseous matter which occur at the site, whether into drainage, water courses, streams, on land, or into the air. This record shall be compiled daily and shall include details of date, time and nature of the event, along with details of the remedial and clean-up measures carried out.

26. Copies of these records shall be given to the Employer monthly.

27. The Contractor shall also maintain a record of any complaints made by any Governmental or Community Organization or by the public, regarding his/her operations. This record shall contain the date and time of receipt of the complaint, the name and address of the complainant and the action taken to remedy the situation. Copies of these records shall be given to the Employer monthly.

C. Environmental Management Plan

28. The requirements of this clause and attendant sub-clauses on Environmental Protection and Pollution Control notwithstanding; the Contractor shall observe and comply with all relevant environmental protection and mitigation, monitoring, and reporting requirements in the Environmental Management Plan (EMP) as stipulated in the Particular Specification. In the event of any conflict between the foregoing sub-clauses and the environmental protection and mitigation measures and pollution control requirements of the EMP, the EMP shall take precedence.

29. The Contractor shall prepare and submit to the Employer's Construction Supervisor a Construction Site specific Environmental Management and Monitoring Plan (SEMP) demonstrating the manner in which the Contractor will comply with the requirements of the foregoing sub-clauses on Environmental Protection and Pollution Control, the EMP, and any particular environmental mitigation measures as stipulated in the Particular Specifications or Technical Specifications forming part of the Contract Documents.

30. The SCEMP shall be submitted within 15 working days of the Contractor receiving the Notice to Proceed with the Works, and shall include a waste management plan detailing procedures for waste management for the site covering all solid, liquid and gaseous waste materials and emissions. The waste management plan shall include procedures for the collection and disposal of all waste materials in such a way as to ensure that no damage is caused to the environment. Training shall be provided to workers about the appropriate implementation of the CEMP and waste management plan measures.

31. Where stipulated in the Particular Specifications or Technical Specifications forming part of the Contract Documents, and provision has been made in the Bill of Quantities; payment for the implementation of the SEMP will be made in accordance with the Unit Rates, Lump Sum or Provisional Sum Items included in the Priced Bill of Quantities.

Annex 4B: Environmental Safeguard Clauses for Civil Works Contracts

32. The general environment, health and safety obligations of the Contractor within this Contract, without prejudice to other official provisions in force, include the following:

33. The Contractor shall ensure that the construction and decommissioning of project facilities comply with (a) all applicable laws and regulations of Tajikistan relating to environment, health and safety; (b) the Environmental Safeguards stipulated in ADB's Safeguards Policy Statement (2009); and (c) all measures and requirements set forth in the Generic environmental management plan (EMP).

34. The Contractor shall establish a telephone hotline to received community complaints, staffed at all times during working hours. Contact details shall be prominently displayed at the sites. The Contractor shall disseminate in a timely manner information on the construction progress, including anticipated activities that might cause safety risk.

35. The Contractor shall secure all necessary permits and licenses before undertaking the works.

36. The Contractor shall assign sufficient qualified staff to manage site-EMP implementation, and ensure adequate financial resources are available to implement the site-EMP throughout the construction period.

37. The Contractor shall provide equal pay for equal work, regardless of gender or ethnicity; provide those they employ with a written contract; provide the timely payment of wages; use local unskilled labor, as applicable, comply with core labor standards and the applicable labor laws and regulations, including stipulations related to employment, e.g. health, safety, welfare and the workers' rights, and anti-trafficking laws; and not employ child labor. The Contractor shall maintain records of labor employment, including the name, ethnicity, age, gender, domicile, working time, and the payment of wages.

38. All buildings shall be designed in compliance with relevant the Government of Tajikistan's design standards and codes for energy-efficient, safe buildings, including but not limited to: Tajikistan national standards monitored by the Agency for Control of Buildings and Architecture. Only low or no volatile organic compound (VOC)-emitting materials shall be used (including paints, coatings, adhesives, carpet and furniture's) to ensure high indoor air quality. Water-based nontoxic, no allergenic paint for drywall or plaster surfaces shall be preferred to latex or oil-based paints. All facilities shall be properly sited to minimize the risk of scouring that may result from increase intensity of precipitation as a result of climate change.

39. The use of ACM as a new material in construction or renovation activities will not be supported under the project. Existing facilities where the ACM will be replaced/removed should apply a series of mitigation measures and monitoring activities which would ensure a proper handling of these materials avoiding any potential impacts on the workers' health. At the initial stage of project implementation the Contractor should be able to identify the locations where the ACM is present, its condition (e.g., whether it is in friable form or has the potential to release fibers), define the procedures for supervision and monitoring, as well as develop procedures on avoiding ACM destruction, and conduct training of its staff in handling the ACM. These issues and requirements regarding ACM should be reflected in the contract clauses. These clauses should also specify that the selected contractor notifies the relevant authorities (environment and/or sanitary inspections) of the removal and disposal of ACM and cooperates fully with representatives of the relevant agencies during all inspections and inquiries.

40. The Contractor shall take necessary precautions to avoid interruptions to water supply, wastewater collection, heating and other utility services during the civil works.

41. The Contractor shall prepare a construction site-EMP based on the construction EMP.

42. The Contractor shall take appropriate sanctions against personnel violating the applicable specifications and provisions on environment, health and safety.

43. The Contractor shall document, and systematically report to the Hospital / Health Center management and the project administration group (PAG), of each incident or accident, damage or degradation caused to the environment, workers or residents or their assets, in the course of the works.

44. The Contractor shall provide all relevant information about the EMP and the Site-EMP to subcontractor/s and be responsible for their actions.

45. The Contractor shall provide the Hospital / Health Center administration and the PAG with a written notice of any unanticipated environmental, health and safety risks or impacts that arise during implementation of the contract that were not considered in the Generic EMP.

Annex 4C: Environmental Site Inspection and Monitoring Checklist

Note: This form is designed for use by the project administration group (PAG) project coordinator during site inspections and monitoring and may not be exhaustive. Modifications and additions may be necessary to suit individual sub-projects and to address specific environmental issues and mitigation measures.

Name of Hospital / Health Center: _____
Location: _____
Inspection Date: _____
Inspection Time: _____
Inspector(s): _____

Table 52: Environmental Site Inspection and Monitoring Checklist

Inspection Item	Yes	No	N.A.	Remarks (i.e. problem observed, possible cause of nonconformity and/or proposed corrective/ preventative actions)
Has contractor appointed a construction supervisor and is the supervisor on-site?				
Is information pertaining to construction disclosed at construction site (including construction period, contractor information, grievance hotline, etc.)?				
Are chemicals/hazardous products and waste stored on impermeable surfaces in secure, covered areas?				
Is there evidence of oil spillage?				
Are chemicals stored and labelled properly?				
Is construction equipment well maintained (any black smoke observed)?				
Is there evidence of excessive dust generation?				
Are there enclosures around the main dust-generating activities?				
Does contractor regularly consult with Hospital / Health Center management as well as nearby residents to identify concerns?				
Is there evidence of excessive noise?				
Any noise mitigation measures adopted (e.g. use noise barrier / enclosure)?				
Is construction wastewater and domestic wastewater discharged to sewer systems (if possible), or are on-site treatment facilities (septic tank) provided?				
Is there any wastewater discharged to soil or surface water?				
Is the site kept clean and tidy (e.g. litter free, good housekeeping)?				
Are separated labelled containers/areas provided for facilitating recycling and waste segregation?				
Are construction wastes/recyclable wastes and general refuse removed off site regularly?				

Inspection Item	Yes	No	N.A.	Remarks (i.e. problem observed, possible cause of nonconformity and/or proposed corrective/ preventative actions)
Is safe supply of clean water and an adequate number of toilets provided for workers?				
Is personal protection equipment provided for workers?				
The contractor provides training of workers and supervisors, adequate equipment and supplies for the scope of works, including adequate closing, gloves and respirators for occupational safety measures from ACM.				
Are clear information and warning signs placed at construction sites in view of the patients and staff as well as the public?				
Are all construction sites made secure, discouraging access through appropriate fencing?				
Are disturbed areas properly re-vegetate after completion of works?				
Were any complaints filed with the contractor, and have staff and nearby residents raised any concerns related to the performance of contractor?				
Any other problems identified or observations made?				

_____

Date, Name and Signature of PAG staff/ consultant

Annex 5: Sample Environment Monitoring Report

Environmental Safeguards Document

Environment Monitoring Report
(-XX)

Document Stage:
Project Number:
Period –
Reporting –

Tajikistan: Inclusive Health Project

Prepared by Ministry of Health (MOHSPP) for Asian Development Bank

The environment monitoring report is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature.

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Annex 6: Grievance Registration and Update Forms

Project Administration Group
Integrated Maternal and Child Health

The Project Administration Group (PAG) welcomes complaints, suggestions, comments and queries from the public regarding the implementation of its projects. We encourage persons with grievance to provide their name and contact information to enable us to get in touch with you for clarification and feedback

Should you choose to include your personal details but want to remain confidential, please inform us by writing/typing "(CONFIDENTIAL)" beside your name.

Table 53: Grievance Registration Form

Contact Information				
Name		Gender	o Male	o Female
Home Address		Age		
		Phone Number		
Sub Project		E-mail		
Complaint/Suggestion/Comment/Question: Please provide the details (who, what, where, and how) of your grievance below:				
How do you want us to reach you for feedback or update on your comment/grievance?				
Potion to be filed by the Project Staff				
Date Received				
Received through	o In person	o Mail	o E-mail	o Other (spec-
Name of staff who received comment/ complaint				
Position of staff member				
Type of Grievances	Type A	Type B	Type C	Type D
Remarks				
Signature of Staff member				

Update on the case

Table 54: Grievance Update Form

Date	Update

Annex 7: Details of Public Consultation (Environment)

Public Consultation Questionnaire

The attached questionnaire is intended for public consultations prior to the construction start.
Frequency: Once before the construction start.

