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# 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

**Rapid Assessment: Healthcare Waste Component of Global Fund HIV, TB and Malaria Projects in Tajikistan**

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**Authors:**
Dr. Ute Pieper, Waste Management Consultant
Jan-Gerd Kühling, Environment & Hygiene Consultant
ETLog Health GmbH, kuehling@etlog-health.de

**Rapid Assessment Series Editor:** Dr. Christoph Hamelmann

**UNDP contact:** Dr. Christoph Hamelmann, christoph.hamelmann@undp.org

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# Abbreviations

| | |
|---|---|
| ACSM | Advocacy, communication and social mobilization |
| AFEW | AIDS Foundation East West |
| ART | Antiretroviral Therapy |
| ARV | Antiretroviral (medicine) |
| CCM | Country Coordinating Mechanism |
| DOTS | Directly observed treatment, short-course |
| GIZ | Deutsche Gesellschaft für Internationale Zusammenarbeit |
| GF | Global Fund to Fight AIDS, Tuberculosis and Malaria |
| HBV | Hepatitis B Virus |
| HCV | Hepatitis C Virus |
| HIV | Human Immunodeficiency Virus |
| IEC | Information, education, communication |
| KfW | Kreditanstalt für Wiederaufbau |
| LLIN | Long lasting insecticide-treated nets |
| M&E | Monitoring and evaluation |
| MDR | Multi drug resistance |
| NEC | National Environmental Committee |
| MoH | Ministry of Health and Social Protection |
| NGO | Non-governmental organization |
| PAL | Practical approach to lung health |
| PMTCT | Prevention of mother-to-child transmission |
| PR | Principal recipient |
| PPP | Private public partnership |
| PVC | Polyvinyl chloride |
| PWID | People who inject drugs |
| RMPC | Republican Medical Procurement Centre |
| SES | Sanitarian Epidemiological Surveillance |
| SR | Sub-recipient |
| STI | Sexual transmitted infections |
| SW | Sex worker |
| TB | Tuberculosis |
| UNDP | United Nation Development Programme |
| WHO | World Health Organization |

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**The assessment included an onsite visit to the Republic of Tajikistan from 7 to 13 December 2013. At that time several UNDP GF projects sites were visited and relevant stakeholders were interviewed. I would like to extend our gratitude to the individuals and institutions that contributed to the planning and execution of this assessment.**

**Special thanks are also extended to UNDP country office in Dushanbe, which hosted the assessment and provided the local organization of the interviews and site visits, especially to Norimasa Shimomura (Country Director), Tedla Mezemir (GFATM PIU: Programme Manager), Zebo Jalilova (HIV, Health and Development - Programme Analyst), Zumrad Maksumova (TB Project manager PIU/UNDP), Mavzuna Burkhanova (HIV/AIDS Project Manager PIU/UNDP), Sulaimoni Khushdil (Administrative Associate PIU/UNDP), and Gulpari Abrorova (National Malaria Consultant, PIU/UNDP).**

# 1 Executive Summary

UNDP has been a strategic partner of the Global Fund to Fight AIDS, Tuberculosis and Malaria (GF) for the last 10 years, and has acted as the interim Principal Recipient (PR) of last resort for countries in which the GF cannot identify a national principal recipient for its grants. In order to deepen the understanding of the environmental impact caused by waste created through its GF project implementations, onsite assessments of GF health projects with UNDP PR-ship were conducted in Tajikistan, Uzbekistan and Zimbabwe.

This report outlines the results of the assessment in Tajikistan, which was carried out in the context of the development of a toolkit to improve the planning and implementation of better healthcare waste systems in future GF projects.

The assessment in Tajikistan was conducted in the week of 7-13 December 2013 and focused on the identification of waste generation sources, generated waste classes and estimations of waste amounts generated in GF HIV, TB and Malaria projects. The assessment included a review of all documents provided by the UNDP country office. Furthermore, interviews were conducted with all relevant governmental and non-governmental stakeholders, and visits and interviews of different Sub-Recipients were also conducted.

The assessment results show that waste management interventions of GF projects are focused on providing safety boxes for the collection of sharps like needles, lancets, etc. The 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. The disposal of infectious and sharp waste is also part of the national system, which is insufficient, risky and not environmentally sound. Chemical waste is not collected. Recycling activities are rarely introduced. The responsibilities for the waste generated by GF projects are not clarified and agreed upon amongst the different stakeholders.

During the assessment, different products which later will become different types of waste were investigated. The result underlined the assumption of WHO[1] that about 10 % of generated healthcare waste can be considered as potentially infectious waste. Further investigations are needed, as waste generated by GF projects is not documented and a reliable database is not available.

The national healthcare waste system is legally based on the "Sanitarian Rules on Safe Handling of Healthcare Waste" issued by the Ministry of Health and Social Protection (MoH) in 2009, in which the former Soviet system of treating infectious and sharp waste with chemicals before disposal is still followed. This system is causing additional environmental risks by generating chemical fluid waste and increasing dioxin and furans by low temperature burning of the waste. In each district, one facility is selected and used as the center for the disposal of waste – all facilities of the district are allowed to bring their infectious and sharp waste to the selected facility. These selected facilities are lacking proper and safe infrastructure and equipment – often, the waste is still openly burned or treated by Small Scale Incinerators (SSI). A budget for healthcare waste management is not specifically designated. The collection of municipal non-hazardous waste is only partly functional – municipal waste, especially in rural areas, is often openly burned or buried due to insufficient collection systems or budget available.

1 Safe management of wastes from health-care activities, Second edition, Edited by Annette Prüss-Ustun, Jorge Emmanuel, Philip Rushbrook, Raki Zghondi, Ruth Stringer, Ute Pieper, William King Townend, Susan Wilburn and Yves Chartier, World Health Organization 2013

The lack of a national healthcare waste policy and strategy is causing non-standardized waste management solutions, and also insufficient planning security for international organizations. For the MoH, it is difficult to coordinate potential healthcare waste interventions without the basis of a policy and strategy. Therefore, the support of the MoH to establish strong and sustainable structures for healthcare waste management in the country is needed.

**Based on the revised documents, interviews and onsite visits, the following recommendations are outlined:**

1. **Country-specific recommendations:**

a. Set up a governmental healthcare waste working group.
b. Support the creation of a donor coordination group for healthcare waste.
c. Support the development of a national healthcare waste strategy and development plan.
d. Designate a person to be responsible for healthcare waste management for each selected healthcare facility.

2. **Context-specific recommendations for the Global Fund programme on the national level of Tajikistan:**

a. Insert healthcare waste management interventions into the planning phase of GF projects.
b. Insert the implementation of a monitoring and evaluation system on healthcare waste management into the planning phase of Global Fund projects.
c. Participate in the development of a national logistic and treatment system for healthcare waste.
d. Discourage the chemical decontamination of class B and class C waste.
e. Include disposable products for waste collection (like waste bags).
f. Develop practical, short safety operation procedures for selected operations (e.g. disposal of syringes, incineration of waste, spill management, accident response, etc.).
g. Develop a take back system for broken or expired bed-nets.
h. Expand the items to be checked for green procurement, and prevent the purchase of PVC-based health products.
i. Increase the collection of used sharps from people who inject drugs (PWID).
j. Support the strengthening of waste recycling and reuse at warehouses, etc.
k. Develop a simple maintenance system for incinerators.

# 2 Assessed Projects

A rapid assessment in Tajikistan was conducted in the first week of December 2013 in order to assess GF project activities and identify current waste management practices and potential for improvements. The following projects have been included (the following information has been taken from http://portfolio.theglobalfund.org/en/Grant/Index/):

### HIV/AIDS: TAJ-809-G07-H

Strengthening the Supportive Environment and Scaling Up Prevention, Treatment and Care to Contain the HIV Epidemic in the Republic of Tajikistan:

The programme supported by this grant is expanding treatment, prevention and care services. The programme also aims to strengthen the public health system and promote the participation of civil society. Rural communities are pivotal to spreading prevention messages and ensuring that quality services are delivered to those who need them. Service delivery:

- Prevention
  - Behavioral change communication - community outreach
  - Blood safety and universal precautions
  - Condom distribution
  - Counselling and testing
  - Preventing mother-to-child transmission of HIV (PMTCT)
- Treatment: Antiretroviral treatment (ART) and monitoring

### Tuberculosis: TAJ-809-G09-T

Strengthening Tuberculosis Prevention and Control Programme in the Framework of Health System Reform in the Republic of Tajikistan:

The programme supported by this grant aims to reach the targets of at least 70 percent detection of new sputum smear-positive cases with an 85 percent rate of successful treatment of identified cases. Programme strategies include strengthening the management of the country's National Tuberculosis Control Programme; implementing effective advocacy, communication and social mobilization of TB control; expanding directly observed treatment, short-course (DOTS) in the prison system; introducing the management of drug-resistant TB; improving collaboration for control of TB/HIV co-infection; and strengthening the evidence for decision-making and action through operational research in TB. In addition, the programme intends to scale up multidrug-resistant TB (MDR- TB) diagnostic and treatment services, including early case detection. It includes new interventions such as addressing TB and human rights issues among the prison population. The programme targets TB patients, including prisoners; drug-resistant TB patients, migrant workers and their families; TB service providers; and the general population. Service delivery areas:

- Infection control in healthcare
- Improving diagnosis
- Standardized treatment, patient support and patient charter
- Monitoring and evaluation (M&E)
- TB/HIV
- MDR-TB
- Practical approach to lung health (PAL)
- Advocacy, communication and social mobilization (ACSM)
- Community TB care
- DOTS

### Malaria: TAJ-809-G08-M

The overall goal of the project is to eliminate malaria infection through interruption of local malaria transmission. The malaria elimination project is a reflection on the successful implementation of the Round 5 malaria grant, and it is in line with the regional malaria elimination strategy of WHO Europe. The project is aimed at consolidating the achieved results of the ongoing reduction of malaria infection initiative. The proposal will scale up existing efforts of the malaria surveillance system, strengthening National Malaria Control Programme (NMCP) capacity, improving early detection and effective treatment as well as promotion of integrated vector control management.

Main objectives of the project:

- Improve capacity within the NMCP to support malaria control policy development, planning, management, partnership and coordination.
- Strengthen the national surveillance system, including epidemic forecasting, early warning and response.
- Improve the coverage and quality of early diagnosis and prompt treatment services in the country.
- Promote cost effective integrated vector management based on indoor residual spraying, larvivorous fish, bed-nets and environmental management.
- Provide the evidence required to allow appropriate and effective malaria control strategies responsive to the rapidly changing disease context through a programme of needs-based operational research.
- Expand behavior change communication through the media and community mobilization strategy.

The following table outlines the management structure of the GF projects in Tajikistan:

**Table 1: Management structure – GF projects**

| Position | Name | Organization |
|---|---|---|
| Fund Portfolio Manager | Mirzoyan Artashes | Global Fund |
| Country Coordination Mechanism | 25 members (detailed list can be found in the annex) | Government; Ministry of Health and Social Protection; National Environmental Committee; Ministry of Finance; Ministry of Interior; Ministry of Education; Ministry of Justice; Department of Health, Women and Family Affairs; National Coordination Committee on HIV/AIDS, TB and Malaria prevention; WHO; NGOs; UNDP Project; HOPE; USAID |
| Principal Recipient | Norimasa Shimomura<br>Tedla Mezemir | UNDP, Tajikistan<br>Country Director<br>GF Programme Manager |
| Local Fund Agent | Alan, Nabiev | Finconsult Ltd. (Tajikistan) |

# 3 Background Information

Tajikistan is the poorest of the former Soviet republics. It declared its independence on 9 September 1991, and has not yet fully recovered from the civil war of the 1990s. In 2007, about 74% of its 6.7 million populations lived in rural areas. Tajikistan's population faces a double burden of both high non-communicable and communicable diseases.[2] There has been a significant increase of communicable diseases, such as tuberculosis. Tajikistan has the worst TB epidemic in Eastern Europe and Central Asia. Although Tajikistan's HIV and AIDS epidemic is still concentrated among most-at-risk populations, the number of new HIV cases officially registered in the country has been increasing over the last 10 years.

UNDP, as PR of GF grants in Tajikistan, has been implementing HIV /AIDS projects since 2003 and TB projects since 2007. Concerned with the environmental safeguarding of its GF operations in the context of sustainable human development, UNDP has initiated assessments concerning its environmental footprint, focusing on the following components:

**a) Carbon footprints and emission reduction strategies**

In 2013, UNDP conducted the first environmental footprint assessment of GF grants worldwide using the Tajikistan HIV and TB grants as pilots.[3] Paradoxically, while the health sector aims to make and keep us healthy, it is also a significant contributor to greenhouse gas emissions, causing potential adverse impacts on human health and sustainable development. The health sector has real potential to reduce greenhouse gas emissions. The study revealed that UNDP's HIV and AIDS and tuberculosis grants examined in Tajikistan and Montenegro produced the equivalent of 148,613 tons of carbon dioxide. Using a conservative estimate of $30 for the future costs of damages caused by every additional ton of carbon emission, the social cost of carbon caused by the examined grants was $4,458,390, or at least six percent of the grants' investments.