Questionnaire for Environmental Implications

Name of District: Fayzobod
Central District Hospital and Policlinics
Number of Participants: 17
No. of Men: 5
No. of Women: 12
Date/Time: 25.06.2018
Name of facilitator: J. Khatamov

Table 55: Details of Public Consultations – Fayzobod District

#	Issues Discussed	Responses and Suggestions from the Participants
1	Do you support the construction at Hospitals / Health Centers?	We fully support rehabilitation of Hospital
2	Do you have sufficient access to health services in your community now?	We have the access to health services of the Hospital but in view of the lack of relevant conditions we suffer the inconvenience.
3	Will this construction at Hospital / Health Center give any negative impact to your apartment complex?	We think during rehabilitation of Hospital negative impact will be at minimum.
4	What benefits do you perceive from this construction?	We hope Hospital will meet all necessary requirements. Favorable conditions are being organized and the new equipment is being installed.
5	Would you have any problem with Hospitals / Health Centers if Contractor makes access road in your parking area, dig any pipeline etc. for repair for diversion?	Some problems may arise but we hope relevant norms will be considered during the construction works
6	Would you be having trouble if construction causes some dust during digging and storing in the Hospitals / Health Centers premises?	We hope to have minimum troubles at the construction and negative impact will be at minimum
7	Will you have a problem if the Contractor required to work during the night to bringing construction material and have earthworks that would cause noise?	We hope construction works will be implemented during the daytime. The night works will have minimal inconvenience.
8	Will you have a problem if the construction activity generates extreme vibration and noise such as concreting, cutting, digging etc.?	We hope construction works will be implemented during the daytime with no impact.
9	Are you concerned about Health &Safety of patients, residents and staff during the construction?	We hope dangerous areas will be fenced and the builders will follow safety requirements
10	Would you like to participate in safety monitoring and controlling activities? Would you be willing to form a Committee to help to Hospitals / Health Centers during the construction period?	If necessary, we are ready to participate in the activities.
11	Any other critical environment related issue and concern by the residents for the during construction and operation stage?	No other critical issues.

#	Issues Discussed	Responses and Suggestions from the Participants
12	If you have any problem caused by this Hospital / Health Center construction, whom would you like to contact? (Contractor, Hospitals / Health Centers, Mayor office/Housing Communal Enterprise etc.)	If we have any problem, we would like to contact a Contractor Representative in the presence of Hospital Chief Doctor.
13	What would you expect to improve at current building (such as changing coal heating to electric heating etc.)	First of all we hope Hospital will meet all necessary requirements all departments will have water supply, operational sewerage, heating during the winter period and rehabilitated waste water plant, the new equipment is being installed.
14	Any shops/commercial establishments and industrial activity disturbed by this construction?	No other establishments (shops, pharmacies) disturbed by rehabilitation of Hospital/Policlinics.
15	What other organizations of environment & nature conservation (NGOs/CBOs/ Civil Society) active in the area? Name of these organizations	
16	Any other issues or comments?	
ANY OTHER OBSERVATIONS/SUGGESTIONS:		

Table 56: Attendance Sheet - Fayzobod District Hospital

Date	25.06.2018
Location	Meeting room Fayzobod district Hospital
Consulted Group	Affected residents, Hospital medical staff and Business owners
Consulting Group	Joint Social & Environmental Team of the TRTA

Table 57: Focus Group Participants: Fayzobod District

No.	Name	Address	Gender	Age	Occupation	Representation	Phone #
1	Khasanova Shiringul	Fayzobod district	F		Family doctor	habitant	
2	Yatimova Chahodgul	Fayzobod district	F		Family doctor	habitant	
3	Mirzoeva Kumri	Fayzobod district	F		Nurse	habitant	
4	Jalilova Ozoda	Fayzobod district	F		Family doctor	habitant	
5	Oyev Rajabmurod	Fayzobod district	м		Family doctor	habitant	
6	Sharifova Surayo	Fayzobod district	F		Pediatrician	habitant	
7	Olimova Nasiba	Fayzobod district	F		Housewife	habitant	
8	Tabaralizoda Guljahon	Fayzobod district	F		стуD.ентка	youth	
9	Odinaeva Tutiniso	Fayzobod district	м		Housewife	habitant	
10	Tabarov Farruh	Fayzobod district	м		Business owner	habitant	
11	Nematulloeva Guljahon	Fayzobod district	м		Nurse	habitant	
12	Khomidova Munira	Fayzobod district	м		Nurse	habitant	
13	Ahmedova Zaragul	Fayzobod district	F		Housewife	habitant	
14	Shukurova Munira	Fayzobod district	F		Housewife	habitant	
15	Abdukarimova Mahiston	Fayzobod district	F		Housewife	habitant	
16	Abdulloeva Nargis	Fayzobod district	F		Housewife	habitant	
17	Saidova Shabnam	Fayzobod district	F		Housewife	habitant	

Questionnaire for Environmental Implications

Name of District: Rasht

Central District Hospital and Policlinics

Number of Participants: 19

No. of Men: 4

No. of Women: 15

Date/Time: 25.06.2018

Name of facilitator: J. Khatamov

Table 58: Details of Public Consultations – Rasht District

#	Issues Discussed	Responses and Suggestions from the Participants
1	Do you support the construction at Hospitals / Health Centers?	We fully support rehabilitation of Hospital/Policlinics.
2	Do you have sufficient access to health services in your community now?	We have the access to health services of these Hospitals/Policlinics, but in view of the fact that not all the departments (wards) have water and sewerage we suffer the inconvenience.
3	Will this construction at Hospital / Health Center give any negative impact to your apartment complex?	We think relevant construction norms will be considered during rehabilitation of Hospital/Policlinics and negative impact will be at minimum.
4	What benefits do you perceive from this construction?	We hope Hospital/Policlinics will meet necessary requirements. Favorable conditions are being organized (water supply, sewerage, heating, power supply and etc.).
5	Would you have any problem with Hospitals / Health Centers if Contractor makes access road in your parking area, dig any pipeline etc. for repair for diversion?	Some problems may arise but we hope relevant norms will be considered during the construction works
6	Would you be having trouble if construction causes some dust during digging and storing in the Hospitals / Health Centers premises?	We hope to have minimum troubles at the construction and negative impact will be at minimum.
7	Will you have a problem if the Contractor required to work during the night to bringing construction material and have earthworks that would cause noise?	We hope construction works will be implemented during the daytime. Bringing of construction material during the night will not cause any inconvenience.
8	Will you have a problem if the construction activity generates extreme vibration and noise such as concreting, cutting, digging etc.?	We hope construction works will be implemented during the daytime with no impact.
9	Are you concerned about Health &Safety of patients, residents and staff during the construction?	We hope dangerous areas will be fenced and the builders will follow safety requirements
10	Would you like to participate in safety monitoring and controlling activities? Would you be willing to form a Committee to help to Hospitals / Health Centers during the construction period?	If necessary, we are ready to participate in the activities.
11	Any other critical environment related issue and concern by the residents for the during construction and operation stage?	No other critical issues.
12	If you have any problem caused by this Hospital / Health Center construction, whom would you like to contact? (Contractor, Hospitals / Health Centers, Mayor office/Housing Communal Enterprise etc.)	If we have any problem, we would like to contact a Contractor Representative in the presence of Hospital Chief Doctor.
13	What would you expect to improve at current building (such as changing coal heating to electric heating etc.)	First of all we hope Hospital/Policlinics will meet all modern requirements and all departments will have water supply, operational sewerage, heating during the winter period and rehabilitated waste water plant.

#	Issues Discussed	Responses and Suggestions from the Participants
14	Any shops/commercial establishments and industrial activity disturbed by this construction?	No other establishments (shops, pharmacies) disturbed by rehabilitation of Hospital / Health Center.
15	What other organizations of environment & nature conservation (NGOs/CBOs/ Civil Society) active in the area? Name of these organizations	
16	Any other issues or comments?	
ANY OTHER OBSERVATIONS/SUGGESTIONS:		

Table 59: Attendance Sheet - Rasht District Hospital

Date	25.06.2018
Location	Meeting-room Rasht Hospital
Consulted Group	Affected residents, Hospital medical staff and Business owners
Consulting Group	Joint Social & Environmental Team of the TRTA

Table 60: Focus Group Participants - Rasht District

No.	Name	Address	Gender	Age	Occupation	Representation	Phone #
1	Sodikova Khikoyat	Rasht district	F		Housewife	habitant	
2	Soibova Ganjina	Rasht district	F		Housewife	habitant	
3	Safarova Zinnat	Rasht district	F		Housewife	habitant	
4	Kasirova Mavjigul	Rasht district	F		Housewife	habitant	
5	Yatimova Rukhshona	Rasht district	F		Unemployed	habitant	
6	Musoeva Shahodat	Rasht district	F		Housewife	habitant	
7	Melikova Bioisha	Rasht district	F		Housewife	habitant	
8	Gafforova Zuhrabi	Rasht district	F		Housewife	habitant	
9	Ibrokhimova Ruzvatbi	Rasht district	F		Housewife	habitant	
10	Gulova Shartnomabi	Rasht district	F		Housewife	habitant	
11	Rajabova Vinatija	Rasht district	F		Housewife	habitant	
12	Shakarova Fotima	Rasht district	F		Housewife	habitant	
13	Asalova Mahfirat	Rasht district	F		Housewife	habitant	
14	Sodikova Misrina	Rasht district	F		PHC staff	habitant	
15	Saburova Bunafsha	Rasht district	F		Housewife	habitant	
16	Aliev D.	Rasht district	м		Business owner	habitant	
17	Saidov M/	Rasht district	м		Business owner	habitant	
18	Bayonov Saidboy	Rasht district	м		Hospital staff	habitant	
19	Pulodov Abdumuslim	Rasht district	м		Hospital staff	habitant	

Questionnaire for Environmental Implications
Name of District: Sh. Shohin
Central District Hospital and Policlinics
Number of Participants: 12
No. of Men: 7
No. of Women: 5
Date/Time: 26.06.2018
Name of facilitator: J. Khatamov

Table 61: Details of Public Consultations – Sh. Shohin District

#	Issues Discussed	Responses and Suggestions from Participants
1	Do you support the construction at Hospitals / Health Centers?	We support the construction of new building of Hospital/Policlinics
2	Do you have sufficient access to health services in your community now?	We have the access to health services of these Hospitals/Policlinics, but in view of the fact that not all the departments (wards) have centralized heating we suffer the inconvenience.
3	Will this construction at Hospital / Health Center give any negative impact to your apartment complex?	We think relevant rehabilitation and construction norms will be considered at the construction of new Hospital/Policlinics and negative impact will be at minimum.
4	What benefits do you perceive from this construction?	We hope Hospital/Policlinics will meet necessary requirements. Favorable conditions are being organized (light and spacious wards, normal water supply, sewerage, heating and etc.).
5	Would you have any problem with Hospitals / Health Centers if Contractor makes access road in your parking area, dig any pipeline etc. for repair for diversion?	We hope relevant norms will be considered during the construction works with the least impact
6	Would you be having trouble if construction causes some dust during digging and storing in the Hospitals / Health Centers premises?	We hope to have minimum troubles at the construction with no impact
7	Will you have a problem if the Contractor required to work during the night to bringing construction material and have earthworks that would cause noise?	We hope construction works will be implemented during the daytime. Bringing of construction material during the night will not cause any inconvenience.
8	Will you have a problem if the construction activity generates extreme vibration and noise such as concreting, cutting, digging etc.?	We hope construction works will be implemented during the daytime with no impact.
9	Are you concerned about Health &Safety of patients, residents and staff during the construction?	We hope dangerous areas will be fenced and the builders will follow safety requirements
10	Would you like to participate in safety monitoring and controlling activities? Would you be willing to form a Committee to help to Hospitals / Health Centers during the construction period?	If necessary, we are ready to participate in the activities.
11	Any other critical environment related issue and concern by the residents for the during construction and operation stage?	No other critical issues.
12	If you have any problem caused by this Hospital / Health Center construction, whom would you like to contact? (Contractor, Hospitals / Health Centers,	If we have any problem, we would like to contact a Contractor Representative in the presence of Hospital Chief Doctor.

#	Issues Discussed	Responses and Suggestions from Participants
	Mayor office/Housing Communal Enterprise etc.)	
13	What would you expect to improve at current building (such as changing coal heating to electric heating etc.)	First of all we hope that new building of Hospital and Policlinics will meet all the requirements, all wards will have water supply, operational sewerage, heating during the winter period, normal waste water plant.
14	Any shops/commercial establishments and industrial activity disturbed by this construction?	No other establishments (shops, pharmacies) disturbed by rehabilitation of Hospital/Policlinics.
15	What other organizations of environment & nature conservation (NGOs/CBOs/ Civil Society) active in the area? Name of these organizations	
16	Any other issues or comments?	
ANY OTHER OBSERVATIONS/SUGGESTIONS:		

Table 62: Attendance Sheet: Sh. Shohin Hospital

Date	26.06.2018
Location	Sh. Shohin Hospital territory site
Consulted Group	Affected residents, Hospital medical staff and Business owners
Consulting Group	Joint Social & Environmental Team of the TRTA

Table 63: Focus Group Participants: Sh. Shohin District

No.	Name	Address	Gender	Age	Occupation	Representation	Phone #
1	Burkhonov Madamon	Sh. Shohin district	M		Doctor		988130805
2	Mahammadi Halim	Sh. Shohin district	M		Dentist		905444474
3	Kurbonov Davlat	Sh. Shohin district	M		Doctor		987770870
4	Faizalii Saidkhon	Sh. Shohin district	M		Dentist		907665641
5	Salimov Jurabek	Sh. Shohin district	M		Accountant		907180489
6	Sufieva Marzigul.	Sh. Shohin district	F		Hospital staff		
7	Kholova Mehriniso	Sh. Shohin district	F		Cleaning Person		
8	Odinaeva Mairambi	Sh. Shohin district	F		Cleaning Person		
9	Kholikova Sadbarg	Sh. Shohin district	F		Doctor	MOHSPP	
10	Shafiev Mirzo	Sh. Shohin district	M		Guardian		
11	Sufiev M	Sh. Shohin district	M		Cashier		
12	Malohati M	Sh. Shohin district	F		Hospital staff		

Questionnaire for Environmental implications
Name of District: Aini
Central District Hospitals and Policlinics
Number of Participants: 14
No. of Men: 6
No. of Women: 8
Date/Time: 24.06.2018
Name of facilitator: J. Khatamov

Table 64: Details of Public Consultations – Aini District

#	Issues Discussed	Responses and Suggestions from the Participants
1	Do you support the construction at Hospitals / Health Centers?	We support rehabilitation of Hospital / Health Center
2	Do you have sufficient access to health services in your community now?	We have the access to health services of these Hospitals/Policlinics but in view of the fact that not all the departments (wards) have water and sewerage we suffer the inconvenience.
3	Will this construction at Hospital / Health Center give any negative impact to your apartment complex?	We think relevant construction norms will be considered during rehabilitation of Hospital/Policlinics and negative impact will be at minimum
4	What benefits do you perceive from this construction?	We hope Hospital/Policlinics will meet necessary requirements. Favorable conditions are being organized (water supply, heating).
5	Would you have any problem with Hospitals / Health Centers if Contractor makes access road in your parking area, dig any pipeline etc. for repair for diversion?	Some problems may arise but we hope relevant norms will be considered during the construction works
6	Would you be having trouble if construction causes some dust during digging and storing in the Hospitals / Health Centers premises?	We hope to have minimum troubles at the construction and Contractor will condition soil with water
7	Will you have a problem if the Contractor required to work during the night to bringing construction material and have earthworks that would cause noise?	We hope construction works will be implemented during the daytime. Bringing of construction material during the night will not cause any inconvenience.
8	Will you have a problem if the construction activity generates extreme vibration and noise such as concreting, cutting, digging etc.?	Yes, we will but we hope construction works will be implemented during the daytime with minimum impact
9	Are you concerned about Health &Safety of patients, residents and staff during the construction?	We hope dangerous areas will be fenced and the builders will follow safety requirements
10	Would you like to participate in safety monitoring and controlling activities? Would you be willing to form a Committee to help to Hospitals / Health Centers during the construction period?	If necessary, we are ready to participate in the activities.
11	Any other critical environment related issue and concern by the residents during construction and operation stage?	No other critical issues.
12	If you have any problem caused by this Hospital / Health Center construction, whom would you like to contact? (Contractor, Hospitals / Health Centers, Mayor office/Housing Communal Enterprise etc.)	If we have any problem, we would like to contact a Contractor Representative in the presence of Hospital Chief Doctor.

#	Issues Discussed	Responses and Suggestions from the Partici-pants
13	What would you expect to improve at current building (such as changing coal heating to electric heating etc.)	First of all we hope Hospital/Policlinics will meet all modern requirements and all departments will have water supply, operational sewerage, heating during the winter period and Hospital negative impact will be at minimum.
14	Any shops/commercial establishments and industrial activity disturbed by this construction?	No other establishments (shops, pharmacies) disturbed by rehabilitation of Hospital/Policlinics.
15	What other organizations of environment & nature conservation (NGOs/CBOs/ Civil Society) active in the area? Name of these organizations	
16	Any other issues or comments?	
ANY OTHER OBSERVATIONS/SUGGESTIONS:		

Table 65: Attendance Sheet: Aini District Hospital

Date	24.06.2018
Location	Meeting room, Aini district Hospital
Consulted Group	Affected residents, Hospital medical staff and Business owners
Consulting Group	Joint Social & Environmental Team of the TRTA

Table 66: Focus Group Participants: Aini District

No.	Name	Address	Gender	Age	Occupation	Representation	Phone #
1	Abdulloeva S.	Aini district	F		Housewife	habitant	
2	Kurbonova G.	Aini district	F		Housewife	habitant	929864005
3	Niyozova F.	Aini district	F		Housewife	habitant	928125353
4	Mirzoeva I.	Aini district	F		Housewife	habitant	927166922
5	Zokirov KH.	Aini district	м		Unemployed	habitant	
6	Aminzoda B.	Aini district	м		Security Officer	habitant	939726581
7	Azizov A.	Aini district	м		Business owner	youth	927166999
8	Mukhambiev Kh.	Aini district	м		Business owner	youth	926378726
9	Murodov Kh.	Aini district	м		Business owner	youth	926002364
10	Rakhmonova Kh.	Aini district	F		Dehkan Farm Head	habitant	927088009
11	Rajabova G.	Aini district	F		Nurse	habitant	927464958
12	Saidova G.	Aini district	F		Head Nurse	habitant	
13	Alieva D.	Aini district	F		Nurse	habitant	926002387
14	Karimov M.	Aini district	м			youth	926678287

Questionnaire for Environmental Implications
Name of District: Sangvor
Central District Hospital and Policlinics
Distance of apartment/unit from Hospitals / Health Centers:
Number of Participants: 13
No. of Men: 3
No. of Women: 10
Date/Time: 26.06.2018
Name of facilitator: J. Khatamov

Table 67: Details of Public Consultations – Sangvor District Hospital

#	Issues Discussed	Responses and Suggestions from the Participants
1	Do you support the construction at Hospitals / Health Centers?	We fully support rehabilitation/construction of new building of Hospital/Policlinics
2	Do you have sufficient access to health services in your community now?	We have the access to health services of these Hospitals/Policlinics, but in view of the fact that not all the departments (wards) have centralized heating we suffer the inconvenience.
3	Will this construction at Hospital / Health Center give any negative impact to your apartment complex?	We think relevant rehabilitation and construction norms will be considered at the construction of new Hospital/Policlinics and negative impact will be at minimum.
4	What benefits do you perceive from this construction?	We hope Hospital/Policlinics will meet necessary requirements. Favorable conditions are being organized (light and spacious wards, normal water supply, sewerage, heating and etc.).
5	Would you have any problem with Hospitals / Health Centers if Contractor makes access road in your parking area, dig any pipeline etc. for repair for diversion?	Some problems may arise but we hope relevant norms will be considered during the construction works with the least impact
6	Would you be having trouble if construction causes some dust during digging and storing in the Hospitals / Health Centers premises?	We hope to have minimum troubles at the construction with no impact
7	Will you have a problem if the Contractor required to work during the night to bringing construction material and have earthworks that would cause noise?	We hope construction works will be implemented during the daytime. Bringing of construction material during the night will not cause any inconvenience.
8	Will you have a problem if the construction activity generates extreme vibration and noise such as concreting, cutting, digging etc.?	We hope construction works will be implemented during the daytime with no impact.
9	Are you concerned about Health &Safety of patients, residents and staff during the construction?	We hope dangerous areas will be fenced and the builders will follow safety requirements
10	Would you like to participate in safety monitoring and controlling activities? Would you be willing to form a Committee to help to Hospitals / Health Centers during the construction period?	If necessary, we are ready to participate in the activities.
11	Any other critical environment related issue and concern by the residents for the during construction and operation stage?	No other critical issues.
12	If you have any problem caused by this Hospital / Health Center construction, whom would you like to contact?	If we have any problem, we would like to contact a Contractor Representative in the presence of Hospital Chief Doctor.