**b) Waste stream analysis and improved waste management strategies**

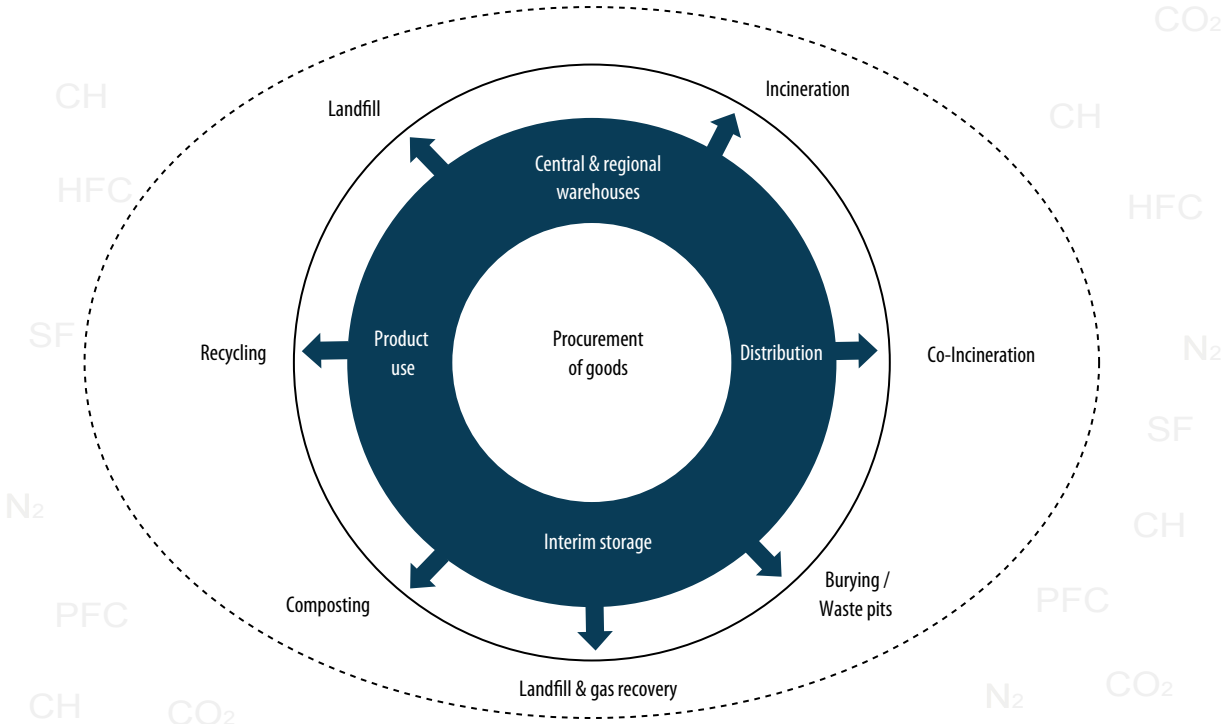
One element of the generated carbon emissions by GF projects is the treated and disposed waste produced by GF activities. In order to find out the importance of this component on carbon emissions and its other environmental impacts, waste sources are identified, the risks are outlined, and strategies for risk reduction. In order to attain a deep insight into the environmental impact of GF project implementation by generated waste, an onsite assessment has been conducted. Different project sites have been visited and relevant stakeholders have been interviewed. The assessment stresses the relevance and importance of existing country-specific policies. Accordingly, the project aims to improve the waste management under the GF in the context of national policies, and provide practical recommendations for improvement of implementation.

This assessment focuses on both the above-mentioned components and is part of similar work carried out in Uzbekistan and Zimbabwe. It aims to inform GF grant planning and implementation under the New Funding Model, and to advocate for an environmental safeguard policy for the GF and its grant-making mechanisms in general.

2 Health Systems in Transition, Tajikistan: Health System review, Vol. 12 No.2, 2010

3 http://www.scribd.com/doc/173048077/Carbon-footprint-of-UNDP-Global-Fund-health-initiatives-in-Montenegro-and-Tajikistan; retrieved December 2013

**Figure 1: Pathways of environmental footprint related to healthcare waste**




## 3.1 Assessment strategy

Before traveling to Tajikistan, the consultant conducted an environmental review of relevant GF grant documents related to generated waste streams, amounts, treatment, disposal and the current procurement processes.

In Tajikistan, the consultant worked closely with the UNDP country office in Dushanbe in order to receive further relevant information regarding the project, and to plan in detail the next steps to take in the country. Stakeholder interviews with GF grant practitioners, including Principal Recipients and Sub-Recipients, government and its agencies, were important in providing deep insights into the current processes and possible obstacles in regard to generated waste and awareness of environmentally friendly waste management. Furthermore, project sites were visited in order to receive direct impressions on the project outputs and the awareness and opinions of the project worker.

The data collected during this assessment will form the basis for the environmental review of previous and current grants related to healthcare waste management aspects. The data will also be useful for a reappraisal of the effectiveness of environmental protection strategies which may be implemented in the future.

**Figure 2: Assessment methodology**

## 3.2 Provided project documents

The following documents were provided by the UNDP country office:

**Table 2: Provided project documents**

| | **Malaria** TAJ-809-G08-M | **Tuberculosis** TAJ-809-G09-T | **HIV/AIDS** TAJ-809-G07-H |
|---|---|---|---|
| **Global Fund Webpage*** | | | |
| Proposal Form (TFM) | X | X | X |
| Grant Performance Report | X | X | X |
| Grant Scorecard | X | X | X |
| Programme Grant Agreement | X | X | x |
| Implementation Letter | X | X | X |
| Disbursement Request | X | X | X |
| **Internal Documents** | | | |
| Performance Framework | X | X | X |
| Funding Request Form | X (Section 3-8) | X (Section 3-8) | X |
| TRP Clarifications Final Approval Form | | X | X |
| Detailed Budget approved by GF | X | X | X |
| Procurement and Supply Management Plan | X | X | X |

*http://portfolio.theglobalfund.org/en/Country/Index/TJK

# 4 Relevant Legal Framework

## 4.1 International Conventions

In addition to the relevant international documents regarding waste management and air emissions, like the Guideline 'Safe management of wastes from health-care activities'[4] issued by WHO, Tajikistan is part of the following Conventions and Agreements:

## 4.2 National legal framework

This assessment stresses the relevance and importance of existing country-specific policies. Accordingly, the GF project aims to improve the waste management under the GF in the context of national policies and provide practical recommendations for improvement of implementation under consideration of the national legal framework, which includes but is not limited to:

a. National Environmental Health Action Plan (NEHAP), 2000
b. Draft National Strategy on Waste Management in the Republic of Tajikistan until 2015
c. Law on Production and Consumption Waste
d. Order on Healthcare Waste Management No. 272, May 2005
e. Regulation on Pharmaceutical Waste No. 370
f. Regulation on Emissions No. 800
g. Sanitarian Rules on Safe Handling of Healthcare Waste, MoH 2009

**Table 3: Status of ratification of international conventions**

| Name of Convention | Status of ratification | Year |
|---|---|---|
| Basel Convention: Technical Guideline on environmentally sound management of biomedical and healthcare waste (UNDP 2003) | - http://www.basel.int/Countries/StatusofRatifications/PartiesSignatories/tabid/1290/Default.aspx | - |
| Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade | Signature http://www.pic.int/Countries/Statusofratifications/tabid/1072/language/en-US/Default.aspx | 28/09/1998 |
| Vienna Convention for the protection of the Ozone Layer and its Montreal Protocol on substances that deplete the Ozone Layer | Accession http://ozone.unep.org/new_site/en/treaty_ratification_status.php?treaty_id=&country_id=169&srchcrit=1&input=Display | 07/01/1998 |
| Stockholm Convention on Persistent Organic Pollutions (POPS), Stockholm | Signature<br>Ratification<br>http://chm.pops.int/Countries/StatusofRatifications/tabid/252/Default.aspx | 21/05/2002<br>08/02/2007 |
| ADR, European Agreement concerning the International Carriage of Dangerous Goods by Road (UNECE) | Accession http://www.unece.org/trans/danger/publi/adr/legalinst_53_tdg_adr.html | 28/12/2011 |
| Minamata Convention on Mercury (UNEP 2013) | - http://www.mercuryconvention.org/Countries/tabid/3428/Default.aspx | - |

4 Safe management of wastes from health-care activities, Second edition, Edited by Annette Prüss-Ustun, Jorge Emmanuel, Philip Rushbrook, Raki Zghondi, Ruth Stringer, Ute Pieper, William King Townend, Susan Wilburn and Yves Chartier, World Health Organization 2013

# 5 Assessment Activities

In the following section, the relevant stakeholders of the GF projects and the results of the onsite visits are outlined.

## 5.1 Stakeholder interviews

Relevant authorities, project partners, implementers and international organizations have been visited in order to investigate the experience with the GF projects in regard of waste management and to identify legal requirements for waste management. The following stakeholders have been interviewed:

Waste management was not regarded a priority among the stakeholders for the planning, implementing and monitoring of GF projects in Tajikistan, although the interviewees were aware of the problem of waste

**Table 4: List of interviewed stakeholder**

| Role | Organization | Persons met | Date |
|---|---|---|---|
| Principle Recipient | UNDP country office (Briefing) | Norimasa Shimomura,<br>Zebo Jalilova,<br>Tedla Mezimir | 09.12.2013 |
| Principle Recipient | UNDP country office: Global Fund Project Implementation Unit (PIU) | Zumrad Maksumova<br>Mavzuna Burkhanova<br>Tedla Mezimir<br>Sulaimoni Khushdil | 09.12.2013 |
| Principal Recipient | UNDP country office: Energy and Environment Practice | Khurshed Kholov<br>Mirzo Isoev<br>Madina Begmatova | 13.12.2013 |
| Principal Recipient | UNDP country office: Operation Manager a.i and Head of Procurement Unit | Mr. Zafar Yuldoshev | 13.12.2013 |
| Principal Recipient | UNDP country office (Debriefing) | Nori Shimomura,<br>Zebo Jalilova,<br>Zumrad Maksumova<br>Mavzuna Burkhanova | 13.12.2013 |
| Government | MoE: National Environmental Committee | Rajabov Sharifjon Huderovich<br>(Vice Chairman) | 10.12.2013 |
| Government | Deputy Head of SES (MoH) | Mr. Navruz Jafarov | 11.12.2013 |
| Principal Recipient | Project HOPE | Mr. Timur Aptekar | 13.12.2013 |
| Sub-Recipient | WHO country office | Stephen Chacko<br>Lola Yuldasheva | 11.12.2013 |
| Sub-Recipient | Republican Centre of TB control | Mr. Bobokhojaev Oktam | 11.12.2013 |
| Sub-Recipient | Republican AIDS Centre | Mr. AlijonSoliev | 11.12.2013 |
| Sub-Recipient | NGO Subhi Tandurusti | Mr. Husaynov Nematullo | 13.12.2013 |
| Sub-Recipient | Republican Center of Disinfection | Mr. Saimurtazo Sayjafarov | 13.12.2013 |

management under the GF grants. It was underlined that healthcare waste management would need to receive more attention from the GF projects, but also from the national administration, as the interventions need to be in line with the strategy and legal requirements of the government. For most of the interviewed stakeholders, the practical implications of the responsibility regarding the generated healthcare waste were not very clear.

In some international projects implemented by other development partners, healthcare waste management is considered within the all-over project infection control strategy.

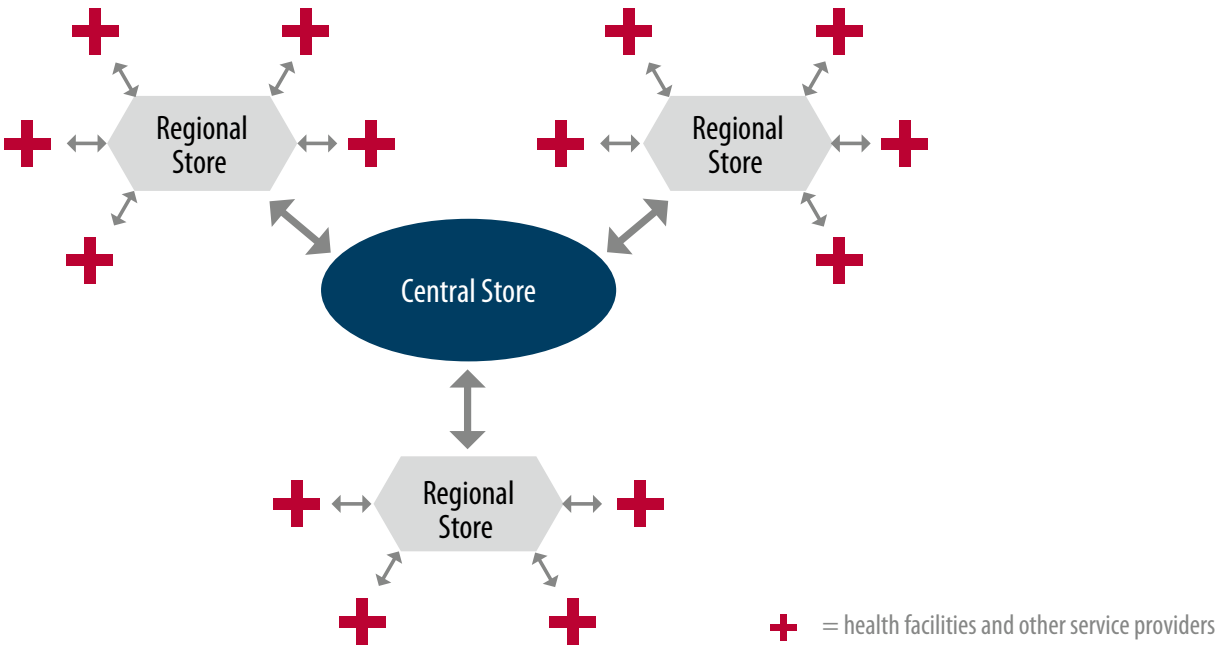
For example, the German development bank KfW is financing a health project supporting the rehabilitation of mother and child departments in district hospitals of Khatlon province and the TB Hospital in Digmoj (Sughd Province). Healthcare waste management is improved by the delivery of basic equipment, but also through awareness and training.

Project HOPE, in function of the Principal Recipient, has introduced Small Scale Incinerators (SSIs) at several hospitals in the scope of a GF project. Médecins sans frontières (MSF) has constructed a waste treatment facility and SSI for the infectious waste at Macheton TB Hospital. Some years ago WHO purchased some incinerators for the treatment of waste generated in the immunization departments.

Currently, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) is planning to finance a public-private partnership (PPP) project focused on 4 pilot hospitals in Tajikistan. One component of this project is healthcare waste management.

A detailed memo of the interviews can be found in the annex.

**Figure 3: Integrated warehousing and distribution structure for the GF projects**



*Storage inside the central warehouse*

*Central store of expired medicines*

## 5.2 Onsite visits

### 5.2.1 Central warehouse in Dushanbe

The central warehouse for the procurements of the GF grants is located in the Republican Medicine Procurement Centre (PMPC). This warehouse is used for the medical goods purchased by the government, but also for the goods of international organizations. As the products are distributed from here and are commissioned into smaller delivery packs for the end-user, packaging waste is generated. Furthermore, this warehouse is used as central storage for expired medicines, which are considered as waste.

From the central warehouse, the goods are transported to regional warehouses, from where the goods are distributed to the end-user. Three regional warehouses are used by GF projects.

The central warehouse is functioning as temporary store for goods which have not yet been custom-cleared and for regular central storage of custom-cleared products. The warehouse is divided into different sections:

- Cool storage area;
- Narcotic storage area;
- Expired drugs and chemical storage;
- General storage, which is divided in areas for the different owner (MoH / international organizations) of the products.

The central and regional warehouses are supported by software called 'Channel'. Everything which is received and everything going out is entered into the system. Monthly and annual reports are generated for the different users of the warehouse. Furthermore, the shelf-life of products is controlled, and the system provides automated alerts if expiry dates are getting closer (the alert time depends on the shelf life and type of a product). In the case of an alert, the MoH is informed and the users are requested to check their needs for ordering.

The storage system works on first expiry / first out (FEFO) basis. UNDP pays for the extra work of the staff with long-term agreements and monitors the warehouse every quarter.