#	Issues Discussed	Responses and Suggestions from the Participants
	(Contractor, Hospitals / Health Centers, Mayor office/Housing Communal Enterprise etc.)	
13	What would you expect to improve at current building (such as changing coal heating to electric heating etc.)	We hope new building of Hospital/Policlinics will meet all the requirements, all wards will have water supply, operational sewerage, heating during the winter period, normal waste water plant.
14	Any shops/commercial establishments and industrial activity disturbed by this construction?	No other establishments (shops, pharmacies) disturbed by rehabilitation of Hospital/Policlinics.
15	What other organizations of environment & nature conservation (NGOs/CBOs/ Civil Society) active in the area? Name of these organizations	
16	Any other issues or comments?	
ANY OTHER OBSERVATIONS/SUGGESTIONS:		

Table 68: Attendance Sheet - Sangvor District Hospital

Date	26.06.2018
Location	Sangvor hospital territory site
Consulted Group	Affected residents, Hospital medical staff and Business owners
Consulting Group	Joint Social & Environmental Team of the TRTA

Table 69: Focus Group Participants: Sangvor District

No.	Name	Address	Gender	Age	Occupation	Representation	Phone #
1	Hojiev Mirzohuja	Sangvor district	м		Business owner	habitant	900930101
2	Mirzoev Ekhson	Sangvor district	м		Business owner	habitant	987101074
3	Gafurov Khotam	Sangvor district	м		Head of Jamoat	habitant	987118668
4	Khakimova Gulrukhsor	Sangvor district	F		Cleaning Person	habitant	
5	Khusainova Nazira	Sangvor district	F		Cleaning Person	habitant	
6	Zukhurova Nilufar	Sangvor district	F		Nurse	habitant	
7	Mahmurodova Mahbuba	Sangvor district	F		Cleaning Person	habitant	
8	Karimova Mavluda	Sangvor district	F		Educational facility staff	habitant	
9	Kurbonova Sabokhat	Sangvor district	F		Educational facility staff	habitant	
10	Abdulloeva AzizMOHSPP	Sangvor district	F		Cleaning Person	habitant	
11	Davlatova Zuhro	Sangvor district	F		Nurse	habitant	
12	Talbonova Khuroson	Sangvor district	F		Cleaning Person	habitant	
13	Yoftakova Jasmin	Sangvor district	F		Nurse	habitant	

Table 70: Follow Up actions suggested during Public consultations

No	Health Facility	District	Consultations Required/not required	Construction safety training	Access route for construction period	Preferred start of construction	Additional recommendation
1	2	3	4	5	6	7	8
1	CDH	Fayzobod	Required	Required	Available	Springtime	Construction work should be carried out only in the daytime
2	DHC	Fayzobod	Not required	Not required	Available	Springtime	
3	CDH	Rasht	Required	Required	Available	Springtime	Construction work should be carried out only in the daytime
4	DHC	Rasht	Required	Required	Available	Springtime	Construction work should be carried out only in the daytime
5	CDH	Shohin	Required	Required	Available	Springtime	Construction work should be carried out only in the daytime
6	DHC	Shohin	Required	Required	Available	Springtime	Construction work should be carried out only in the daytime
7	CDH	Aini	Required	Required	Available	Springtime	Construction work should be carried out only in the daytime
8	DHC	Aini	Required	Required	Available	Springtime	Construction work should be carried out only in the daytime
9	CDH	Sangvor	Required	Required	Available	Springtime	Construction work should be carried out only in the daytime
10	DHC	Sangvor	Required	Required	Available	Springtime	Construction work should be carried out only in the daytime

CDH = Central District Hospital; DHC = District Health Center
Subprojects 1-6 are currently proposed for funding and 7-10 are on backstop if more funds become available in future.

Photographs from Consultations

Figure 76: Consultation in Aini

Figure 77: Consultation in Rasht

Figure 78: Photo of Consultation in Fayzobod

Figure 79: Photo of Consultation in Sangvor

Figure 80: Photo of Consultation in Sh. Shohin

Annex 8: Terms of Reference for Noise Measurements

1. **Requirement:** The Noise meter must be able to measure LAeq (which shows the equivalent of the average period).

2. **Noise measurements:**

- Measure noise during the day time only (6 am to 9 pm = 15 hours)
- Undertake measurements at the receptors location (four locations at the boundary of the facilities and up to four measurements within the hospital boundaries at the buildings which are operating which are also considered sensitive receptors)- Total eight (8) locations.
- Short continuous readings of 1hr each as per international/national standards at regular intervals of every one hour.

3. **Guidelines:**

- The meter must be set to measure the LAeq. LAeq is the sound level in decibels equivalent to the total “A-weighted” sound energy measured over a stated period of time.
- The noise meter must be put on an appropriate tripod, cannot be on hand while measurements are being collected.
- The background noises that are likely to influence the readings, such as wind, insect and traffic noise, should be considered and reported as part of the survey report as it may be appropriate to re-measure one or more of the sites.
- Where the sound from an activity is to be measured at a land area, the measurement site must be representative of the maximum level of sound from the activity under investigation as received anywhere on that land.

4. **Reporting:**

5. All attended measurements should be accompanied by a written record of the measurement conditions and subjective notes. In addition to the general requirements and the requirements of particular measurement procedures a report of a noise survey should include a clear, scaled map showing the locations of the activity, measurement sites and possible noise sensitive locations. It is expected that the report will include:

- survey details, including times, dates, locations, methodology;
- a location map;
- details of the source of noise under investigation where appropriate;
- details of subjective observations;
- a summary of the meteorological conditions;
- measurement results; and appropriate interpretation.

Annex 9: Terms of Reference for Occupational Health Asbestos Action Plan, Asbestos and Debris estimation for Demolition or Refurbishment

Purpose of Assessment:

1. Demolition or refurbishment work may involve workplaces or structures that contain or have contained hazardous materials, which may include lead, asbestos, polychlorinated biphenyls (PCBs), contaminated dust and combustible materials. The project implementation at hospitals / health centers would require:

A. Occupational Health Asbestos Action Plan: Control asbestos fiber exposures when demolishing, rehabilitating buildings and ensure its proper disposal from worksite.

B. Control disposal of debris waste from demolition of building (s).

Methodology for Action Plan

2. In order to ensure safe project implementation at each of the hospitals / health centers involved, the Contractor will ensure the following:

Estimation of Asbestos Containing Material (ACM)

3. The Contractor will undertake the following tasks for estimation of Asbestos (particularly):

Conduct Risk Assessment

- Study the type, condition and amount of asbestos present.
- Document the location of asbestos in relation to the proposed demolition or refurbishment – pipes, roof, walls etc.
- Are there are inaccessible areas that are likely to contain asbestos.
- Determine the method of demolition or refurbishment required and how will it affect the asbestos.
- Determine if the asbestos is likely to be damaged or disturbed as a result of the demolition or refurbishment work – if yes, can it be removed safely before work commences.

Conduct Asbestos Management Survey

- When was the building built?
- Is there any existing information about asbestos in the building? Get any reports or plans relating to the building.

4. The building plans may not have any information about asbestos ask the building designer, the architect or builder who is familiar with such buildings of the era.

5. Develop a checklist – list places and materials that may contain asbestos (for example):

- corrugated roofing, tiles, 'slates', gutters, downpipes, walls and panels;
- insulation under the roof, on beams and wall sides;
- boards and panels, and any insulation between them;
- insulation around pipes, on boiler, storage heaters;
- decorative coatings on walls or ceilings;
- insulation around windows, building fabric;
- vents, waste water pipes;
- plastic floor tiles.

- Equipment
- bricks, soundproofing, external surfaces, insulating mat;
- fire blanket, fire insulation in or on doors, insulating gloves.

Prepare an 'asbestos register' which lists where asbestos is located or where there might be asbestos (Note the condition and amount of materials that might contain asbestos).

Table 71: Asbestos Register

No	Location of observation point	Is it visible	Condition of asbestos	Accessible?	Type of Asbestos	Volume of Asbestos	Protection needed for removal	Timing of removal	Remarks

Name: _____ Date: _____

- The following materials do not contain asbestos, but may conceal it.
  - most furnishings and fabrics.
  - stone;
  - brick or mortar, concrete;
  - metal;
  - glass;
  - wood.
- Conduct refurbishment/demolition survey.
- Estimating total debris from demolition and type
- The refurbishment / demolition survey is required where the hospital premises, or part of it, need upgrading, refurbishment or demolition. The survey does not need a record

of the condition of asbestos-containing materials. Normally, a surveyor is needed for refurbishment / demolition surveys.

- A Refurbishment / demolition survey aims to ensure that the total volume of demolition and wastes are documented.
  - Recyclable waste to be generated
  - Inert construction waste to be generated to be dumped in land fill
  - Hazardous waste
- Develop a damaged items report that contains list of any damage to materials, surfaces or equipment.

Standards

- IFC (2007) guidelines for asbestos-containing materials (ACM):[73]
- The ILO Conference in Geneva (May 31-June 16, 2006), its resolution declares that the elimination of the future use of asbestos and the identification and proper management of asbestos currently in place are the most effective means to protect workers from asbestos exposure and to prevent future asbestos-related diseases and deaths. In Tajikistan, the Ministry of Education passed a special resolution prohibiting use of asbestos and asbestos nets in chemical and physical labs of secondary schools, vocational-technical schools and higher educational institutions twenty years ago already.74
- Internationally-recognized Standard Practice for Maintenance, Renovation and Repair of Installed Asbestos Cement Products (American Society for Testing and Materials [ASTM] E 2394).[75]

Demolition, Removal and storage

- Estimate demolition time required and method to be used to demolish (mechanical, manual etc.)
- Prepare the plan for phased out removal of materials and temporary storage.
- Train workers on the removal and storage practises.

Company to prepare a list of Personnel protective Equipment required to be procured before demolition or repair.

Company shall prepare a layout plan based on the above surveys.
How much disposal area (pit size) is required to safely dispose of asbestos removed?

Communication plan

The Contractor put up the layout plan clearly demarcating areas that contain asbestos. Coloured and distinctive stickers on asbestos items indoors must be placed. The warning colours will be based on:

- Warning for the building contractor workers about pipe insulation, asbestos cement and the fire door panel that might be asbestos.
- Warning for the plumbers about the piping insulation and the asbestos insulating sheets on heating pipes in the building.

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73 International Finance Corporation. Environmental, Health, and Safety Guidelines, 2007. http://www1.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/sustainability+framework/environmental%2C+health%2C+and+safety+guidelines/ehsguidelines

74 http://news.tj/en/news/ilo-adopts-resolution-concerning-exposure-asbestos

75 ASTM International. ASTM E2394-11, Standard Practice for Maintenance, Renovation and Repair of Installed Asbestos Cement Products. West Conshohocken, PA, 2011. http://www.astm.org/Standards/E2394.htm. This standard describes work practices that protect worker and community health within the resources available in developing and industrialized countries. As much as possible it relies on readily-available tools, equipment, and supplies, and techniques that require careful and diligent workmanship but not the services of highly-skilled tradesmen. The standard is written for construction workers and tradesmen, for those involved in the preparation of contracts and tenders, and for government officials involved in developing regulations to protect worker and community health.

- Warn the electrician about the asbestos insulating board panel that the asbestos-containing switch box is screwed onto.

List type of personnel who can enter the area and wear what type of protection.

Put warning boards and parameter around the building so that hospital patients and outsiders do not enter the area or pick up any lose material in the area.

Annex 10: Health Care Waste (HCW) Management

1. What is HCW

The majority of waste is comparable to domestic waste, and can be classified as “non-hazardous” or “general healthcare waste”. a smaller part may pose a variety of environmental and health risks, and is regarded as “hazardous” healthcare waste.