According to the deputy director of the central warehouse, products in the central and regional warehouses rarely expire – rather, product expiration occurs at the end-user sites. The warehouse management does not have information on the amount of expired drugs. In accordance to the law, expired pharmaceuticals must be collected, stored and documented by the waste generator (e.g. health facilities). Then, the Republican Medical Procurement Centre (RMPC) on the national and regional levels collects this waste and stores it in a designated room at the central warehouse.

Every 6 months, the RMPC prepares a report of the stored pharmaceuticals, and informs the State Drug Expertise Centre. Then, a committee checks the document, assesses the storage at the RMPC, decides on the method of destruction of the different hazards, and monitors the destruction. The committee consists of members of the MoH, Customs, Ministry of Internal Affairs, Tax Committee, and National Investigation Committee, and a television reporter for documentation. This committee prepares a 'Destruction Document' in which the sources and kinds of the pharmaceutical wastes and the method of destruction are outlined. Every member of the committee has to sign and stamp the document.

Waste which is produced within the warehouses, like packaging waste, is collected and burned in a nearby oven of a company. Expired pharmaceuticals or lab reagents are declared as waste, documented and stored in the store room for expired pharmaceuticals.

### 5.2.2 Regional AIDS Center in Kurgan-Tyube

The regional HIV center in Kurgan Tyube conducts and analyses HIV tests, operates a blood center, and treats HIV positive patients. In addition, the regional center is responsible for 5 other district centers, which also have Trust Points and treat HIV patients. 284 HIV positive patients were treated and 1,219 people were reported to be infected in Khatlon Province in 2013. In this year, 38,000 HIV tests have been conducted in the province. 140,000 HIV tests were conducted in 2012.

*Collection of used blood collecting tubes (infectious waste)*

*Autoclave for disinfecting of unused blood bags*

The laboratory tests for HIV with two different ELISA tests. The lancets and gloves are thrown in sharp containers, which are provided by the Sanitary Epidemiological Surveillance (SES). For blood collection, glass test tubes are used, which are disinfected with chlorine solution and cleaned. The test plates and pipets are disposed into the infectious waste, and the wash water of the analyzing apparatus is disposed into the sewer. The second kind of test is the CD4 test, which is used as indicator for the level


*ELISA test kit*

*CD4 analyzing equipment*

*Burning of waste*

*Small scale incinerator and ash pit*

of immunosuppression among HIV infected patients. Some 300 patients are each tested 4 times a year.

Infectious waste is not disinfected with chlorine solution before burning. This procedure contradicts the national regulations, but is consistent with international regulations, as waste does not need to be disinfected prior to incineration due to the risks of high levels of hazardous emissions.

The blood center serves 400 to 500 donors per month. Blood is also brought from collection points in the districts by truck. Of all blood collected, about 4 to 5 % tests positive for an infection like HIV, HCV and others, and about 5 % will expire and can therefore not be used. The infected and expired blood is autoclaved and then transported to the incinerator.

The waste from the regional center is treated in an on-site Small Scale Incinerator (SSI) and the ash is buried right beside it. Fuel is used to ensure full combustion of the waste. The deputy director of the Regional HIV Centre pointed out that the more advanced incinerator at the regional hospital is not used, as the centre would have to pay for the waste treatment service, but does not have the budget for this.

All districts have one central burning area – open or equipped with an incinerator – either at a healthcare facility or at the district SES.

### 5.2.3 Regional TB center in Kurgan Tyube

The regional TB center is located in the TB hospital built through the GF grant. The TB hospital opened in July 2013. The regional center has two different laboratories: one for traditional microscopic tests and one for new genetic TB diagnosis. The microscopic lab tests sputum for TB by using the staining and microscope diagnosing method. The staining reagents like Fuchsine, Methylene, Phenol, Sulphuric Acid, and Ethanol are disposed in the drain. The glass slides are kept for one month, and then chlorinated and buried at a designated place. The gene analysis laboratory is equipped with an analyzing apparatus in which the sputum of 4 patients can be examined at the same time. The results are displayed and saved in a computer. Disposable cartridges are used for the test. 2 ml of

sputum and special oil is placed in the cartridge for testing. 4 to 5 tests are conducted every day.

*Lab with staining equipment*

Furthermore, pharmaceuticals for patient treatment and disposables are delivered by the GF. The hospital stores all goods, including the goods from the GF project, in a storeroom without a computerized system. In cases when pharmaceuticals or lab reagents are near expiry, the hospital informs the Republican Medical Procurement Centre (RMPC) in Dushanbe. The RMPC then organizes the re-distribution of the substances to another facility for immediate usage or, if this is not possible, the substances are collected and transported back to the central warehouse in Dushanbe and stored in the store room for expired medicines.

*GenXpert analyzer with disposable cartridge*

The sharp waste generated in the TB hospital is treated in an on-site Small Scale Incinerator (SSI) and the ash is buried right beside it. The area for ash burial is fenced. The incinerator appears to be old, although the TB hospital was opened only 4 months before.

*Burning chamber of the incinerator*

### 5.2.4 Regional Tropical Disease Center in Kurgan-Tyube

The regional tropical disease center is responsible for testing potential patients for tropical diseases like malaria and leishmaniasis, and for the monitoring of the distribution of malaria nets (distributed by an NGO), the Mosquito spraying activities and the distribution of Gambusia fish, which are released in the irrigation systems of rice fields and water ponds. Gambusia fish feed on the larvae of malaria mosquitos. All products (tests, chemicals, pharmaceuticals, etc.) used in the Center are financed by the GF.

Malaria is tested using rapid tests. In 2013, about 100,000 tests were conducted (population of Khatlon: 2,780,000), and only 6 malaria cases have been reported. The preventive measures are ongoing. Through the use of the rapid tests, infectious waste and sharp waste (lancets) is produced. If the test is positive, an additional test is conducted, with which the blood is stained with Giemsa for identifying the kind and status of malaria. The staining solution is disposed into the drain and the test slides are disinfected with chlorine solution.

In the same year (2013), 76,000 mosquito nets have been distributed in Khatlon province, financed by GF. 24,000 households have been sprayed with insecticides, resulting in 1.8 tons of insecticide used. Additionally, about 5 tons have been used in the country.

The NGO SubhiTandurusti is responsible for conducting the "Sleeping Group Survey", which aims to identify the target households in the relevant district for the distribution of LTIN bed nets. The mosquito nets are treated with an insecticide (Deltamethrin) that will remain effective for a lifespan of 5 years. In 2012-2013, 200,000 bed nets were distributed. There were no left-overs or take-back systems; however, on the packaging, the contact details of the NGO are written, in order to contact them in case of questions. The users are trained in the use of the nets and receive an information leaflet. The recipients of the nets are then responsible for the waste which is generated by this activity, like the packaging material of the nets, the nets themselves after 5 years of usage, and broken nets.

### 5.2.5 HIV Trust Point in Kurgan Tyube

The trust point visited is managed by an NGO. 350 people who inject drugs (PWID) use this facility, served by 4 outreach focal persons. 5 social workers are employed. Independent of how many syringes and needles are returned, the PWID receive a maximum of 10 new syringes and needles per week and person. Furthermore, condoms are distributed.

Depending on the kind of drug and the preference of the PWID, 1ml, 2ml, 5ml and 10 ml syringes are provided. 4 to 5 sharp boxes are transported every month to the regional HIV center for incineration. About 160 packs of condoms are distributed per month.

## 5.3 Current healthcare waste logistics and practices

In the following section, healthcare waste logistics and practices that can be found in the health settings in Tajikistan are outlined. As healthcare waste management is not considered in the GF projects, these practices are the same at the GF-supported health facilities.

**Infectious waste**

According to the MoH regulations, infectious wastes, including sharp waste, are supposed to be soaked in a 0.5 % chloride solution. 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 include the following:

*Segregation system for sharp and infectious waste (buckets with chlorine solution)*

- concentration of the chemical in the disinfectant solution;
- temperature;
- pH;
- relative humidity of the environment;
- duration of contact.

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.

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 – in particular, polychlorinated dibenzo-p-dioxins and dibenzofurans (dioxin and furans).

**Pharmaceutical waste**

The management of pharmaceutical waste is regimented by the Regulation on Pharmaceutical Waste No. 370, issued in 2002 by the Ministry of Health. According to the Head of National Pharmaceutical Task Force, the pharmaceutical waste from the oblasts is transported to Dushanbe one to two times per year. In Dushanbe, it is packed and transported to the landfill, where the waste is buried at a designated cell. According to the interviews of this assessment, in 2006, about 10 tons of pharmaceutical waste was collected. The landfill operator declared that no pharmaceutical waste was brought in the last two years. Cytotoxic drugs are co-incinerated in a brick factory.

*Burning in a small scale incinerator*

**Chemical waste**

In Tajikistan, no waste disposal system exists for chemical waste from healthcare facilities.

**Pathological waste**

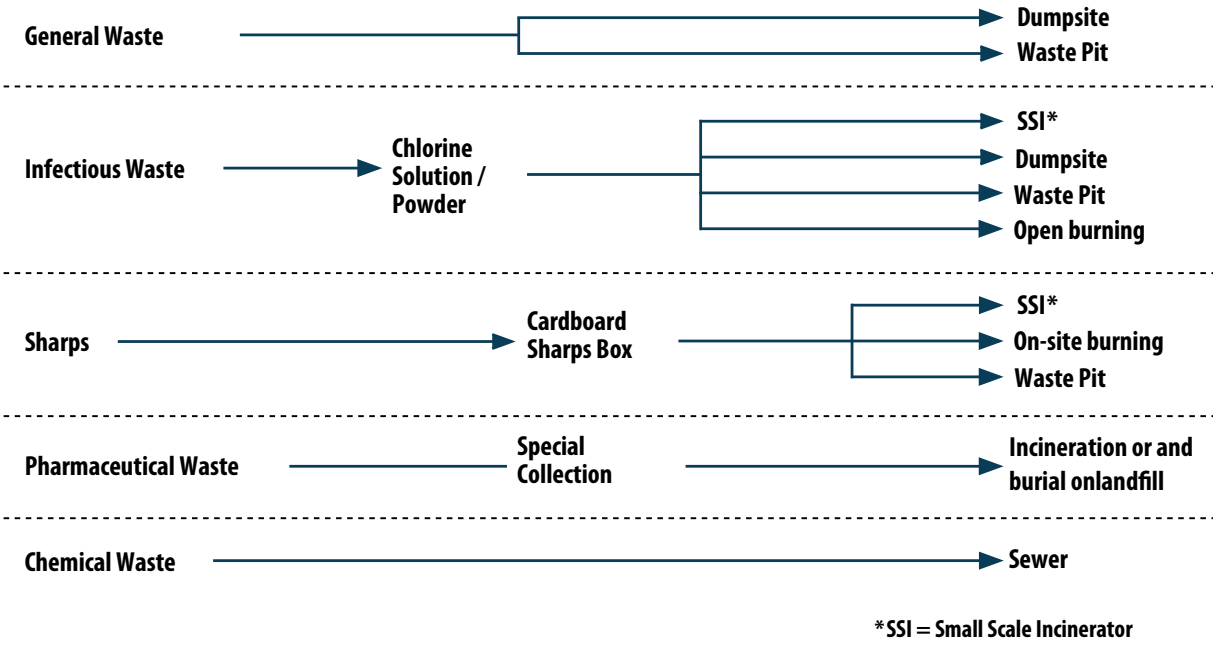
In accordance with Islamic traditions, pathological waste like organs and extremities are handed over to the patient or family for religious ceremonies. Placentas are mostly buried in placenta pits.

In the following flow chart, the different waste streams which were observed during the mission are outlined:

**Landfill**

As there is a shortage of trucks, fuel and lubricants, the collection of solid municipal waste in urban areas is poor. The collection of non-hazardous municipal waste is not available everywhere in the rural areas. As a consequence, waste is fly-tipped (illegally dumped) within the cities, as well as in the countryside.
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.

**Figure 4: Scheme of healthcare waste streams**

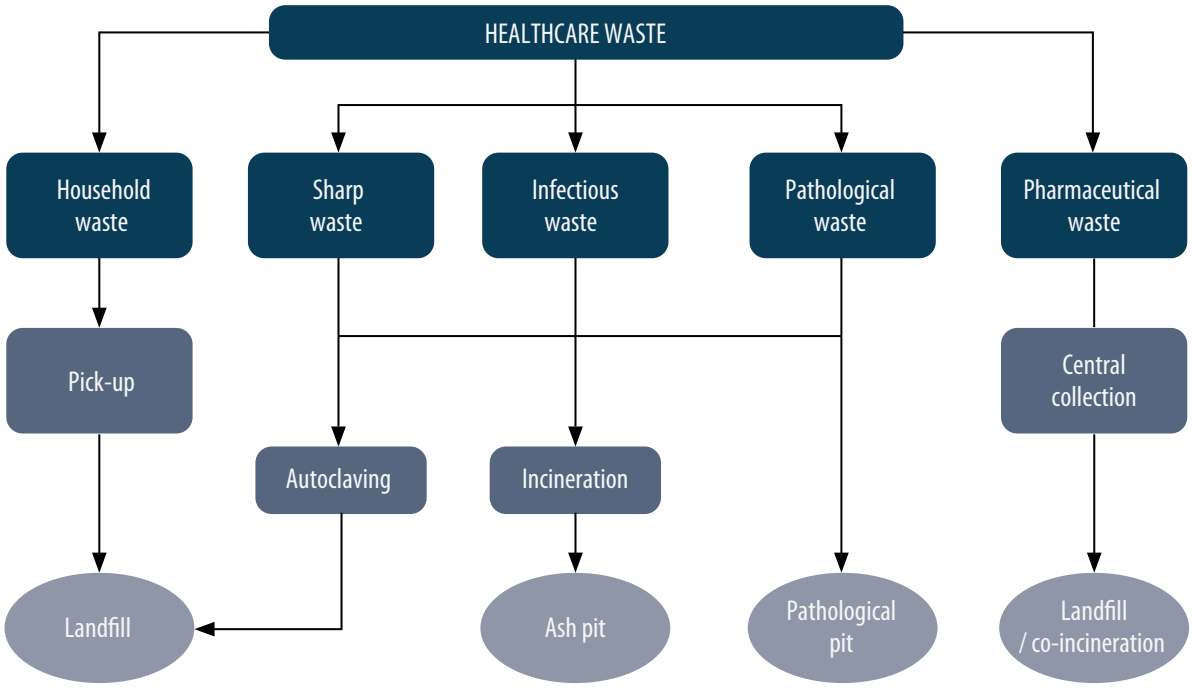



The landfill of Dushanbe is an open dumpsite with some safety measures, like input documentation and the compacting of waste. The informal recycling sector is active on the landfill, sorting plastic waste. The disposal of medical waste on municipal landfills or dumpsites in Tajikistan is causing risks for humans, animals and the environment.

### Recommended waste disposal strategies

In the figure below, the identified waste streams with the proposed disposal strategies are outlined. The municipal waste should be collected by the municipality; recyclable waste can be sold for further treatment, if a system is available. Infectious and sharp waste should be incinerated or disinfected in central or de-central treatment plants. The residues after treatment are disposed of in a waste pit on the hospital compound. Pathological waste should be buried in special pits constructed on the compound of the health facility.

**Figure 5: Healthcare waste classes and disposal strategy**



# 6 Waste Inventory of GF Projects

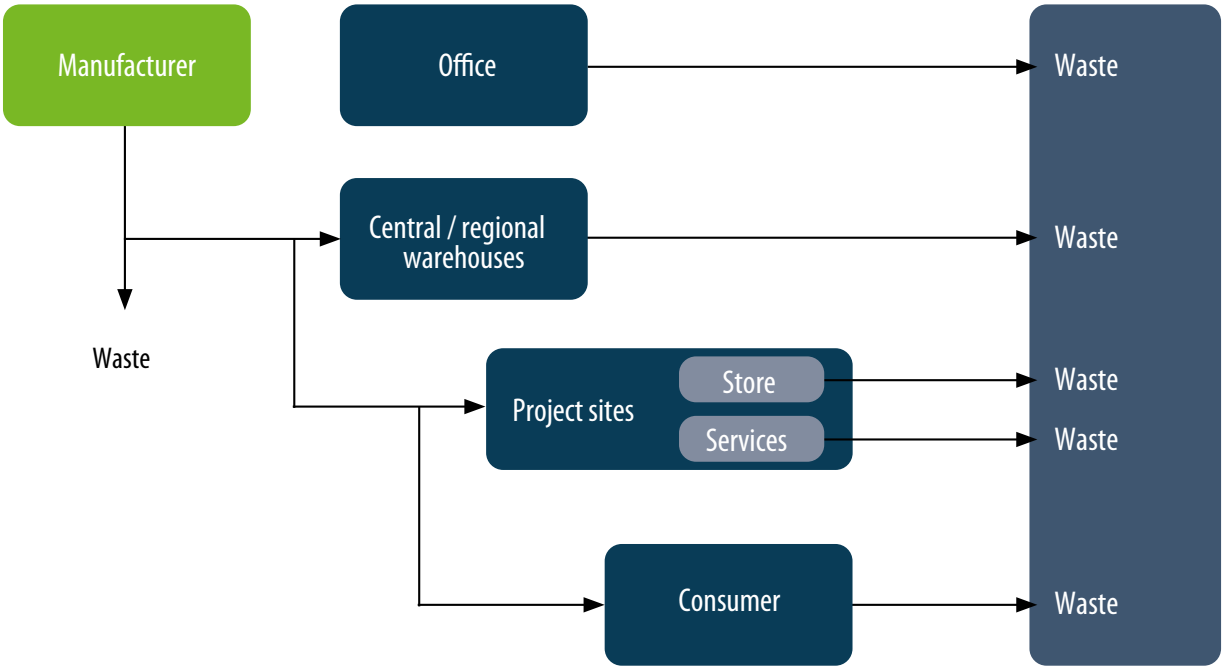
## 6.1 Waste generation points

Next to the medical-related products, the inputs of the grant included the set-up and operation of different offices, the procurement of office consumables as well as investment products (computers, furniture), the procurement or hiring of transport equipment (cars, etc.) and the equipping and operation of (cold) warehouses.

Output from these general activities will be general, non-hazardous and hazardous office waste like cartridges, waste electrical and electronic equipment (WEEE), disposable and reusable packing materials, waste from spillages, and waste from the maintenance of the transportation equipment (including used tires, used oil, etc.).

This graphic also shows that, 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.

**Figure 6: Identified waste generation points**



## 6.2 Input-output analysis

### 6.2.1 HIV Project: HIV 809 G07 H

According to the UNDP Procurement and Supply Management Plan for the period from 1 October 2013 to 30 September 2015, the following products will be procured:

1. Input HIV diagnosis:

    a. Screening tests for HIV, hepatitis B&C and syphilis: rapid test kits, ELISA test kits, specialized tests like TPHA and VDRL;
    b. Health equipment and supplies: Test tubes, pipettes, reagents for biochemistry, bandages, syringes, gloves, catheters, disinfectants, etc.;
    c. Safety boxes, tourniquets, gloves, gynecological kits for STI, diagnostic instruments, disposable materials, and disinfectants for STI treatment;
    d. Supply of reagents, lab equipment: ELISA Reader, ELISA washer, centrifuges, thermo shaker, incubators, water distillers, autoclaves, refrigerators, biochemical analyzer, test tubes with liquid EDTA, FACS Solutions, Pipette, thermo paper, BD FACS Count Control kits, FACS reagents, test kits for PCR, test kits for Western Blots, automatic pipettes, ELISA plates, thermometer for storage of ELISA.

2. Input HIV treatment:

    a. ARV medicines;
    b. Other medicine and supplies, like medicines for opportunistic infections, vitamins, IV solutions, infusion sets, catheter, syringes;
    c. Methadone, infusion solutions (NaCl), test strips, naloxone for OST;
    d. Medicines for STI treatment;
    e. Safety boxes, tourniquets, gloves, capillary tubes, micro-tubes, condoms, syringes, sterile water for injection, sterile swaps.

3. Input Blood safety (Blood donation center):

    a. Pipette tips, micro tubes, blood tubes, blood collection needles with adopter.

4. Input Trust Points:

    a. Condoms; syringes with needles (1, 2, 5 and 10 ml); swabs; gloves for outreach workers; safety boxes; information, education and communication (IEC) materials.

5. Medical materials for 45 Friendly Clinics for migrants:

    a. Spatula, gyn kits, gloves, alcohol swabs, gloves, bandages, syringes, object plate, disinfectants.

The expected waste **output** is:

A) General, non-hazardous waste:

    a. Packing waste (cardboard, foil, etc.),
    b. Paper waste
    c. General office waste (unsorted)
    d. Used condoms
    e. Expired or unusable products, non-hazardous (e.g. syringes, condoms, etc.)

B) Hazardous waste:

    a. Infectious waste (contaminated swabs, syringes, test kits etc.)
    b. Sharp waste (used syringes)
    c. Pharmaceutical waste
    d. Electronic Waste (WEE)
    e. Chemical waste (Ash from the hospital incinerator)

### 6.2.2 TB Project: TAJ-809-G09-T

In accordance with the internal UNDP document "list of products to be procured", for the period of two years, the following products were planned to be procured until September 2013:

1. Input for TB laboratory network and diagnostics:

    a. Lab equipment: autoclave, biosafety cabinet, balance, centrifuge, homogenizer, incinerator, inspissation, refrigerator, stem pots, vortex mixer, walk-in incubator, hot dry oven, water distiller, microscope, binocular, for use with daylight or/and electric power, oil immersion lens (100x), eye pieces (8x or 10x), spare

bulbs, microscopy slides, sputum containers, slide storage box, adhesive labels for sputum containers, immersion oil, xylene, glassware, wash bottles, timer, staining rack, slide rack, lens tissues, filter paper, drop bottle, gloves, disinfectants, laboratory coat, laboratory registry books and forms, wire loop holder, nickel –chromium wire,

b. Reagents and consumables: reagents for Ziehl-Neelsen staining (basic fuchsine, methylene blue, phenol crystals, sulfuric acid or acid alcohol), ethyl alcohol; for fluorescent staining (auramin etc.), glycerol, cyanogens bromide (BrCN), hydrogen peroxide 30% (superoxol), L –asparagines, magnesium sulphate MgSO4, magnesium citrate, malachite green, methylated spirit, N-naphthylethylene-diamine-dihydrochloride, Na2HPO4 (anhydrous), p-Nitrobenzoic acid (PNB), potassium permanganate KMNO4, potassium dihydrogen phosphate KH2PO4 (anhydrous), sodium hydroxide (NaOH), sodium chloride, sodium pyruvate, sodium nitrate, sulfanilamide, tween 80, aluminium foil, reagents and consumables for MGIT liquid culture; cartridges for GenXpert system, consumables for GenoType.

2. Prevention and treatment:

   a. First- and second-line anti-TB drugs: amikacin, capreomycin, cycloserine, moxifloxacin, levofloxacin, PAS Sodium, pyrazinamide, prothionamide, water for injection.
   b. The auxiliary drugs used for management of anti-TB drugs side-effects: amitriptillin, dexametazone sodium phosphate, haloperidol, hydrokortizone, ibuprofen, loperamide, metoclopramide, omeprozole, paracetamol, phytomenadionum (Vit K1), pyridoxine, prometazine, tiamine HCI (Vit B1), hidrooxid Al, levothyroxin, ORS, fluconazole, sol Ringer lactate, sol dextrosa, diclofenac sodium, amilorid, cimetidine, diazepam, chlorfenamine, phenition, klemastin,
   c. Disposable medical equipment: syringe 5ml, syringe 2 ml, syringe for tuberculine, x-ray films.

3. The health products and consumables related to infection control:

   a. Respirator, surgical mask, gown, slipper/shoes, disposable caps, gloves, mobile UV lamp, bulbs for UV lump, safety box for disposal of syringe, UVGI shielded fixtures for low ceilings, lamp ballast, UVGI lamp, HEPA filters.

The expected waste output is:

A) General, non-hazardous waste:
   a. Packing waste (cardboard, foil, etc.),
   b. Paper waste
   c. General office waste (unsorted)
   d. Expired or unusable products, non-hazardous (e.g. syringes, gloves, etc.)

B) Hazardous waste:
   a. Infectious waste (contaminated swabs, syringes, test kits etc.)
   b. Sharp waste (used syringes)
   c. Pharmaceutical waste (TB drugs)
   d. Electronic waste (WEE – lab equipment)
   e. Chemical waste (used reagents, ash from the hospital incinerator)

### 6.2.3 Malaria Project: TAJ-809-G08-M

In accordance with the "Procurement and supply management plan" for the period from 1 October 2013 to 30 September 2015, the following products were planned to be procured:

1. Input malaria diagnostics:

   a. Rapid diagnostic test, lancets
   b. Laboratory: Giemsa stain 500ml, immersion oil for microscope 50ml, ethanol 70%, xylene solution, staining rack, slide box

4. Input Treatment:

   a. In Phase II no medicines are planned to be procured under the GF malaria grant.

5. Input Prevention:

   a. Bed nets: Size S (LLINs 130x180x150 cm), Size M (LLINs,260x200x165 cm) and Size L (LLINs, 325x200x170 cm)
   b. Insecticides (alpha-cypermethrin 5% wp),100 gram package for Indoor Residual Spraying interventions

c. Sprayers and spare parts
d. Protective clothes

The expected waste output is:

A) General, non-hazardous waste:
   a. Packing waste (cardboard, foil, etc.),
   b. General office waste (unsorted)
B) Hazardous waste:
   a. Infectious waste (contaminated swabs, Rapid Tests)
   b. Sharp waste (used lancets)
   c. Chemical waste (Ash from the hospital incinerator, left over from insecticides)
   d. Bed-nets treated with insecticides

### 6.2.4 Output summary

Hazardous healthcare waste created by GF financed projects might include:

- Infectious waste: All waste which is suspected of containing pathogens and that poses a risk of disease transmission, such as laboratory cultures from TB diagnostic
- Sharp waste: Used or unused sharps (e.g. hypodermic, intravenous or other needles; auto-disable syringes; syringes with attached needles; etc.)
- Pharmaceutical waste: Medicines that are expired or no longer needed such as artemisinin-based combination therapies, TB or HIV medicines;
- Chemical waste: Waste containing chemical substances (e.g. deltamethrin or permethrin from impregnated bed net).
- Electronic waste: Waste from broken refrigerators, laboratory analysis apparatus etc.

These products can be divided in to the waste categories shown in Table 5.

## 6.3 Generated and expected waste amounts

Waste generated by UNDP GF project activities is currently not documented. The weights of the products procured are not available. The procurement office in Dushanbe has exemplarily summarized the received gross and net weight of different products in order to have a rough estimation how much waste will be generated (unit weight multiplied with the quantities of units). During the on-site mission, some of the

**Table 5: Waste categories expected from procured supplies from GF projects**

| Waste Categories | Waste Classes | | | | | |
|---|---|---|---|---|---|---|
| | Chemical Waste | Pharmaceutical Waste | Infectious Waste (after use) | Sharps | Recyclables / Packaging | Others |
| Pharmaceuticals (ARTs, TB medicines, etc.) | | X | | | X | |
| Test kits (for STI, syphilis, etc.) | X | | X | | X | |
| Chemicals (reagents, disinfectants, insecticides, impregnated bednets, etc.) | X | | | | X | |
| Disposable medical equipment (condoms, gloves, swaps, syringe, sharp boxes, etc.) | | | X | X | X | |
| Reusable medical equipment (glass pipettes, etc.) | | | | | X | |
| Lab equipment (analyzer, autoclaves, etc.) | | | | | X | Electronics (WEE) |

used products have been weighed and can be used for further calculations.

### 6.3.1 Diagnostic kits (HIV, TB and Malaria)

**Diagnostic kits and reagents for HIV: ELISA**

In the Regional AIDS Centre in Kurgan, Tyube, two different ELISA tests are taken: one is used as a screening test and the other, which is more exact and more expensive, is used as confirmation if the first test result is positive. The test kit consists of testing solutions, the testing plate for 91 tests and packaging material. During the testing procedure, the testing solutions are released into the sewage system. The used plates are considered as infectious waste. At the center, 632 tests were used in one year, and 38,000 people have been tested. On average, 66 % of the test plate is used (about 60 tests per plate). The test plate weight of ELISA test 1 is 63 g, and ELISA test 2 is 69 g.

Calculation of infectious waste by ELISA tests:

- 40.698 kg infectious waste by ELISA testing per year in Kurgan Tyube HIV Center
- 0.001071 kg of infectious waste per tested patient.

Gloves and sharp containers have been delivered by the MoH.

**Rapid HIV test**

The rapid HIV tests are delivered with 50 tests per box. Each test is packaged separately and consists of a testing membrane (plastic) and packaging material. The pipet, which is used for the test, is not in the package. One box is 590 g, and each test is 10 g (500 g per box). The used tests are considered as infectious waste. 2,500 people have been tested at KT HIV Center in 2013.

Calculation of infectious waste by rapid HIV tests:

- 25 kg of infectious waste of Rapid Tests in KT HIV Center per year
- 0.5 kg of infectious waste per rapid test box used (50 tests per box)
- 0.01 kg per tested person.