The WHO76 classified the medical waste into eight (8) categories of medical waste:

1. Infectious waste – Waste that may transmit infection from virus, bacterial, parasites to human, i.e.: lab cultures, tissues, swabs, equipment and excreta
2. Sharps – Sharp waste, such as needle, scalpels, knives, blades, etc.
3. Pathological – Human tissue or fluids i.e. body parts, blood, other body fluids
4. Radioactive – Unused liquid in radiotherapy or lab research, contaminated glassware, etc.
5. Chemical – Expired lab reagents, film developer, disinfectant
6. Pharmaceuticals – Expired and contaminated medicines
7. Pressurized containers – Gas cylinders and gas cartridges
8. General waste (UMW) – No risk to human health because no blood or any related bodily fluid, i.e.: office paper, wrapper, kitchen waste, general sweeping, etc.

This hazardous medical waste or Health Care Waste (HCW) contains potentially harmful microorganisms, which can infect hospital patients, health workers and the public. According to WHO, around 15% of HCW is considered hazardous material that may be infectious, toxic or radioactive.

Table 72: Classification of Hazardous Medical Waste[77]

	Technique	Type of Waste Handled	Composition
1	Compaction and disposal to Municipal Solid Waste	Non-medical waste	plastics, box, paper etc.
2	Incineration	Pharmaceutical	Pills, Injectibles, antibiotics,
		Pathological Waste	Organs, Tissues, Surgical specimens, Bodily fluids removed during surgery or autopsy, Blood products (albumin)
3	Autoclaving /Microwave	Sharps	Needles, Ampules, Broken Glass, blades, Razors, Staples, others
		Infectious waste	Contaminated PPE, IV tubing, Cultures, Stacks
4	Chemical	Chemical waste	Liquid waste (from laboratory waste)

2. National Policy and Legal Framework on Medical Waste

There is no national healthcare waste policy and strategy which is causing non-standardized waste management solutions, and also insufficient planning for new projects. Therefore, the support of the MOHSPP to establish strong and sustainable structures for healthcare waste management in the country is needed.

a) National legal framework

- National Environmental Health Action Plan (Nehap), 2000
- Draft National Strategy on Waste Management in the Republic of Tajikistan until 2015
- Law on Production and Consumption of Waste

76 Waste management Practices - Safe management of wastes from health-care activities, World Health Organisation (WHO), 2014

77 Source: Medical Waste Management Manual International committee of the Red Cross

- Order on Healthcare Waste Management No. 272, May 2005
- Regulation on Pharmaceutical Waste No. 370
- Regulation on Emissions No. 800
- Sanitarian Rules on Safe Handling of Healthcare Waste, MOHSPP 2009

b) International conventions

- Basel Convention: Technical Guideline on environmentally sound management of biomedical and healthcare waste (UNDP 2003)
- Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade
- Vienna Convention for the protection of the Ozone Layer and its Montreal Protocol on substances that deplete the Ozone Layer
- Stockholm Convention on Persistent Organic Pollutions (POPS), Stockholm
- ADR, European Agreement concerning the International Carriage of Dangerous Goods by Road (UNECE)
- Minamata Convention on Mercury (UNEP 2013)

c) Guidelines

- Safe Management of Wastes from Health-Care Activities' Issued By WHO, Tajikistan

3. Types of Healthcare Waste

- Household waste
- Sharp waste
- Infectious waste
- Pathological waste
- Pharmaceutical waste
- Chemical waste

4. Waste Management Procedures

a) Segregation system for sharp and infectious waste

According to the MOHSPP regulations, infectious wastes, including sharp waste, are supposed to be soaked in a 0.5 % chloride solution. Chloride solutions need to be regularly prepared as fresh solutions to avoid growth of micro-organisms in the solution and to ensure optimal activity of the disinfectant chemical. for safe disinfection the infectious waste has to get in optimal contact with the chloride solution. especially in the case of hollow materials, like intravenous lines, it is not sufficient to soak the waste in the solution because it is likely that not all parts inside the tube are soaked by the disinfection solution.

Many disinfectants have toxic effects, ranging from irritation of the skin and mucous membranes to carcinogenesis, and some have physical properties that make them dangerous to handle and use. These properties should be taken into consideration when selecting a disinfectant for a particular use. The effectiveness of a disinfectant depends not only on the properties of the micro-organisms against which it is used, but also upon factors in the environment in which it is used.

Factors that may affect the action of chemical disinfectants (bucket with chlorine solution) includes the following:

- concentration of the chemical in the disinfectant solution;
- temperature;
- pH;
- relative humidity of the environment;
- duration of contact.

b) Pathological waste

In accordance with Islamic traditions, pathological waste like organs and extremities are handed over to the patient or family for religious ceremonies. Placentas are mostly buried in placenta pits.

c) Pharmaceutical waste

The management of pharmaceutical waste is dealt by the Regulation on Pharmaceutical Waste no. 370, issued in 2002 by the Ministry of Health. The pharmaceutical waste from the oblasts is transported to Dushanbe one to two times per year where it is packed and transported to the landfill and buried at a designated cell.

d) Chemical waste

In Tajikistan, no waste disposal system exists for chemical waste from healthcare facilities.

5. Stages of Medical Waste Disposal

Process in which medical waste is collected, stored, transported and treated.

Stage 1 – Collecting & Segregating The biomedical waste has to be collected in containers that are resilient and strong from breakage during the handling process. Sharps, used needles, syringes, or other contaminated tools should not be mixed in common waste disposal or recycle bin because the entire waste will be infectious by doing so. The segregation also needs to be performed between the liquid and solid biomedical waste products. Categorizing the medical waste with correct segregation to isolate and manage each waste in the proper way. For this purpose, the segregations come in colored waste containers, label coding and plastic bags.

Stage 2 – Storing & Transporting specific requirements for storage facilities, such as a secure area that is inaccessible to the general public, as well as separated it from areas for food consumption. Some facilities even provided special vehicles and protective devices to dispose, handling or transport the biomedical waste products.

Stage 3 – Treatment

The needs of professional handling that work according the by-law regulation are needed to ensure that the regulated medical waste (RMW) is handled properly. The treatment process will use several medical waste equipment that ranged from handling, carts, shredding, conveying, size reducing, compactors, to sterilization or recycling.

6. Equipment/Process

The following equipment/process is needed to properly process the waste in order to reduce the hazards, and maintain the environment:

a) Small-scale incineration

Incineration – Type 1 of Medical Waste Treatment The incineration technology used a high temperature thermal process that can convert inert material and gases with the combustion process. It will process the waste to convert into ash, gas, and heat. There are three types of incinerators that are commonly used for biomedical waste:

1. The Multiple Hearth Type– it has a circular steel furnace that contains solid refractory hearths with a central rotating shaft to convert the waste into ash
2. Rotary Kiln – it is an incinerator, shape like a drum, commonly for medical and hazardous waste
3. Controlled Air – there are two process chambers that will handle the waste. The complete combustion and oxidizing it, leading to a stream of gas with carbon dioxide and water vapor composition. It is commonly used for waste that has organic materials.

In addition, for some cases, performing a shredding for biomedical waste needed as an aid for incineration process.

In 2004, WHO commissioned a screening-level health risk assessment for exposure to dioxins and furans from small-scale incinerators. The study found that the expected practice with small-scale incinerators resulted in unacceptable cancer risks under medium usage (two hours per week) or higher (Batterman, 2004). The report concluded that small-scale incineration should be viewed as a transitional means of disposal for health-care waste. Single-chamber, drum and brick incinerators do not meet the BAT requirements of the Stockholm Convention. Incinerator emissions should comply with national standards and in accordance with the Stockholm Convention BAT and best environmental practices (BEP) guidance in those countries that have signed the convention. If the relevant authorities have not established such regulations, the BAT/BEP guidelines or international standards are followed.

The Stockholm Convention. The Guidelines on best available techniques and provisional guidance on best environmental practices (UNEP, 2006) were released in 2006. Section V.A.II deals specifically with health-care waste. Best environmental practices (BEP) include source reduction, segregation, resource recovery and recycling, training, and proper collection and transport. The best available techniques (BAT) guidelines for health-care waste incinerators require a combination of specified primary and secondary measures to achieve air emission levels of polychlorinated dibenzo-p-dioxins and dibenzofurans no higher than 0.1 ng I-TEQ/Nm3 (at 11% O2), as well as dioxin and furan concentrations less than 0.1 ng I-TEQ/litre of wastewater from the flue gas treatment. The Stockholm Convention states that “priority consideration” be given to alternative processes that have similar usefulness but that avoid the formation and release of these chemicals. The BAT/BEP guidelines describe alternative technologies such as steam sterilization, advanced steam sterilization, microwave treatment, dry-heat sterilization, alkaline hydrolysis and biological treatment (UNEP 2006).

http://apps.who.int/iris/bitstream/handle/10665/85349/9789241548564_eng.pdf;jsessionid=7BC6ADAB86A3D096CE65A8853FD2D434?sequence=1

After disinfection with chloride, the wastes are often burned with low temperatures on the hospital compound. The generation of dioxins and furans in the presence of chloride solutions is very likely, and has a high potential of harming humans and the environment.

Under article 5 and annex c of the Stockholm convention, governments that are party to the convention are required to reduce or eliminate releases from unintentional production of pops (polychlorinated dibenzo-p-dioxins) and dibenzofurans (dioxin and furans).

b) Landfills

As there is a shortage of trucks, fuel and lubricants, the collection of solid municipal waste in all districts and hukumats is poor. The collection of non-hazardous municipal waste is not available everywhere in the rural areas. as a consequence, waste is illegally dumped within the municipal limits as well as in the countryside. As per estimates, there are 73 official landfills for municipal waste, which are neither safe for humans and animals nor environmentally safe. There are also a growing number of unofficial dumps all over the country.

The landfill of Dushanbe is an open dumpsite with limited safety measures such as input documentation and the compacting of waste. The informal recycling sector is active on the landfill, sorting plastic and associated wastes. The disposal of medical waste on municipal landfills or dumpsites in Tajikistan is causing risks for humans, animals and the environment.
Non-Incineration System (Autoclaving, Irradiation, Chemical Methods) – Type 2 of Medical Waste Treatment

Aside from the incineration technology, the non-incineration method also provided to dispose

the biomedical waste, it contains **four basic processes** such as thermal, irradiative, chemical, and biological.

The **autoclaving system** (a photo of our autoclave machine is below) is commonly used for the human body fluid waste, sharps, and microbiology laboratory waste. This system requires high temperature (thermal) that produces steam to decontaminate the biomedical waste. The steam plays a critical role in the medical waste autoclaving process therefore a good waste holding container is required.