**Example**

Amount generated through the UNDP GF project on HIV (procured in Year 1):

Test kits for HIV analysis: 265 boxes of rapid HIV tests results in 133 kg of infectious waste in one year.

*Weighing of ELISA Test Kit*

**Diagnostic kits and reagents for tuberculosis**

The microscopic lab tests sputum using staining and microscope diagnosing methods. The staining solutions are disposed into the drain – the glass slides are disinfected and buried on the hospital compound.

The gene analysis laboratory for MDR analysis is equipped with an analyzing apparatus, the GenXpert Analyzer, with disposable cartridges. One cartridge is used for each test. The cartridge, to which 2ml of sputum is added, is considered as infectious waste after the test. The cartridges are delivered in a box of 10. Each one is 33 g.

Calculation of infectious waste by MDR Analysis (GenXpert Analyser):

- 0.053 kg of infectious waste per tested person.
- 0.53 kg of infectious waste per MDR test box used (10 tests per box)

**Rapid test for malaria**

100,000 rapid tests for malaria have been conducted in 2013 in the Khatlon province. 60 tests are packed into one box – each box weights 800 g and each test 13 g. For each test one lancet is used: 0,1 g.

Calculation of infectious waste by rapid testing of Malaria:

- 1,300 kg of infectious waste generated by the rapid tests for malaria per year in Khatlon Province
- 0.013 kg of infectious waste per tested patient
- 0.78 kg infectious waste per box consumed (60 tests per box)


*Weighing of a filled sharp container*

Calculation of sharp waste by rapid testing for malaria:

- 10 kg of sharps generated for malaria tests per year in Khatlon Province
- 0.001 kg of infectious waste per tested patient
- 0.020 kg infectious waste per box consumed (200 lancets per box)

### 6.3.2 Blood bags

The blood center in Kurgan Tyube collects about 5,400 blood bags per year from Khatlon Province. About 9 % cannot be used in the end, because the blood is contaminated (HBV, HCV, HIV, syphilis etc.) or has not been used on time and is expired. These unused blood bags are considered as infectious waste and are disinfected by autoclaving. After that, the empty blood bags are incinerated. One empty blood bag weighs 184 g.

Calculation of infectious waste by blood donations:

- 97.2 kg of autoclaved blood bags ready for incineration per year in Khatlon Province
- 0.20 kg infectious waste per unused blood bag (expired / infectious)
- 0.018 kg of potential infectious waste per blood donor.

### 6.3.3 Waste from malaria Interventions

1.8 tons of insecticides against mosquitos have been applied in Khatlon Province and 5 tons in Tajikistan through GF project activities in 2013. 24,000 households have been reached in Khatlon Province, which results in 75 g of insecticide per household sprayed.

On the national level, 200,000 bed nets have been distributed in 2012-2013. The mosquito nets are treated with insecticides (permethrin or deltamethrin) and are not retreated. There are three different sizes: S, M and L. The bed nets are delivered in boxes of 50 pieces.

**Table 6: Supplied bed nets**

| Size of bed nets | Weight per box (50 pieces) | Weight per net |
|---|---|---|
| S | 25 kg | 0.50 kg |
| M | 41 kg | 0.82 kg |
| L | 51 kg | 1.02 kg |

Through the UNDP GF project in 2012 and 2013, about 129,600 kg of bed nets has been distributed.

### 6.3.4 Expired medicines

Expired medicines are collected by the RPMC, reported to the State Drug Expertise Centre and destroyed once or twice a year under supervision of an official national committee.

2,473 kg of expired drugs from GF projects were collected within the period 2009 to 2010. The complete list of drugs can be found in Annex 9.5. In 2011, no expired drugs were identified. In 2012, RMPC through "State Drug Expertise Center" organized a destruction process. The destruction process of the expired drugs from GF projects is paid for by GF. The expired drugs collected in the period of 2012 and 2013 will be destroyed in June 2014.

### 6.3.5 Waste estimation for selected products (2012 and 2013)

The UNDP procurement department listed 12 types of products purchased in 2012 and 2013 and summarized the net weight of the products. The complete list of products can be found in the annex. In the table below, the purchased medicines and specific test kits are summarized. After expiry, these products will be

become pharmaceutical waste and infectious/sharp waste (see table below).

While the main part of these products can be classified as non-hazardous waste (e.g. packing materials like blister, etc.) a smaller part will become hazardous waste. In accordance with the experiences of the UNDP procurement department (interviews in December 2013) it can be assumed that about 5 % of pharmaceutical products will expire on average. Based on 10.5 tons (net) of purchased pharmaceuticals in 2013, it can be assumed that about 500 kg of pharmaceutical wastes will be generated.

4,509 kg (net) of diagnostic test kits and gynecological kits have been purchased in 2013. Based on the weighing exercises on-site, the proportion of infectious waste that resulted from the use of the diagnostic kits is about 10 %. This results in about 450 kg of infectious waste generated in 2013 only by the two mentioned test kits.

This result is underlining the figures provided by the World Health organization (Source: Safe management of wastes from health-care activities - second edition) which states that 10 % of the total healthcare waste amount can be considered as potentially infectious waste. According to the information of the procurement department, 174,154 kg (net) products have been purchased in 2013, which potentially results in infectious waste after usage. Applying the above-mentioned WHO[5] rate of 10 %, about 17,415 kg infectious wastes has been generated by UNDP GF projects in 2013 in Tajikistan.

**Table 7: Net weights of different products purchased in 2013**

| # | Type of products | Potential Waste Class | Net Weight (kg) in 2013 |
|---|---|---|---|
| 1 | ARV pharmaceuticals | Pharmaceuticals | 1,235 |
| 2 | Second line TB medicines | Pharmaceuticals | 5,698 |
| 3 | Other medicines | Pharmaceuticals | 789 |
| 4 | STI medicines | Pharmaceuticals | 987 |
| 5 | Detox and substitution treatment medicines | Pharmaceuticals | 890 |
| 6 | Opportunistic medicines | Pharmaceuticals | 984 |
| 7 | Diagnostics test kits | Infectious | 2,854 |
| 8 | Gynecological kits | Infectious | 1,654 |

5 Safe management of wastes from health-care activities, Second edition, Edited by Annette Prüss-Ustun, Jorge Emmanuel, Philip Rushbrook, Raki Zghondi, Ruth Stringer, Ute Pieper, William King Townend, Susan Wilburn and Yves Chartier, World Health Organization 2013

# 7 Potential Risks Exposure

Supplied products in health projects might be a potential source of harm or create adverse health effect for patients, staff, the public and the environment, and therefore can be considered as a hazard. The likelihood that a person or the environment may be harmed during the usage or disposal of the supplied product depends on the quality and quantity of the product and exposure. A potential risk exists which should be controlled. To control the risks, different measures can be applied. These measures include actions that can be taken to:

- remove the hazard;
- reduce the potential of exposure to the hazard; and
- reduce the likelihood of the exposure to that hazard.

## 7.1 Environmental risks

Environmental risks are created in cases of incidents and accidents during usage and from the disposal of discharged products. 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 (HFCs) 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.

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., arising from the implementation of the health programme. To be able to identify the environmental risks, it is necessary to understand the life cycle of a product from "cradle-to-grave" and maybe even beyond. Generally, it is necessary to assess potentially environmental risks from the raw material extraction through materials processing, manufacture, distribution, use, repair and maintenance, and disposal or recycling.

Furthermore, this underlines that waste management includes also the feedback loop to procurement decisions and practices. Knowing all steps of the life of a product it will help to make a decision on how to control the environmental risks. 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.

## 7.2 Health risks from healthcare waste

Today, the term 'healthcare waste' includes all the waste generated within healthcare-related activities and procedures. The GF-financed health projects create different types of healthcare waste. 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. Hazardous healthcare waste created by GF financed projects can include:

- Infectious waste: All waste which is suspected to contain pathogens and that poses a risk of disease transmission, such as laboratory cultures from TB diagnostic;
- Sharp waste: Used or unused sharps (e.g. hypodermic, intravenous or other needles; auto-

disable syringes; syringes with attached needles; etc.);
- Pharmaceutical waste: Medicines that are expired or no longer needed such as expired artemisinin-based combination therapies;
- Chemical waste: Waste containing chemical substances (e.g. deltamethrin or permethrin from insecticides impregnated bed nets);
- Electronic waste: Waste from broken refrigerators, laboratory analysis apparatus etc.

### 7.2.1 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.

### 7.2.2 Chemical risks

Chemical risks are often underestimated risks from healthcare waste. Waste from health programmes often creates chemical risks, if 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 are 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 sulphid 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.

Chemical risks are also caused by discharged pharmaceuticals and their metabolites, vaccines and sera.

### 7.2.3 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. This group is the largest group of hazardous healthcare waste, and can represent up to 15 % of the total waste stream of a healthcare facility. There is no statistically reliable data available on the risk of the transmission of infectious diseases by unsafe waste management.

WHO estimates that annually, 21 million hepatitis B infections, 2 million hepatitis C infections and 260 000 HIV/AIDS cases may be caused by the re-use of syringes and needles without sterilization.[6] The viruses that can be transmitted through unsafe injections can remain "silent" in the body for a long time before they cause symptoms. Thus, unsafe injections can lead to a silent epidemic that occurs many years after the original events. In addition to PWID, health workers are also at risk of being infected by needle sticks. One reason is the unsafe handling of sharp waste. "Overall, 16,000 HCV, 66,000 HBV and 1,000 HIV infections may have occurred in the year 2000 worldwide among Healthcare Workers due to their occupational exposure to percutaneous injuries. The fraction of infections with HCV, HBV and HIV in Healthcare Workers attributable to occupational exposure to percutaneous injuries fraction reaches 39%, 37% and 4.4% respectively."[7]

6 WHO Global Burden of Disease study 2000 (Hauri A. et al, Int J STD and AIDS 2004;15: 7-16).

7 Estimation of the global burden of disease attributable to contaminated sharps injuries among health-care workers; Annette Prüss-Ustün, Elisabetta Rapiti, Yvan Hutin; Article in: Protection of the Human Environment, World Health Organization, Geneva, Switzerland; American Journal of Industrial Medicine; 01/2006; 48(6):482-9

## 7.3 Hazards from healthcare waste treatment methods[8]

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 Safe management of wastes from health-care activities, Second edition, Edited by Annette Prüss-Ustun, Jorge Emmanuel, Philip Rushbrook, Raki Zghondi, Ruth Stringer, Ute Pieper, William King Townend, Susan Wilburn and Yves Chartier, World Health Organization 2013

# 8 Findings & Recommendations

## 8.1 Country-specific recommendations

### a) Set up a governmental healthcare waste working group

**Current Situation:** An inter-ministerial Working Group lead by the MoH on healthcare waste management is not established.

**Justification/Impact:** Without a working group on healthcare waste management, it is difficult for the MoH to provide required feedback for the review of the national legal documents and the development of a national healthcare waste policy and strategy.

**Recommended activities:** Set up of an inter-sectorial healthcare waste working group.

### b) Support the creation of an donor coordination group for healthcare waste

**Current Situation:** Different organizations (including UNDP, WHO, KfW, etc.) are working in the health sector and are active in the field of healthcare waste.

**Justification/Impact:** In the past, different activities related to healthcare waste management were already carried out. Some activities of donors (e.g. guideline development and training development) overlapped or were duplicated. Possible synergies were not always utilized.

**Recommended activities:** A donor coordination group on healthcare waste should be established and should meet regularly (e.g. every 2 months) to discuss achievements and on-going and planned activities, and to coordinate future investments.

### c) Support the development of a national healthcare waste strategy and development plan

**Current Situation:** A national strategy which describes the envisaged future system does not exist and investments are not always following a uniform plan.

**Justification/Impact:** As no national development plan exists, investments are uncoordinated, and possible synergies between the different projects are not utilized, and partly the different projects are developing different strategies.

**Recommended activities:** To support the development of national healthcare waste strategy, preferably by the line ministries of Tajikistan in close cooperation with the donor coordination group.

### d) Designate a person to be responsible for healthcare waste management at each healthcare facility

**Current Situation:** The management of healthcare waste is not under a clear responsibility of one position. Therefore, the planning, training, monitoring and supervision on facility level is not standardized, and thus not conducted and documented properly.

**Justification/Impact:** As no person in the health facility is appointed to be responsible for waste management, measures and planning are uncoordinated and effective and environmental solutions are not implemented.

**Recommended activities:** To insert the duty of each healthcare facility to identify a responsible person for healthcare waste management into the related legal framework, and to establish a training and education programme on healthcare waste management.

## 8.2 Context-specific recommendations for the GF programme in Tajikistan

### a) Insert healthcare waste management interventions into the planning phase of GF projects

**Current Situation:** Besides providing safety boxes for the collection of sharp waste, no healthcare waste measures are planned for the safe and environmental disposal of waste generated by GF project.

**Justification/Impact:** As no healthcare waste management measures for waste generated by project activities have been planned, the disposal of healthcare waste is not standardized, responsibilities are not clarified and the disposal is neither safe nor environmentally friendly.

**Recommended activities:** Taking into consideration the national existing legal framework and infrastructure on healthcare waste, healthcare waste interventions should be considered within the planning phase of GF projects. The dialogue process of the New Funding Model of the GF will provide a good opportunity to engage the GF portfolio manager and all CCM stakeholders.

### b) Establish a monitoring and evaluation system for waste management healthcare waste management interventions into the planning phase of GF projects

**Current Situation:** A separate M&E system for waste generated and disposed by GF project activities is not available.

**Justification/Impact:** Without an existing stand-alone M&E system for the safe and environmentally friendly management of waste generated within the UNDP GF projects, the interventions are not supervised and evaluated and, therefore, the planned activities are not implemented in accordance with existing standards like the Environmental and Social Screening Procedure for UNDP projects – Guidance Note (2012).

**Recommended activities:** An M&E System for waste generated and disposed of should be developed and implemented. The UNDP GF projects should follow the internal environmental and social screening protocol, and tools should be developed that allow for the planning and budgeting of waste management during the process of proposal development.

### c) Participate in the development of a national logistic and treatment system for healthcare waste

**Current Situation:** No clear and standardized system for the collection, treatment and final disposal of healthcare waste exists.

**Justification/Impact:** As no system is in place, waste generators dispose of waste to the best of their ability, and set up their own treatment solutions. Monitoring and supervising these mushrooming systems is not possible, so environmental impact assessments do not take place.

**Recommended activities:** To develop a national waste treatment strategy that provides clear advice for waste producers regarding where and how to treat the different waste streams. Include the national logistic and treatment system in the national healthcare waste strategy and development plan. Ensure that the strategy will be implemented by the relevant authorities and donor organizations.