Environment pollution

- Incineration after disinfection. After disinfection with chloride, the wastes are often burned with low temperatures on the hospital compound. The generation of dioxins and furans in the presence of chloride solutions is very likely, and has a high potential of harming humans and the environment.
- The risk of air, water and soil pollution directly from waste due to defective incineration or autoclaving can be harmful.

7. Hazards from healthcare waste treatment methods

In addition to the specific hazards posed by different types of healthcare waste, there are hazards associated with waste treatment processes. some are similar to those common in industries using machinery:

- flue gases from waste incinerators may have an impact on people living and working close to a treatment site. it is stressed that the health risk is most serious where an incinerator is improperly operated or poorly maintained. emissions, if poorly controlled, may cause health concerns from particulates (associated with increased cardiovascular and respiratory mortality and morbidity); volatile metals, such as mercury and cadmium (associated with damage to the immune system, neurological system, lungs and kidneys); and dioxins, furans and polycyclic aromatic hydrocarbons (known carcinogens that may cause other serious health effects).
- ash from the incineration of hazardous healthcare waste may continue to pose a risk. burnt out needles and glass may have been disinfected but can still cause physical injury. Furthermore, incinerator ash may contain elevated concentrations of heavy metals and other toxic items, and the ash provides ideal conditions for the synthesis of dioxins and furans, as it is often exposed for a long time within a temperature range of 200-450 °c.
- burial of healthcare waste in landfill sites may pose hazards to workers and the public. The risks are often difficult to quantify, and the most likely injury comes from direct physical contact with waste items. The possible presence of chemical contaminants or pathogens in the landfill
- leachate may be released into surface streams or groundwater. on poorly controlled land disposal sites, the presence of fires and sub-surface burning waste poses the further hazard of airborne smoke. Within the smoke, there may be the vitalization of heavy metals and other chemical contaminants that, over time, may affect the health of site workers and the general public.

8. Potential risks of Medical Waste

a) Exposure

The likelihood that a person or the environment may be harmed during the disposal of waste and exposure.

b) Environmental risks

Environmental risk can be defined as an actual or potential threat of adverse effects on living organisms and the environment by effluents, emissions, wastes, resource depletion, etc. Unsafe disposal of waste can create environmental damage. burying waste not only takes up more and more valuable land space, it also causes air, water and soil pollution, discharging carbon dioxide (CO2), methane (CH4) and hydrofluorocarbons (HFC's) into the atmosphere and chemicals and pesticides into the earth and groundwater. This, in turn, is harmful to human health, as well as to the health of plants and animals. burning waste can result in emissions of dioxins and acid gases such as nitrogen oxides (NOx), Sulphur dioxides (SO2), and hydrogen chlorides (HCL), which can be harmful to human health.

c) Health risks from healthcare waste

Exposure to dioxins and furans may lead to the impairment of the immune system, the impairment of the development of the nervous system, the endocrine system and reproductive functions.

d) Physical risks

Physical risks occur mostly from sharp items like broken glass, syringes, disposable scalpels and blades, etc. The problem of physical risks is not only the direct injuries by themselves but the break of the protective shield of the human body. cuts, stitches, etc. can be the point of entry for different kind of pathogens and other harmful agents.

e) Chemical risks

Chemical risks are often underestimated risks from healthcare waste. Chemical risks are caused by discharged pharmaceuticals and their metabolites, vaccines and sera. The materials are:

- ignitable: Waste can catch fire under certain condition. examples are solvents, paints and certain degreasers.
- corrosive: it corrodes metals or has a very high or low pH. Examples includes disinfectants, acids or alkaline cleaning fluids and battery acids.
- Reactive: it is unstable and explodes or produces toxic fumes, gases and vapors when mixed with water or under other conditions such as heat or pressure. examples are certain cyanides or sulphide bearing waste.
- toxic: it is harmful or fatal when ingested or absorbed, or if toxic chemicals leaches into the soil or groundwater when disposed of on land. examples are waste that contains high concentrations of pesticides or heavy metals such as cadmium, lead or mercury.

f) Biological risks

Microbiological risks from waste can be generated from materials contaminated with pathogenic agents. typical examples are cultures and stocks of infectious agents, waste from infected patients, waste contaminated with blood and body fluids, discarded diagnostic samples, infected animals from laboratories, contaminated materials like swabs, bandages or contaminated equipment. The viruses that can be transmitted through unsafe injections can remain "silent" in the body for a long time before they cause symptoms. One reason is the unsafe handling of sharp waste.

9. Recommendations

For operational purposes of waste management, it is not only important to identify what type of waste and in what quantities will be produced overall in the project, but also where it will be (by quantity and quality) and from where to where it needs to be transported for final disposal or treatment.Based on the interviews and onsite visits, the following recommendations are outlined:

Hospital level:

- Develop practical, short safe operational procedures for segregation of wastes and selected stages of operations (e.g. disposal of syringes, incineration of waste, spill management, accident response, etc.).
- Develop a simple maintenance system for incinerators.
- Increase the collection of used sharps used for injections etc.
- Discourage the chemical decontamination of different types of waste.
- The residues after treatment are disposed of in a waste pit on the hospital compound.
- Designate a person to be responsible for healthcare waste management for each selected healthcare facility.

Hukumat/District level administrations:

- Plan healthcare waste management interventions into the planning at hukumat level.
- Development of a local logistic and treatment system for healthcare waste.
- Support the strengthening of waste recycling and composting and landfills, waste-water treatment, etc.
- Set up a district/hukumat level healthcare waste working group.
- Document a list of waste generation points and develop reliable database at local level and how to dispose of segregated waste.
- The responsibilities for the waste generated by all constituents of district/hukumats need to be clarified and agreed upon amongst the different stakeholders.

Overall recommended waste disposal strategies

The most evident waste disposal strategies that could be implemented include:

- The municipal waste should be collected by the municipality and recyclable waste can be sold for further treatment, if a system is available.
- Infectious and sharp waste should be collected in safety boxes for the collection of sharps like needles, lancets, etc. and only incinerated or disinfected in central or decentral treatment plants.
- Pathological waste should be buried in special pits constructed on the compound of the health facility or could be incinerated in scientifically designed incinerators.
- Develop procedure for collection of chemical waste in the district / hukumats.

Management of expired or unused pharmaceutical waste is a part of the existing take-back system of the Ministry of Health on a national level.

10. Document Information Source:

- Tajikistan National progress report on the implementation of the Hyogo Framework for Action (2009-2011) - interim
- Country Portfolio Evaluation, Tajikistan (1999–2015), Volume 2: Technical Documents, GEF Independent Evaluation Office. GEF
- Environmental Performance Reviews - Tajikistan Second Review, Synopsis, United Nations New York and Geneva, 2012
- Rapid Assessment: Healthcare Waste Component of Global Fund HIV, TB and Malaria Projects in Tajikistan, Supplement to the Healthcare Waste Management Toolkit for Global Fund Practitioners and Policy Makers, UNDP May 2014
- Medical Waste Management, International Committee of the Red Cross, Geneva, Switzerland

Annex 11: Existing and Proposed Health Care facilities at each site

Attachment A: GPS Coordinates for all Project Sites

Table 73: GPS Coordinates for all Project Sites

No	Hospital / Health Center c	Location of Facility		Location of Water supply location in City		Location of City landfill site		No City WWTP. Only local hospital location	
		GPS Lat.	GPS Long	GPS Lat.	GPS Long	GPS Lat.	GPS Long	GPS Lat.	GPS Long
1	Fayzobod District Hospital	N 38.55122	E 69.31762	N 38.55573	E 69.32827	N 38.56313	E 69.35821	N 38.53967	E 69.31410
2	Fayzobod Health Center	N 38.55048	E 69.31626	SAME					
3	Rasht District Hospital	N 39.02200	E 70.37347	N 39.03511	E 70.37546	N 38.99817	E 70.29728	WWTP tanks Co-located	WWTP tanks Co-located
4	Rasht Health Center	N 39.02198	E 70.37251	SAME					
5	Sh. Shohin District Hospital	N 37.84011 Pref. site N 37.83735	E 70.04061 Pref.Site E 70.03956	Captive Well	Captive Well	N 37.85467	E 70.04507	Local Pits	Local Pits
6	Sh. Shohin Health Center	N 37.83695	E 70.03925	SAME					
7	Aini District Hospital	N 39.38734	E 68.56206	N 39.36319	E 68.60332	N 39.40440	E 68.53055	Local Pits	Local Pits
8	Aini Health Center	N 39.38859	E 68.56270	SAME					
9	Sangvor District Hospital	N 38.69622	E 70.48655	Reservoir N 38.67173 Pipe-length N 38.69421	Reservoir E 70.498831 Pipe-length E 70.48505	N 38.70015	E 70.47338	Local Pits	Local Pits
10	Sangvor Health Center	Co-Located	Co-located	SAME					

Attachment B.1: Aini: Existing Infrastructure in Facility and the Proposed Suggestions for the Restoration of Infrastructure System

Table 74: Aini - Existing Infrastructure and Proposed Measures

№	Name of facility	Location	Types of proposed design	Water supply		Sewage system / Waste-water Management		Solid Waste Management		Hazardous waste
				Current condition	Proposed solutions	Current condition	Proposed solutions	Current condition	Proposed solutions	Proposed solution
1	2	3	4	5	6	7	8	9	10	11
1	CDH	Aını district	Total building renovation	Water supply of the central hospital by gravity from springs, located at a distance of 11 km from the hospital. (Photo 1) Water from springs is collected in a concrete tank and then piped to the hospital. Because of the connection to the hospital line of water supply to the population and other consumers, the water pressure became less.	To ensure sufficient water for the hospital, it is necessary to clean the reservoir of settled sludge and to construct a separate line for the needs of the central hospital and health center.	Due to the dysfunctionality of the hospital's treatment facilities, hospital wastewater enters the pits / septic tanks located on the hospital site. Due to the filling of the existing septic tank, a pit is dug near them, which is drained at the moment. (photo 2). From the maternity department, the sewerage enters a separate septic tank. (photo 3). Outside the hospital at a distance of 500 m there are treatment facilities of the hospital, which for a long time do not work. Facilities located in the southeastern part of the hospital (down the slope). The treatment facilities consist of a receiving well and a crusher, two concrete tanks and a cleaning	It is necessary to completely replace the sewerage system of the hospital (internal and external pipelines),	On the territory of the hospital there is no temporary point for the accumulation of solid waste. Solid waste, as well as medical waste, are burned on the territory of a non-functioning boiler house. (photo 6). Ashes and unburnt waste are thrown out on an unauthorized landfill (on the shore/bank of the Zeravshan	It is necessary to build a garbage dump. Install metal boxes with covers. It is also necessary to set a schedule for the removal of garbage	To clean out the placenta pits (old one and current), both with capacity 2m^3 seal them and construct new 2 pits; 100% of roof removal required.