### d) Discourage the chemical decontamination of class B and class C waste

**Current Situation:** The generated waste is partly treated by following outdated operation procedures for the decontamination of reusable items.

**Justification/Impact:** The treatment of the waste by following the outdated procedures is resulting in high risk for occupational accidents during the manipulation of the waste products, including the transmission of blood-borne diseases such as HIV. The soaking of the waste in the chlorine solution cannot guarantee the safe treatment of the waste. The usage of the large amounts of chlorine is creating health problems among the workers and creates environmental problems during the disposal of the disinfectant.

**Recommended activities:** To discourage hospitals from treating waste by chlorine disinfection and to raise awareness on the environmental and health problems of these procedures.

### e) Include disposable products for waste collection (waste bags)

**Current Situation:** In projects, there is often only sharp containers for the collection of syringes, and no items for the collection of infectious waste (as e.g. strong yellow bags) or for household waste (as e.g. black bags) are supplied.

**Justification/Impact:** As bags are missing, infectious waste such a used swabs, etc. are either disposed of in sharp containers, are disposed of in self-procured bags, which sometimes do not fulfil quality requirements, or are collected without bags. This results in a faster filling of sharps containers or in hygiene risks during waste collection.

**Recommended activities:** To include the supply of waste bags for infectious waste and normal waste in GF health projects.

### f) Develop practical, short SOP for selected operations (e.g. disposal of syringes, incineration of waste, spill management, accident response, etc.)

**Current Situation:** Specific Guidelines or SOP for healthcare waste management procedures are not available within the GF projects.

**Justification/Impact:** Without clear and practical guidance, sub-recipients and others will manage generated waste in an unsystematic "as good as possible" way which may not fulfill all safety aspects.

**Recommended activities:** To develop clear guidance on basic operation procedures on healthcare waste in line with international recommendations.

### g) Develop a take-back system for broken or expired bed-nets

**Current Situation:** Distributed bed-nets for malaria prevention are treated with insecticides and have a durability of about 5 years. When the bed-nets are not used anymore they are disposed of by the user (burial, burning, local dumpsite).

**Justification/Impact:** Unused or broken bed-nets treated with insecticides are not disposed of appropriate to their potential chemical hazard. Health and environmental risks can be assumed.

**Recommended activities:** Provide a take-back system for insecticide-treated bed-nets and dispose of the bed-nets with an adequate disposal technology.

### h) Expand the items to be checked for green procurement, and prevent the purchase of PVC based health products

**Current Situation:** The current "Green Procurement" system of UNDP is tackling mainly electronics and vehicles on energy efficiency. One of the problems of disposing healthcare waste by burning is the generation of high levels of dioxins and furans (POPs), as a high percentage of PVC plastic can be found in health products.

**Justification/Impact:** PVC and other potentially hazardous substances in medical products are generating dioxin and furans by their disposal through incineration or open burning, as the temperatures are too low for preventing these toxic emissions. Environmental and health threats are the result.

**Recommended activities:** Expand the "Green Procurement" catalogue and guidelines of the UNDP / GF on hazardous substances in medical products, in order to substitute towards less hazardous products.

### i) Enhance the collection quantity of used sharps from PWIDs

**Current Situation:** Currently, out of 10 syringes handed over to PWID by the GF activities about 6-7 used and potentially infectious syringes are brought back (data based on site visits and interviews). The uncollected 30 to 40 % is disposed of in public places or is reused.

**Justification/Impact:** As only about 60 to 70 % of the syringes and needles are brought back by the PWID, the syringes which are not brought back are causing a high risk for the public of being pricked by a used needle and getting infected.

**Recommended activities:** Provide more intensive and comprehensive awareness-raising activities for PWID and introduce permanently installed metal sharps boxes, where used syringes and needles can be dropped off. Another measure to reduce blood-borne virus transmission associated with injecting drugs could be the introduction of "syringe vending machines" which

are used with special coins distributed by the "Trust Points". This would increase access to sterile injecting equipment.

### j) Support the strengthening of waste recycling and reuse at warehouses, etc.

**Current Situation:** The waste from warehouses is disposed of without further planning. Systems to collect and to reuse or to recycle waste are not officially implemented.

**Justification/Impact:** Warehouses create large amounts of waste which can be recycled, including cardboard and plastics. The reuse of these products (e.g. pallets), or at least recycling, is not officially introduced.

**Recommended activities:** To request all warehouses to set up a least a basic recycling programme and report the amount and types of recycled materials.

### k) Develop a simple maintenance system for incinerators

**Current Situation:** A maintenance system for the supplied incinerators is not available.

**Justification/Impact:** Without existing instruction and a maintenance system, it is expected that the lifetime of the incinerator might be not much longer than the time of the warranty period.

**Recommended activities:** To develop at least a basic maintenance system, including clear instructions for the required daily, weekly, monthly, quarterly and yearly maintenance. To ensure the availability of necessary spare-parts and to clarify the responsibilities for the carrying out of maintenance and other running costs. To clarify the responsibility for the monitoring of the maintenance activities.

# 9 Annexes

## 9.1 Mission programme

| Time | Activity | Venue | Responsible / accompanying person |
|---|---|---|---|
| 09.30-10.30 | Briefing with Country Director or DCD | UNDP CO | Zebo, UNDP CO |
| 10.45-11.45 | Meeting with Energy and Environment project NGO representative | Shevchenko office | Muazama Burkhanova (NGO director) |
| 12.00-13.00 | Lunch | | |
| 13.30-15.00 | Meeting with PIU of HIV, TB and Malaria projects | VEFA center | PIU, UNDP |
| 15.30-17.30 | Visit of central storage places for GF supplies | | |
| **Tuesday, 10 December, 2013** | | | |
| 09.00-10.20 | Interview: Meeting with CCM secretary | MoH | Beknazarov M.B. |
| 10.35-11.55 | Interview: Meeting with UNAIDS representative | VEFA center | Gulpari Abrorova |
| 12.30-13.30 | Lunch | | |
| 13.45-14.45 | Interview: AFEW | VEFA center | Ibragimov Ikrom (Director) |
| 15.00-16.00 | Meeting with Committee of Environment | CoE | |
| **Wednesday, 11 December, 2013** | | | |
| 09.00 – 10.15 | Interview: Meeting with WHO representative | WHO | Gulpari Abrorova |
| 10.30-11.30 | Interview: Meeting with national SR, RTBC Director | VEFA center | Bobokhojaev U |
| 11.45-12.45 | Lunch | | |
| 13.00 – 14.00 | Interview: Meeting with national SR, RTDC Director | VEFA center | Dr. Karimov S. S |
| 14.15-15.15 | Interview: Meeting with national SR, NAC Director | VEFA center | Ruziev M. M |
| 15.30-16.30 | Meeting with Head of State Sanitary Epidemiological Surveillance | Republican SES | Mr. Aliev Samariddin P. |
| **Thursday, 12 December, 2013** | | | |
| 06.00-08.00 | Departure to KT | | |
| 08.00 –09.00 | Visit to HIV Center in Kurgan-Tyube | | |
| 09.30-11.45 | Visit to Regional TB Centre in Kurgan-Tyube, Oblast TB center of microscopy and gen .expert laboratory | Kurgan-Tyube, Gogol street, 24. | Director Kamolov Suhrob |
| 12.00 – 13.00 | Lunch | | |

| Time | Activity | Venue | Responsible / accompanying person |
|---|---|---|---|
| 13.15-14.15 | Visit to Tropical Diseased Center in Kurgan-Tyube | | |
| 15.45-16.45 | FC for migrants in Bokhtar (Regional Skin Diseases Dispensary) | Khatlon Region, Bokhtar District | Mr. Abdulvohidov Abdunabi, Kholikova Shahlo |
| **Friday, 13 December, 2013** | | | |
| 09.00 – 09.45 | Project HOPE | VEFA center | Timur Aptekar (Director) |
| 10.00-10.45 | Meeting with UNDP Energy and Environment project | CO | Khurshed Kholov (UNDP) |
| 11.00-11.45 | Meeting with Operations Manager a.i./Head of Procurement Unit | CO | Mr. Zafar Yuldoshev |
| 12.00-13.00 | Lunch | | |
| 13.15-14.15 | Interview: Meeting with NGO Subhi Tandurusti | VEFA center | Zamir Sangov (Director) |
| 15.00-16.00 | De-briefing meeting | CO | PIU managers and Country Director |
| **Saturday morning, 14 December, 2013, Departure to Germany** | | | |

## 9.2 Detailed memo of interviews

| Date | Organization | Persons | Retrieved Information / Outcomes |
|---|---|---|---|
| 09.12.2013 | UNDP | Norimasa Shimomura, Zebo Jalilova, Tedla Mezemir | - GF projects are functioning as gap filling funding. UNDP is functioning as Principle Recipient of last resort. Most of the goods procured under the grant are distributed by UNDP to sub-recipients in the country (government and NGOs).<br>- It is important for the country office to receive information about the risks the generated waste is exposing.<br>- General healthcare waste management is under the National Environmental Committee but the specific healthcare waste management inside the facilities are regulated by the Ministry of Health and Social Protection<br>- HIV project is generating mainly waste at the compounds targeting PWID, MSM, Sex-workers, Labs and VCT (Counselling, Testing).<br>- At the TB project mainly pharmaceutical waste is generated but also lab disposables and chemical solutions.<br>- Malaria is slowly phasing out – only some spraying chemicals and bed nets are distributed and some lab chemicals are purchased. The distribution of Gambusia Fishes which feed themselves with the larvae of the mosquitos is a great success. In 2013 only 11 cases of malaria infection were counted.<br>- UNDP consultant Hilda van der Veen will conduct a mission on healthcare waste management a week after this mission. She is coming on behalf of the energy and environment Practice and will have a broader look on the management of healthcare waste in the country of Tajikistan. A close information exchange should be conducted. |
| 09.12.2013 | UNDP PIU | Zumrad Maksumova<br>Mavzuna Burkhanova<br>Tedla Mezemir<br>Sulaimoni Khushdil | - UNDP is function for GF not only as PR but also supporting capacity development and Policy Engagement of the Fund.<br>- Project Implementation Unit is responsible for the project management, procurement, financial management and Monitoring and Evaluation.<br>- Waste management is part of the new developed "National guideline for infection control" |

| Date | Organization | Persons | Retrieved Information / Outcomes |
|---|---|---|---|
| 09.12.2013 | NGO: Foundation to Support Civil Initiatives | Muazama Burkhanova | - The NGO conducted assessments focused on mercury waste. The two main areas are the impact of mercury nearby mines (water, soil, air) and in healthcare facilities. The impacts were highlighted and a public awareness raising campaign is ongoing.<br>- The established 4 mercury collection centers in Dushanbe area at which everybody (also healthcare providers) can bring their mercury waste for free. From there the municipality will transport the waste to a treatment plant which has been purchased by the EBRD – if the plant is already operational was not clear.<br>- They are planning to be part of the project development for the implementation of the new convention on mercury (Minamata Convention). The government is supporting activities to avoid the use of mercury and the safe handling of pharmaceutical waste |
| 10.12.2013 | CCM Secretary | Beknazarov M.B. | - The work and role of the CCM and Secretary was outlined: The CCM is not only responsible for GF proposals but also for other international proposal coordination. CCM is meeting at least 4 times per year and has 22 members (10 from Government, 9 NGO, and 3 International Organizations).<br>- For GF proposals working groups are developing the proposals. CCM is providing guidance and direction. From there the Secretary is organizing round table meetings, distribution of the draft etc. for receiving comments. After finalizing the proposal the CCM is deciding if the proposal is ready for submission.<br>- The Secretary agreed that it would be good to focus more on the environment but is emphasizing the financial crisis of the GF and the Government of the Tajikistan. The government has the overall responsibility and should support GF activities within their national framework. |
| | UNAIDS | Ulugbek Aminov | - Mr. Aminov was HIV Manager of GF Project before he started to work for UNAIDS. UNAIDS is lobbying HIV activities, policies etc. and coordinating the country team of UNAIDS co-sponsors.<br>- In 2006 incinerators have been purchased by a GF project. They were installed and operational. The national structure for the operation, maintenance, approval and monitoring for the incinerators was not established, therefore the sustainability of their operation was difficult. The government pointed out that they wanted to be supplied with a large centralized system for the treatment of healthcare waste.<br>- There is a need for a policy and strategy on healthcare waste management, in which the responsibilities and focal points are defined on national, regional and district level. SES should be the leading agent of this procedure.<br>- CCM should lobby for the improvement of healthcare waste management in the country (and therewith for the international project) to the government.<br>- The need of insertion of environmental sustainable practices, national policies and strategies needs to be articulated to the GF Portfolio Manager.<br>- Due to financial crisis the focus of GF projects is on the health of patients etc. – environmental objectives may not be priorities. Also for the government it is difficult to allocate money for healthcare waste management. |
| | Sub Recipient: AFEW<br><br>UNDP | Ibragimov Ikrom (Director)<br><br>Sheraliev Firdavs (HIV Programme Coordinator) | - AIDS Foundation East-West is a Sub recipient of the HIV GF project. They are focused on harm reduction of vulnerable persons, sex workers and inmates.<br>- Activities: Counselling, raising awareness, capacity building, development of guidelines and SOP<br>- Healthcare waste is recognized as a problem, but point out that no medical waste is generated through the activities of the foundation. |
| | NEC: National Environmental Committee | Rajabov Sharifjon Hudoerovich (Vice Chairman) | - The Committee for Environmental Protection under the Government of the Republic of Tajikistan is responsible for the control and licensing of waste processes. For example for the operation of an incinerator a "Permit for the emission of harmful substances into the atmosphere" has to be obtained.<br>- Healthcare waste management is not under responsibility of the Committee.<br>- They are recommending to involve the Committee in the GF proposal development and to establish a project environmental department in order to control the environmental impacts of the projects. |