						building (photo 4 and 5))		River) (photo		
2	DHC	Aini district	Total building renovation	Water supply is provided from the central hospital and the problems are identical with the problems in the hospital		Sewerage of the Health Center goes to the hospital sewage pit, same issues		The solid waste of the Health Center is also burnt as in the hospital. Problems are identical		

	Name of Facility	Medical Waste management		Heating system		Powersupply		fire-fighting system	
	Aini District	Current condition	Proposed solutions	Current condition	Proposed solutions	Current condition	Proposed solutions	Current condition	Proposed solutions
	1	12	13	14	15	16	17	18	19
1	CDH	As a result of accumulation, medical waste is incinerated on the territory of a non-functioning boiler house. Ashes and unburned waste are thrown at an unauthorized landfill (on the bank of the Zeravshan River) Medical waste that is not subject to burning (placenta, etc ..) are buried in a pit located near the maternity ward. (photo 8).	It is necessary to install a new incinerator, and train the staff how to use this unit. It is necessary to organize new pits meeting the requirements of the appropriate storage and disposal of medical waste. Consider the option of burial of medical	The hospital has its own boiler room, which does not work (dekulakized). (photos 9 and 10). In some departments electric boilers are installed, which provide heat for 4-6 chambers. (photo 11) The remaining hospital buildings are heated by electric heating appliances.	Restore the boiler room, which will provide heat to all the buildings of the hospital and Health centers	Electricity supply of the hospital is provided from the central system. Two transformers with a capacity of 400 kW each are installed on the territory of the hospital. These transformers are in good condition and fully satisfy the need of the		On the territory of the hospital there is a fire-fighting reservoir, which is in non-operating condition. Fire protection stands are installed on the territory of the hospital. The fire hydrant system does not work. Fire alarms are not installed.	Install additional fire fighting stands according to fire regulations. To restore the fire reservoir and the fire hydrant system, install fire alarms in all rooms.

			waste in the territory of a common district garbage dump.			hospital. Also in the hospital installed a diesel generator.			
2	DHC	Medical waste is incinerated as in the hospital. Problems are identical		The premises of the clinic are heated by electric heaters. Problems are identical.		Electricity is supplied from the hospital line.		On the territory of the polyclinic no firefighting reservoir. The fire hydrant system does not work. No fire alarms installed	Install additional fire fighting stands, according to fire regulations. Restore the fire hydrant system and install fire alarms in all rooms.

			
Photo 1	Photo 2	Photo 3	Photo 4
			
Photo 5	Photo 6	Photo 7	Photo 8

			
Photo 9	Photo 10	Photo 11	

Attachment B.2: Fayzobod: Existing Infrastructure in Facility and the Proposed Suggestions for the Restoration of Infrastructure System

Table 75: Fayzobod - Existing Infrastructure and Proposed Measures

№	Type of facility	Location	Type of proposed measure	Water supply		Sewage system / Wastewater Management		Solid Waste Management		Hazardous waste
				Current condition	Proposed solutions	Current condition	Proposed solutions	Current condition	Proposed solutions	Proposed solution
1	2	3	4	5	6	7	8	9	10	11
1	CDH	Fayzobod district	Total building renovation	Water is supplied to the hospital from the main line, 2 outlets from the springs Haftchashma and Guvo. First, water enters to 2 water reservoirs (with a volume of 500 m^3 each), then chlorinated and supplied to facility where water enters to the hospital water tower. (photo 1), then water is distributed throughout the hospital.	For uninterrupted water supply, the entire water supply system of the hospital must be completely replaced. (internal and external pipelines)	All the wastewater from the hospital goes to the general sewage treatment facilities located in the southern part of the district at a distance of 1 km. (Photo 2)	It is necessary to completely replace the sewerage system of the hospital (internal and external pipelines),	Solid waste from the hospital is collected in the hospital area, which is fenced, but the foundation is not cemented (photo 3), all the liquid is absorbed into the ground, thus polluting soil and groundwater. There are no special metal waste boxes, all wastes are scattered, with the wind there is a risk of spreading waste through the hospital. Waste is transported by trucks of the district's district house holding enterprise/housing and communal services as it accumulates, about once a week.	Upgrading trash area, concreted coating. Install metal boxes with covers. It is also necessary to set a schedule for the removal of garbage	To clean out the placenta pit and pit for Hazardous waste, with capacity 3m3 put concrete surface put back waste from placenta seal them properly, construct 2 new pits in suitable area.

2	DHC	Fayzo-bod dis-trict	The building of the clinic is new, no repairs are needed.	Water is supplied to the facility from the main line		Sewerage of the Health Center goes to the district sewage treatment plant		Solid waste of the Health Center is stored in garbage dumps, which have a concrete fence and a hard coating. Solid waste is ex-ported to the gen-eral landfill as it is filled..	Install metal boxes with covers. It is necessary to take out the garbage on schedule,

Waste management		Heating system		Power supply		Fire-fighting system	
Current condition	Proposed solu-tions	Current condition	Proposed solutions	Current condition	Pro-posed solu-tions	Current condition	Proposed so-lutions
12	13	14	15	16	17	18	19
Medical waste, as accu-mulation incinerated in the furnace of non-functioning boiler building (picture 4), located within the hospital area. Medical wastes that are not subject to combus-tion (needles, ampoules, etc.) are buried in special pits located in the hospital compound (Picture 5 and 6).	It is necessary to install a new incin-erator, and train the personnel how to use this unit. It is necessary to organize new pits that meet the re-quirements for disposal of medi-cal waste.	The hospital has its own boiler house, which does not work (it is dispos-sessed). (photo 7 and 8). The premises of the hos-pital are heated by electric heaters.	Restore the boiler room, which will provide heat to all hospital buildings.	Electricity supply of the hospital is provided from the central system. One transformer with a capacity of 400 kW is installed on the territory of the hospital. (photo 9) This transformer is in good condition and completely satisfies the need of the hospital. Also, in the hospital there are two diesel generators		On the territory of the hospital there are fire-fighting reservoirs. Fire protection stands are installed on the territory of the hospital. The fire hydrant system does not work. (Photo 10) Fire alarms are not in-stalled.	Install addi-tional fire-fighting stands according to fire regula-tions. Restore the fire hy-drant system and install fire alarms in all rooms.
Medical waste is incine-rated in a special furnace. Ash is thrown into the gar-bage dump.		Health Center has its own new electric boiler in the amount of 2 pcs. which does not work. The rooms are heated by electric heaters.	It is nec-essary to solve the problems in the electric boiler.	Electricity supply of the Health Center is provided from the main electric net-work of the district. The Health Center has its own transformer with a capacity of 400kV.		The Health Center is provided with all fire-fighting equip-ment	

			
Photo 1	Photo 2	Photo 3	Photo 4
			
Photo 5	Photo 6	Photo 7	Photo 8

			
Photo 9	Photo 10		

Attachment B.3: Rasht: Existing Infrastructure in Facility and the Proposed Suggestions for the Restoration of Infrastructure System

Table 76: Rasht - Existing Infrastructure and Proposed Measures

№	Name of facility	Location	Types of proposed design	Water supply		Sewage system / Wastewater Management		Solid Waste Management	
				Current condition	Proposed solutions	Current condition	Proposed solutions	Current condition	Proposed solutions
1	2	3	4	5	6	7	8	9	10
1	CDH	Rasht district	Total building renovation	Centralized water supply system, source is the springs of Loyak, Mullahusain and Tug. Four lines are diverted from the source. The hospital and part of the population is provided with water from one line, the spring of Loyak, due to this load, there is a shortage of water every year, (population growth (photo 1 and 2)	To ensure sufficient water for the hospital, it is necessary to connect to this line an additional line (source) flowing at a distance of 200 meters from the source of Loyak.	All wastewater from the hospital goes to the sewage treatment plant located in the south-western part of the hospital (down the slope). The treatment facilities consist of a receiving well and two concrete tanks with a capacity of 600 m3 (10x10x6). Tanks are worn out, long time not cleaned, filled to the very top, sewage flows through these filled tanks and without the envisaged disinfection are discharged into the Surkhob River. (photo 3 and 4)	It is necessary to completely replace the sewage system (internal and external pipelines), clean and modernize the treatment facilities (clean reservoirs and develop an additional decontamination system).	The hospital's solid waste is stored in two special sites located on the territory of the hospital. (photo 5 and 6) These sites have a concrete fence without a hard coating. The base of the site is not cemented; all the liquid from the waste is absorbed into the ground. Due to the lack of special metal boxes, all wastes are scattered. Waste is transported by special trucks of the district's LCFM approximately once a week.	Upgrade the garbage dump, concrete the covering. Install metal boxes with covers. It is necessary to organize a schedule of garbage disposal.

2	District Health Center	Rasht district	Construction of an additional building	Water supply is provided from the central hospital network and the problems are identical.		Sewerage of the Health Center goes to the treatment facilities of the central hospital and the problems are identical		The solid waste of the Health Center accumulates in the garbage dumps of the hospital. Problems with waste are identical.	

Waste management		Heating system		Power supply		Fire-fighting system	
Current condition	Proposed solutions	Current condition	Proposed solutions	Current condition	Proposed solutions	Current condition	Proposed solutions
11	12	13	14	15	16	17	18
Medical waste is incinerated in 2 furnaces located on the territory of the hospital, one of which does not work. These furnaces work on wood and coal. (photo 7). Also in 2014, the project of the American Embassy in the hospital has installed an incinerator on diesel fuel and electricity, but due to technical problems this equipment does not work. (Photo 8). Medical waste that cannot be burned (needles, ampoules, etc.) is buried in special pits. Of the three pits, two are overcrowded (a pit for sharp objects, ampoules, etc., 45 m^3, and a pit for the placenta,45 m^3) so all wastes of this pits are discharged in a pit for dumping the ashes after	It is necessary to restore the work of the incinerator, and train the personnel to use it. It is necessary to close the pits for the disposal of medical waste and to organize new pits that meet the requirements for the disposal and disposal of medical waste. Consider the possibility of burial of medical waste on the territory of a common district landfill.	The hospital has its own electric boiler room in the amount of 2 pcs. handicraft production located in the basement of the main building. This boiler room provides heat only to the main building of the hospital. The remaining hospital buildings are heated by electric heating appliances. (photo 11)	To install a modern electro-boiler room that provides heat to all hospital rooms.	The power supply of the hospital is provided from the central system. Two transformers with a capacity of 400 and 600 kW are installed on the territory of the hospital. These transformers are in good condition and fully satisfy the need of the hospital. Also in the hospital there are two diesel generators with a capacity of 10 kW and 20 kW		On the territory of the hospital there are two fire-fighting reservoirs with a volume of 120 m3 each. On the territory of the hospital there are only two fire panels. The fire hydrant system does not work. Fire alarms are not installed. (photo 12)	Install additional fire-fighting stands according to fire regulations. Restore the fire hydrant system and install fire alarms in all rooms

incineration of hospital wastes. (photo 9 and 10)							
Medical waste is incinerated in furnaces and stored in the pits. Problems are identical		The Health Center has its own electro-boiler house of artisan production in the amount of 2 pieces, located in the basement of the building. This boiler room provides heat to all the premises of the Health Center.		Electricity supply of the Health Center is provided from the hospital power supply.		On the territory of the Health Center no firefighting reservoir. The fire hydrant system does not work. Fire alarms are not installed.	Install additional firefighting stands according to fire regulations. Restore the fire hydrant system and install fire alarms in all premises of Health Center.