| Date | Organization | Persons | Retrieved Information / Outcomes |
|---|---|---|---|
| 11.12.2013 | WHO | Stephen Chacko<br>Lola Yuldasheva | - WHO is sub-recipient for technical assistance on HIV, TB and Malaria. Two focal point persons are responsible. As the focal point for HIV and TB was absent the focal point for malaria was interviewed.<br>- Regarding the GF malaria project, WHO is responsible for operation recommendations, assessment of surveillance, and evaluation of project activities.<br>- The main waste classes generated are blood lances (sharps), rapid diagnostic tests (RDT), insecticides (spray), bed-nets and potentially reagents, ELISA needed in the lab.<br>- A national policy and strategy is needed – Mr. Chacko proposed that the WHO representative should talk to MoH and highlight the need |
| | Sub-Recipient: Republican Centre of TB | Mr. Bobokhojaev U | - GF is supporting all TB labs in the country; the national lab and the 66 labs in the districts (microbiological labs)<br>- The RCTB is responsible for the control of infection safety in the labs. Standard Operation Procedures are available and checklists are used. Regular reports on the controls are produced.<br>- Waste which is produced: infectious waste, sharp waste, packaging waste. Potentially pharmaceutical waste. The reagents for the labs are not considered as waste.<br>- Only sputum waste need to be disinfected before waste treatment. The infectious waste is packed in 5 l safety boxes and transported to a centralized treatment area. The national lab is transporting the waste to Macheton, where it is incinerated. The labs in the rayon are transporting the waste to the waste area of the district where it is incinerated or openly burned. There is no payment system implemented. |
| | Sub-recipient: NAC (National AIDS Centre) | Soliev Alijon | - NAC is coordinating 21 trust points in the country. Here the PWID can exchange used syringes and needles and receive new ones. Furthermore also condoms are available. The PWID receive 10 syringes each and after 3 days they are supposed to come back to exchange the used syringes and receive new ones. The collected syringes and needles are disposed in a 5 l cardboard safety box. In one safety box 60-65 used 5ml syringes or 80-85 used 5 ml syringes can be thrown until it is ¾ filled (maximum filling rate).<br>- In the 21 trust points about 2,500 PWID are served regularly.<br>- In 2013, about 80% of the delivered sharps boxes have been used.<br>- The sharp boxes of the Center are transported to the nearby central health facility where the sharps are treated by burning.<br>- NAC is also responsible for HIV testing in 38 AIDS Centers, out of which 24 have labs for ELISA testing. The produced waste is mainly infectious and sharp waste, which is treated / disposed of at the central treatment areas in designated health facilities.<br>- Also the treatment of HIV by pharmaceuticals is done by NAC. About 1-5 % of pharmaceutical waste is generated. |
| | Deputy Head of Sanitarian Epidemiological Surveillance (SES) | Mr. Jafarov Navruz | - SES is not directly involved in GF project, but is beside others responsible on monitoring of infection control including healthcare waste management – and therefore also for the health facilities and laboratories which are involved in the GF projects.<br>- A regulation on healthcare waste is available. As not all health facilities have a proper healthcare waste treatment facility and recycling activities are increasing in the facilities, the chemical disinfection is still recommended. Mr. Narvus agrees and would approve not to use chemical disinfection if sufficient disposables like bags and safety containers are available and proper treatment equipment is operational which is fenced and secured.<br>- In 2011, there was a SES survey which showed that 5-7 % of the health workers have hepatitis A or B. |

| Date | Organization | Persons | Retrieved Information / Outcomes |
|---|---|---|---|
| | | | - In 2006, within the scope of a World Bank project, 4 incinerators had been purchased. These plants use auxiliary fuel in order to receive the correct temperatures. These plants were licensed by the Committee of Environment. One is operating in the hospital for infectious diseases and one in Kurgan Tyube.<br>- The municipality of Dushanbe has purchased with support of the EU 4 collecting trucks and an incinerator for healthcare waste at the landfill of Dushanbe.<br>- Mr. Narvus recommended that it would be important to establish a National Working Group which works on Policy / Strategy and Guidelines / SOPs on healthcare waste management. This strategy could then implement with support of the international projects. |
| 13.12.2013 | Project HOPE | Mr. AptekarTimur | - Within the extension (RCC) of the round 3 GF project, the work plan included activities for healthcare waste management.<br>- Budget for 2 advanced healthcare waste incinerators was available. As there were problems with the needed constant electricity and to find operators who were able to work with these incinerators, with the low salary, it was decided to purchase instead 17 Small Scale Incinerators. SES permitted to use them (license) – not the Environmental Committee.<br>- Now GF wants project Hope to concentrate on DOTS+ and the provision of first line TB drugs. Waste management is not envisaged.<br>- Project Hope would be happy to write a proposal on planning and implementing a proper healthcare waste management project if a programme would provide budget. |
| | UNDP Energy and Environment Practice | Khurshed Kholov<br>Mirzo Isoev<br>Madina Begmatova | - Currently, they are working on a project on the development of national strategy on ozone depleting substances (ODS). Tajikistan falls under Article 2 of the Montreal Protocol. The strategy will cover the period until 2020 and the first phase will last until 2016 aiming at a 10 % reduction of ODS – based on figures of 2009. The strategy has been developed by an inter-ministerial task force and will be handed over for approval soon.<br>- To reduce ODS they conduct trainings for environmental officers and custom officers, are planning to install pilots on recycling and upgrading of freon using equipment (like refrigerators, air conditioning, telephone broadcasts,etc.), closing gaps in laws and regulation and supporting enforcing.<br>- The MoH should be an active stakeholder in the programme<br>- Regarding waste generated in hospitals mainly refrigerators, air conditioning etc. is relevant.<br>- They support an NGO on mercury reduction in healthcare facilities.<br>- They financed a composting project implemented by an NGO.<br>- Enforcement of policies and regulation is a big problem in the country. |
| | UNDP Operation Manager / Procurement | Mr. Zafar Yuldoshev | - UNDP is following the UNDP Green Procurement Guidelines like the "Environmental Procurement Vol. 2" but also the relevant GF documents on procurement.<br>- Regarding green procurement they are checking on: Energy efficiency (IT), minimization of fuel consumption of vehicles, less paper use, packaging material which is biodegradable (like the packaging of bed nets).<br>- Partly the procurement is done via Copenhagen (long term agreements with suppliers), or they contact the supplier directly, or they purchase goods via an LTA with UNICEF.<br>- The document "Environmental and social screening procedure for UNDP projects" is not known. |

| Date | Organization | Persons | Retrieved Information / Outcomes |
|---|---|---|---|
| | NGO Subhi Tandurusti | Mr. Husaynov Nematullo | - This NGO is responsible for conducting the Sleeping Group Survey and the distribution of LTIN bed nets. The mosquito nets are treated with an insecticide (deltamethrin); the impregnation has a life time of 5 years. In 2012/13 200,000 bed nets have been distributed. In 2014, there will be 15,000 and in 2015 40,000 nets distributed. There were no left overs or taking back systems. But on the packaging the number of the NGO is written, in order to contact them in case of questions. The users are trained on the use of the nets and receive an information leaflet. |
| | Republican Center of Preventive Disinfection | Mr. Saimurtazo Sayjafarov | - This center is responsible for spraying of insecticides to fight malaria in households and stores in 17 districts. The empty cardboard boxes of the pulverized insecticides are brought to the landfill and burned. Left overs in the spraying equipment are left in the spraying body and used for the next time. The spraying operators are trained and are wearing Personal Protective Equipment<br>- The insecticide is mixed as follows: 10 l of water plus one package of alpha methrin (5% 100g package) plus one package of ICON (lambda-cyhalothrin: 62g 10% package). This mixture can be used for about 280 $m^3$. 67,200 households have been sprayed in 2013. |
| | UNDP Debriefing | Norimasa Shimomura, Zebo Jalilova, Zumrad Maksumova Mavzuna Burkhanova | - The outcomes of the mission were outlined and discussed. |

## 9.3 Country Coordination Mechanism members (as of December 2013)

| Name | Organization |
|---|---|
| Ruqiya, Qurbonova | Vice Prime Minister and Chair of CCM |
| Muratboki, Beknazarov | CCM Secretary |
| Nusratullo, Salimov | Minister of Health |
| Azamjon, Mirzoev | Deputy Minister of Health |
| Jarno, Habicht | WHO |
| Saidmukarram, Abdukodirzoda | FBO: Ulemah Council of Tajikistan |
| Tohir, Sherhonov | NGO: Davo |
| Mansurjon, Dodarbekov | NGO: Golos |
| Norimasa, Shimomura | UNDP |
| Timur, Aptekar | HOPE |
| Tojinisso, Mahmadova | Ministry of Education |
| Lola, Bobohojieva | Department of Health, Women and Family Affairs |
| Sohibnazar, Rahmonov | MoH |
| Zamir, Sangov | NGO: Subhi Tandurusti |
| Pulod, Jamolov | NGO: Spin Plus |
| Maram, Azizmamadov | NGO: Volontyor |
| Masuda, Bobokhojaeva | NGO: Nabzi Solim |
| Jonibek, Asroriyon | NGO: Nekroy |
| Shavkat, Sohibov | Ministry of Finance |
| Abdullo, Navdjuvonov | Ministry of Interior |
| Kathleen, McDonald | USAID |
| Maliksho, Nematov | Youth, Sports and Tourism Committee under the Government |
| Izatullo, Sharipov | Ministry of Justice |

# 9.4 Procurement lists

### 9.4.1 Project HIV: Extract – Procurement and supply management plan

| Product Category | Product | Strength | Estimated unit cost (USD) (indicate per tablet, per inj, per ml, etc) | Year 1 Estimated quantity | Year 2 Estimated quantity |
|---|---|---|---|---|---|
| ARVs (BL 4.1.3 and 4.2.4) | Abacavir | 300 mg | 0.241395 | 43,200 | 43,200 |
| | Efaverenez | 600mg | 0.14984667 | 504,000 | 504,000 |
| | Efavirenz | 200mg | 0.195806 | 75,600 | 75,600 |
| | Lamivudin/Zidovudin | 150/300mg | 0.16115167 | 1,292,400 | 1,292,400 |
| | Lopinavir/Ritonavir | 200/50mg | 0.28329 | 154,800 | 154,800 |
| | Nevirapin | 200mg | 0.04366833 | 129,760 | 129,760 |
| | Tenofovir/Emtricitabin | 300mg/200mg | 0.35067661 | 90,000 | 90,000 |
| | Lopinovir/Ritonovir(LPV/r) | 80mg/20mg or/s | 12.16 | 3,120 | 3,120 |
| | Lamivudin susp. | 10mg/ml, 240.0 ml, susp | 2.1945 | 6,240 | 6,240 |
| | Nevirapin syr | 10mg/ml, 240.0 ml, susp | 1.95 | 3,120 | 3,120 |
| | Zidovudin Suspen | 10mg/ml, 240.0 ml, susp | 2.05 | 6,240 | 6,240 |
| | Zidovudin(AZT)RMTCT for children | 4mg/ml,100ml | 2.31 | 3,360 | 3,360 |
| Medicine for detoxication (BL 1.1.3.1.1) | Natrii oxybutyras | 20% 10ml inj | 1.9955 | 14,000 | 3,500 |
| | Diazepam (amp.) | 10mg ,2,0 ml inj | 0.74831 | 14,000 | 3,500 |
| | Analginum (amp) | 50% 2.0 ml, inj | 0.0424 | 14,000 | 3,500 |
| | Dimedrol (amp) | 1% -1.0 ml inj | 0.02993 | 14,000 | 3,500 |
| | Baralgin (amp) | 5,0 ml inj | 0.29932 | 7,000 | 1,750 |
| | Natrii thiosulfas (amp) | 30% 5,0 ml inj | 0.12472 | 7,000 | 1,750 |
| | Mildronate (amp) | 2.0 ml, inj | 1.32202 | 7,000 | 1,750 |
| | Haemodesum | 500 ml solution | 1.49662 | 3,500 | 875 |
| | Ringer's solution | 500 ml solution | 0.64854 | 3,500 | 875 |
| | Potassium chloride (NaCl), | 500 ml solution | 0.54876 | 3,500 | 875 |
| | Vitamin B1 (amp) | 100 mg/ml 1,0 ml, inj | 0.03243 | 21,000 | 5,250 |
| | Vitamin B6 (amp) | 50 mg/ml 1,0 ml inj | 0.03243 | 21,000 | 5,250 |
| | Infusion set | | 0.24944 | 10,500 | 2,000 |

| Product Category | Product | Strength | Estimated unit cost (USD) (indicate per tablet, per inj, per ml, etc) | Year 1 Estimated quantity | Year 2 Estimated quantity |
|---|---|---|---|---|---|
| Medicine for detoxication (BL 1.1.3.1.1) | Catheter | 22 G | 0.0798 | 7,000 | 1,750 |
| | Syringes | 10, 0 ml. 0.46x25 | 0.0399 | 42,000 | |
| | Syringes | 5, 0 ml.046x25 | 0.0399 | 7,000 | |
| | Syringes 10, 0 ml. | 2.0 ml 046x25 | 0.0399 | 98,000 | |
| | Diazepam | 5 mg, tab | 0.07483 | 42,000 | 10,500 |
| | Clonidine | 0.075 mg, tab | 0.62359 | 42,000 | 10,500 |
| | Carbamazepine | 200 mg, tab | 0.14966 | 35,000 | 8,750 |
| Methadone hydrochlo-ride for OST (BL 1.1.3.1.2) | *Solution of methadone hydrochloride | , 5mg-ml, 1000 ml | 17.94 | 4,088 | 4,088 |
| | Immunochromatographic tests (strip-tests) to determine drugs in biological environments (in urine)package | 20 tests | 28.1029 | 420 | 420 |
| | Naloxone | 400 mcg/ml 1 ml amp, inj | 0.566578 | 2,000 | 2,000 |
| Needs in medicines for STI treatment among PWIDs, SW; MSM, at-risk youth; immigrants and inmates | Acyclovir | 200 mg, tab | 0.04 | 163,800 | |
| | Benzathin benzylpenicilin | 2400000 IU VLS | 0.26 | 11,300 | |
| | Ceftrixone | 1.0 g vl | 0.57 | 8,300 | |
| | Clortrimazole 0.5, VAGINAL CAP | 0.5, VAGINAL CAP | 0.430113 | 7,975 | |
| | Doxycycline | 100mg, tab | 0.013 | 44,100 | |
| | Erythromycin 0.25 TAB | 250 mg, tab | 0.27 | 56,300 | |
| | Fluconazole 0.150 CAP | 0150 mg,tab | 0.22 | 12,200 | |
| | Methronidazole | 500 mg, tab | 0.013 | 112,000 | |

| Product Category | Product | Strength | Estimated unit cost (USD) (indicate per tablet, per inj, per ml, etc) | Year 1 Estimated quantity | Year 2 Estimated quantity |
|---|---|---|---|---|---|
| Health Products (excluding pharmaceuti-cals & health equipment | Disposable spatula for swabbing | | 0.4256 | 9,000 | |
| | Disposable Gynecological kit | | 1.7157 | 22,500 | |
| | Gloves | Medium size | 0.00798 | 225,000 | |
| | Alcohol Swabs | | 0.00798 | 149,580 | |
| | Bandage | 4smX8sm | 0.4256 | 9,000 | |
| | Syringe for blood sampling | 2.0 ml | 0.0532 | 45,000 | |
| | Object-plate | | 0.0133 | 22,500 | |
| | Disinfectants | | 42.95362 | 45 | |
| | Maintenance of the existing cold chain* | set | 18,715.54 | 1 | 1 |
| | Test-tubes, 12x75 mm( 2 pack of 100 pcs per clinic per year) | | 44.555 | 8 | 8 |
| | Pipette tips (1000 pcs - 2 packs per year per clinic) | | 46.2707 | 6 | 6 |
| | Reagents for biochemistry for 100 patients (annual needs) | | 857.99896 | 5 | 5 |
| | Disposable medical materials (cotton-wool, bandages, syringes, gloves, disinfectants, catheters, etc.) (set to cover 6 month's needs) | | 859.047 | 10 | 10 |