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Photo 6

Photo 7

Photo 8

Photo 9

Photo 10

Photo 11

Photo 12

Attachment B.4: Sangvor: Existing Infrastructure in Facility and the Proposed Suggestions for the Restoration of Infrastructure System

Table 77: Sangvor: Existing Infrastructure and Proposed Suggestions

№	Name of facility	Location	Types of proposed design	Water supply		Sewage system / Wastewater Management		Solid Waste Management	
				Current condition	Proposed solutions	Current condition	Proposed solutions	Current condition	Proposed solutions
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	CDH	Sangvor district	Demolition and construction of a new building	The central hospital supplies water from a centralized water supply system. Central water supply is provided from the source of Mirkalon located in the lower reaches of the mountain of Kalanak at a distance of 3.5 km from the central hospital. (Photo 1) gravity flow water system. The water from this source is collected in reservoirs (4 tanks of 20-25m^3) located at a distance of 1.5 km from the hospital. From these tanks, water is	To ensure sufficient pressure of water in the hospital, it is necessary to connect other sources (springs) located at a distance of 500 to 1000 meters from the Mirkalon spring. It is possible to replace the hospital's pipeline with a diameter of 25mm to a pipeline of 50 or 80mm, the distance from the main line to the hospital is 300m.	Sewage system of the hospital is in a sorry state, part of the pipeline is not working. There is no central sewerage system in the district. Several pits for sewage have been excavated on the territory of the hospital (for surgical, maternity wards, for the main building and for therapy). The pits do not meet the requirements. (Photo 2 and 3)	It is necessary to completely replace the sewage system (internal and external pipelines). Build several septic tanks that meet the relevant requirements. There is an opportunity to build a septic tank on the territory of a public district garbage dump.	Solid waste from the hospital is stored on a special site located in the hospital. This site has a concrete fence and no hard cover. Because of the absence of special boxes (metal), all wastes are scattered. With wind, there is a risk of spreading waste through the hospital. Due to the lack of a solid coating, all the liquid is absorbed into the ground, thus polluting the soil and groundwater. Waste is transported by special trucks of the Housing and utilities department, once every two weeks. (Photo 4)	Upgrade the garbage dump, concrete the covering. Install metal boxes with covers. It is necessary to take out the garbage on schedule,

№	Name of facility	Location	Types of proposed design	Water supply		Sewage system / Wastewater Management		Solid Waste Management	
				Current condition	Proposed solutions	Current condition	Proposed solutions	Current condition	Proposed solutions
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
				supplied to consumers through 4 pipelines with diameters of 125mm-2pc, 120mm-1pc. 100mm-1pc. The central hospital receives water through a 125 mm diameter pipeline along the main road; from the main road to the hospital, the pipeline narrows to 25 mm. the water pressure in the hospital is not sufficient.					
2	District Health Center	Sangvor district	Construction of an additional building	Water supply is provided from the central hospital network and the problems are identical.		On the territory of the Health Center a pit was dug into which wastewater enters. Pits do not meet the requirements (excavated just a pit and closed with a stove). Problems are the same as in the hospital		The solid waste of the Health Center accumulates in the garbage dumps of the hospital. Problems with waste are identical.	

Waste management		Heating system		Power supply		Fire-fighting system	
Current condition	Proposed solutions	Current condition	Proposed solutions	Current condition	Proposed solutions	Current condition	Proposed solutions
11	12	13	14	15	16	17	18
Medical waste is burned with wood and coal in the incinerator located on the hospital territory. Solid waste is also sometimes burned in this stove. (photo 5) Medical waste that cannot be burned (needles, ampoules, placenta, etc.) is buried in special pits. Number of pits 4 pcs. During the entire period of the hospital's existence (since 2004), these pits were cleaned only once. (photo 6 and 7) This land plot, where these pits are located, is being considered for construction of a new Health Center building.	To construct new pits for the burial of medical waste in another suitable place of the hospital, taking into account the existing rules, or to build these pits in the territory of the general district garbage dump.	The hospital does not have its own boiler room. The premises of the hospital are heated by electric heaters and handicraft stoves. (photo 8)	To install a modern electro-boiler room that provides heat to all hospital rooms.	The power supply of the hospital is provided from the central system. Two transformers are installed on the territory of the hospital, one of which is a reserve one. These transformers are in good condition and fully satisfy the need of the hospital. Also in the hospital there are two diesel generators		On the territory of the hospital there is one fire-fighting reservoir with a volume of 52.5 m3., also installed old and non-standard fire shields in each department. There is no fire hydrant system. Fire alarms are not installed in all department. (photo 9 and 10)	Install additional fire-fighting stands according to fire regulations. Restore the fire hydrant system and install fire alarms in all rooms
Medical waste is incinerated in furnaces and stored in the pits. Problems are identical		The health center has no heating system. The premises are heated by electric heaters	To install a modern electro-boiler room that provides heat to all premises of the Health Center	The power supply of the health center is provided by the hospital's electrical network.		On the territory of the health center no fire-fighting reservoir. The fire hydrant system does not work. Fire alarms are not installed.	Install additional fire-fighting stands according to fire regulations. Restore the fire hydrant system and install fire alarms in all premises of the Health Center.


Photo 1


Photo 2


Photo 3


Photo 4


Photo 5


Photo 6


Photo 7


Photo 8


Photo 9


Photo 10

Attachment B.5: Sh. Shohin: Existing Infrastructure in Facility and the Proposed Suggestions for the Restoration of Infrastructure System

Table 78: Sh. Shohin - Existing Infrastructure and Proposed Measures

№	Name of facility	Location	Types of proposed design	Water supply		Sewage system / Wastewater Management		Solid Waste Management		Hazardous waste
				Current condition	Proposed solutions	Current condition	Proposed solutions	Current condition	Proposed solutions	Proposed solution
1	2	3	4	5	6	7	8	9	10	11
1	CDH	Sh. Shohin district	Construction of a new building. The land site of the hospital consists of two sections in one of which the main building is located, in the other is a dilapidated building of the 30s. As an option for the construction of a new hospital building, an agricultural land of 3 hectares (is allocated) in the eastern part of the city. (photo 1 and 2) From the northern part of the earth, a foundation pit for the new building of the SES. From the eastern and southern parts -	The central hospital supplies water from its own 90-meter deep well located in the hospital. Water from the well is pumped through a deep water pump into a water tower with a capacity of 10 m^3, after which water is supplied to the hospital. This well completely satisfies the need of the hospital and health center. (photo 3 and 4)		Sewage system of the hospital is in a poor state and does not work in full. (photo 5 and 6) There is no centralized sewerage system in the area yet.	It is necessary to build sewer septic tanks that fully meet the requirements.	Solid waste from the hospital is burned in a furnace for the incineration of medical waste. There is no special site for waste collection on the territory of the hospital.	Build a garbage dump with a fence and a hard surface. Install metal boxes with covers. Organize the removal of garbage on schedule to the public landfill.	To clean out the placenta pit and pit for Hazardous waste, with capacity 3m3 put concrete surface seal it and construct new extra pit; 100% of roof removal required.

			agricultural land, sown with wheat. in addition, on the second plot of land of almost 0.8 hectares, where the dilapidated building is located, there is unused land that could be used for construction of a new hospital building.							
2	District Health Center	SH. Shohin	For the construction of an additional building, a plot of land located within the health center (the western part) is proposed. This area currently occupied by fruit trees and simple trees (apple trees - 9 pieces and poplars - 20pcs of which 2 are large ones).	Water supply is provided from the central hospital network and the problems are identical.		There is no pit for wastewater in the health center	It is necessary to build sewer septic tanks that meet the relevant requirements.	Solid waste of the health center is collected in a garbage box, which is placed on an open area.	Build a garbage dump with a fence and a hard surface. Install metal boxes with covers. Organize the removal of garbage on schedule to the public landfill.	

Waste management		Heating system		Power supply		Fire-fighting system	
Current condition	Proposed solutions	Current condition	Proposed solutions	Current condition	Proposed solutions	Current condition	Proposed solutions
12	13	14	15	16	17	18	19
Medical waste as well as solid waste are burned in an incinerator located on the territory of the hospital, where wood and coal are used (photo 7). The incinerator is in a deplorable state, the lid is broken, there is no pipe. Medical waste not subject to incineration needles, ampoules, placenta, etc. is buried in special excavated pits without the corresponding concreting.	Establish a new incinerator; build new pits for disposal of medical waste within the territory of the future hospital.	The hospital has its own electro-boiler room, with two installed electric boilers. This boiler room provides heat only to the main building of the hospital. (photo 8)	Establish a modern electric boiler room in the new building that provides heat to all the premises of the future hospital.	The power supply of the hospital is providing from the central system. One transformer with a capacity of 400 kW is installed on the territory of the hospital. These transformers are in good condition and fully satisfy the need of the hospital.		Within the hospital territory there is one fire-fighting reservoir with a volume of 75 m3. (photo 9), old and non-standard fire shields are also installed. The fire hydrant system does not work. (photo 10)	Install new fire shields in accordance with established fire regulations. Install the fire hydrant system and install fire alarms in all rooms.
Medical waste, as accumulated, is incinerating in an incinerator located in the health center which operates on wood and coal.	To install the new furnace. To construct new pits for burial of medical waste.	The health center does not have its own boiler room. The premises are heated by electric heaters.	It is necessary to install a modern electro-boiler room that provides heat to all the premises of the Health Center	Electricity supply of the Health Center is provided from the hospital power supply.		On the territory of the health center no fire-fighting reservoir with a capacity of 75m^3. The fire hydrant system does not work. Fire alarms are not installed.	Install new fire shields in accordance with established fire regulations. Install the fire hydrant system and install fire alarms in all rooms.


Photo 1


Photo 2


Photo 3


Photo 4


Photo 5


Photo 6


Photo 7


Photo 8


Photo 9


Photo 10