| Product Category | Product | Strength | Estimated unit cost (USD) (indicate per tablet, per inj, per ml, etc) | Year 1 Estimated quantity | Year 2 Estimated quantity |
|---|---|---|---|---|---|
| Health Products (excluding pharmaceuti-cals & health equipment | Test kits for HCV analysis | | 204.32 | 265 | |
| | Test kits for HBV analysis | | 99.4 | 265 | |
| | Test kits for HIV analysis | | 16.32 | 265 | |
| | Syphilis TP ELISA for detection of antibodies to Syphillis in human serum/ plasma | | 76.18 | 265 | |
| | Microtubes 0.5 ml blood sampling | pcs | 0.31 | 15,000 | 15,000 |
| | Pipette tips 0,5-10 mkl (steril with filter) | pcs | 0.31 | 100,000 | 100,000 |
| | Pipette tips 10-50 mkl (steril with filter) | pcs | 0.31 | 50,000 | 50,000 |
| | Pipette tips 20 -200 mkl (sterile with filter) | pcs | 0.31 | 50,000 | 50,000 |
| | Pipette tips 100-1000 mkl (sterile with filter) | pcs | 0.31 | 50,000 | 50,000 |
| | PCR tubes, 0,2 ml, with optically transparent cover (pack of 1000 pcs) | pack | 90.00 | 20 | 20 |
| | FACS Flow 20L/Gal | kits | 50.00 | 90 | 90 |
| | FACSClean 5lt | kits | 37.00 | 90 | 90 |
| | FACS Count control | kits | 275.00 | 90 | |
| | FACS Count reagents | kits | 440.00 | 90 | 90 |
| | Replacement of digital automatic pipet BD FACS Count | pcs | 2094.48 | 20 | |
| | Digital pipetter stand with charging functions (single) | pcs | 258.00 | 5 | 5 |
| | EDTA tubes, 5 ml, (pack of 100 pcs) | box | 35.00 | 200 | 200 |
| | BD Facs Count Thermopaper (box of 5) | roll | 55.00 | 100 | 100 |
| | RED Top Tubes, 5mL (pack of 100 pcs) | box | 25.00 | 50 | 50 |

| Product Category | Product | Strength | Estimated unit cost (USD) (indicate per tablet, per inj, per ml, etc) | Year 1 Estimated quantity | Year 2 Estimated quantity |
|---|---|---|---|---|---|
| Health Products (excluding pharmaceuti-cals & health equipment | Maintenance of existing ELISA/ IFAT equipments (ELISA Reader, ELISA washer, centrifuges, thermo shaker, incubators, water distillers, autoclaves, refrigerators)* | set | 13858.9059 | 1 | 1 |
| | Biochemical analyzer for testing of PLWH in NC AIDS | pcs | 13858.9059 | 1 | |
| | Test tubes Vacationers with liquid EDTA 1 pack of 1000 pcs | pack | 171.6099 | 2 | 2 |
| | FACS Clean Solution | pack | 71.82 | 20 | 20 |
| | FACS Flow Solution | pack | 71.82 | 20 | 20 |
| | Pipette tips V-300 mkl | pack | 120.1256 | 20 | 20 |
| | Thermo paper | roll | 20.5884 | 20 | 20 |
| | BD FACS Count Controls kits for 25 analysis | kit | 306.565 | 10 | 10 |
| | BD FACS Count Reagent kits for 50 analysis | kit | 432.8884 | 15 | 15 |
| | ELISA Test kits for screening of HIV | kit | 60.0628 | 10 | |
| | Confirmatory ELISA test kits for HIV | kit | 129.01 | 10 | |
| | ELISA Reagents - HIV combi Ag and Ab - 3rd or 4th generation (480 tests/box) | kits | 446.62 | 45 | 45 |
| | Test-kits for PCR HIV Viral Load Monitor (48test/kit) | kits | $607.20 | 20 | 20 |
| | Test-kits for PCR HIV Viral Load FRT (96test/kit) | kits | $536.00 | 20 | 20 |
| | Test-kits for Western blot HIV confirmatory (20test/kit) | kits | 379 | 215 | 215 |
| | Procurement of automatic pippettes, single channel 0.50 - 250 uL | pcs | 503 | 5 | 0 |
| | Procurement of automatic pippettes, single channel 0.100 - 1000 uL | pcs | 503 | 5 | 0 |
| | Procurement of automatic pippettes, single channel 0.10 - 100 uL | pcs | 545 | 5 | 0 |

| Product Category | Product | Strength | Estimated unit cost (USD) (indicate per tablet, per inj, per ml, etc) | Year 1 Estimated quantity | Year 2 Estimated quantity |
|---|---|---|---|---|---|
| Health Products (excluding pharmaceuti-cals & health equipment | ELISA Plates - 96 wells | pcs | 2.4073 | 20 | 20 |
| | Pipette tips 0,5-10 mkl (steril with filter) | pcs | 0.3059 | 1,000 | 1,000 |
| | Pipette tips 10-50 mkl (steril with filter) | pcs | 0.3059 | 1,000 | 1,000 |
| | Pipette tips 20 -200 mkl (sterile with filter) | pcs | 0.3059 | 1,000 | 1,000 |
| | Pipette tips 100-1000 mkl (sterile with filter) | pcs | 0.3059 | 1,000 | 1,000 |
| | Micro tubes, 0,5 ml, with optically transparent cover (pack of 1000 pcs) | pack | 40 | 5 | 5 |
| | Blood tubes with silica gel 8mL, sterile, 100 tubes/box | box | 46 | 85 | 85 |
| | Blood collection needles with adapter (100/box) | box | 22 | 85 | 85 |
| | Thermometer for storage of ELISA reagents | pcs | 23 | 5 | 0 |
| | Safety boxes for needle disposal, hard paper, non-reusable 10pcs/pack | pack | 11 | 100 | 100 |
| | Tourniquets | pcs | 7 | 50 | 50 |
| | Gloves examination (100/box) | box | 4 | 1,000 | 1,000 |
| | Rapid test for HIV 1/2 | kits | 29 | 420 | 420 |
| | Capillary tubes (100/box) | box | 7 | 30 | 30 |
| | Microtubes 0.5 ml blood sampling | pcs | 0.32676 | 2,500 | 2,500 |

### 9.4.2 TB Grant

| Product Category | Product | Strength | Year 2 Estimated quantity |
|---|---|---|---|
| Anti-TB drugs | Kanamycin | 1 gr vial | 0 |
| | Capreomycin | 1 gr vial | 175,824 |
| | Amikacin | 500mg/2ml | 34,188 |
| | Levofloxacin | 250 mg | 1,468,130 |
| | Moxifloxacin | 400 mg tabs | 54,375 |
| | Prothionamide | 250 mg tab | 1,631,256 |
| | Cycloserin | 250 mg tab | 1,631,256 |
| | P-aminosalicylic acid (PAS) | 4 gr sachets | 761,253 |
| | Pirazinamide | 400 mg | 1,960,112 |
| | Water for injection | 5 ml | 175,824 |
| All other pharmaceuticals | Amitriptillin | 25mg tab | 6,000 |
| | Dexametazone sodium phosfate | 4mg/ml, 1ml, inj | 650 |
| | H aloperidol | 5 mg,tab | 900 |
| | Hydrokortizone | 1%/15g, ungvent. | 400 |
| | Ibuprofen | 400mg/ coated tab | 16,100 |
| | loperamide | 2mg, capsules | 5,000 |
| | Metoclopramide | 10mg/2ml, inj | 13,000 |
| | Omeprozole | 20mg , cap | 12,504 |
| | Paracetamol | 500mg, tab | 12,000 |
| | Phytomenadionum (vit K1) | 1 mg/ml, 1 ml | 5,000 |
| | Piridoxine | 5mg/ml, 5ml, inj | 264,000 |
| | Prometazine | 25mg coated tab | 11,200 |
| | Prometazine | 50mg/2ml, inj | 10,000 |
| | Tiamine HCl(Vit B1) | 100mg/2ml, inj | 265,000 |
| | Hidrooxid Al | tab | 8,000 |
| | Левотироксин | 0.1mg,tab | 23,000 |
| | ORS | 18.9g | 2,400 |
| | Fluconazole | 200 mg cap | 5,000 |
| | Sol Ringer lactate | 500ml inj | 2,300 |

| Product Category | Product | Strength | Year 2 Estimated quantity |
|---|---|---|---|
| All other pharmaceuticals | Sol Dextrosa | 5% 500ml inj | 2,600 |
| | Diclofenac sodium | 75mg 3 ml | 2,670 |
| | Amilorid | 10mg, tab | 900 |
| | Cimetidine | 200mg tab | 8,200 |
| | Diazepam | 10mg 2 ml inj | 4,400 |
| | Chlorfenamine | 4mg , tab | 600 |
| | Phenition | 300mg tab | 2,000 |
| | Klemastin | 01% 2 ml inj | 800 |
| | Syringe 5ml | 0,6x25 | 443,100 |
| | Syringe 2ml | 0,6x32 | 294,450 |

| Product Category | Product | Estimated unit cost (USD) | Year 1 Estimated unit cost (USD) | Year 2 Estimated quantity | Procurement conducted by |
|---|---|---|---|---|---|
| Health Products (excluding pharmaceuticals & health equipment) Provide supplies for bacteriology laboratories (activity 1.1.1) | Provide supplies for bacteriology laboratories (activity 1.1.1) | Lump sum | See budget assumption | See budget assumption | UNDP |
| | Support laboratory system (activity 1.1.2) | Lump sum | See budget assumption | See budget assumption | UNDP |
| | Clinical laboratory investigations for MDR-TB patients (activity 1.1.5) | Lump sum | See budget assumption | See budget assumption | UNDP |
| | Support laboratory system (activity 1.1.7) | Lump sum | See budget assumption | | UNDP |
| | X-ray films(activity 2.2.1a) | Lump sum | See budget assumption | See budget assumption | UNDP |
| | Improve contact tracing and LTBI among children (Activity 2.2.3) | Lump sum | See budget assumption | See budget assumption | UNDP |
| | Improve TB detection among PLWH (activity 2.2.4) | 2.4 USD | 5000 PLWH | 5000 PLWH | UNDP |
| | Personal protection measures for healthcare workers (activity 2.3.2) | Lump sum | See budget assumption | See budget assumption | UNDP |
| | Procure infection control equipment for TB/MDR-TB departments (Activity 2.3.3) | See budget assumption | See budget assumption | See budget assumption | UNDP |

### 9.4.3 Malaria grant

| Product Category | Product | Estimated unit cost (USD) | Year 1 Estimated unit cost (USD) | Year 2 Estimated quantity | Procurement conducted by |
|---|---|---|---|---|---|
| Total Health Products (HPE) | Rapid diagnostic test, lancets (BL 1.1.2) | 0.46 | 100,000 RDT | 100,000 RDTs | UNDP |
| | Procurement of Gimsa stanine 500ml (BL.1.1.3) | 8.27 | 20 | 20 | UNDP |
| | Procurement of Immersion oil for microscope 50ml (BL 1.1.4) | 12.59 | 30 | 30 | UNDP |
| | Procurement of Ethanol 70% 1L (BL 1.1.5) | 6.74 | 25 | 25 | UNDP |
| | Procurement of Xylene 1L solution/ Ксилен 1Л р-р (BL 1.1.6) | 1.14 | 3 | 5 | |
| | Procurement of Staining rack (BL 1.1.7) | 5.35 | 20 | 20 | UNDP |
| | Procurement of slide box (BL 1.1.8) | 7.43 | 20 | 20 | UNDP |
| | Procurement of insecticides (ALPHA-CYPERMETHRIN 5% WP),100 gram package for IRS interventions (BL 2.1.1) | 0.66 | 100,000 packages 100 gram | 100,000 packages 100 gram | UNDP |
| | Procurement of sprayers and spare parts (BL 2.1.2) | 230.30 | 329 units | 0 | UNDP |
| | Procurement of protective clothes (BL 2.1.3 – 2.1.9) | See budget assumption | See budget assumption | See budget assumption | UNDP |
| | Bed nets (LLINs 130x180x150 cm) (BL 2.2.1) | 3.19 | 23,000 units | 18,400 units | UNDP |
| | Bed nets (LLINs,260x200x165 cm) (BL 2.2.2) | 5.14 | 20,000 units | 16,000 units | UNDP |
| | Bed nets (LLINs, 325x200x170 cm) (BL 2.2.3) | 5.93 | 7,000 units | 5,600 units | UNDP |

# 9.5 Expired Pharmaceuticals 2009 / 10

| # | Description of items | Unit /measure | Quantity |
|---|---|---|---|
| 1 | Cyclosenne 250 mg | tab | 10,600 |
| 2 | RH (Rif - Isioniazid) 150 x 75 | tab | 2,800 |
| 3 | RH (Rif - Isioniazid) 150 x 75 | tab | 7,392 |
| 4 | Water for injection 60x5 | amp | 420 |
| 5 | Ethambutol 400 mg | tab | 15,000 |
| 6 | Ethambutol 400 mg | tab | 4,000 |
| 7 | RH (Rif - Isionia) 150 x 75 | yab | 431,424 |
| 8 | KIT I-II B2 A/Kit | kit | 45,024 |
| 9 | Streptomycin 1 gr | vial | 2,512 |
| 10 | KIT I-II B2 A/Kit | kit | 224 |
| 11 | KIT I-II B2 A/Kit | kit | 9 |
| 12 | Isoniazid 100mg tablets | tab | 11,200 |
| 13 | RH (Rif - Isioniazid) 150 x 75 | tab | 157,920 |
| 14 | RH (Rif - Isioniazid) 60 x 30 | tab | 5,720 |
| 15 | RH (Rif - Isioniazid) 60 x 30 | tab | 70 |
| 16 | Streptomycin 1 gr | vial | 2,000 |
| 17 | Levotroxine | tab | 80,000 |
| 18 | RH (Rif - Isioniazid) 150 x 75 | tab | 12,768 |
| 19 | RH (Rif - Isioniazid) 150 x 75 | tab | 15,456 |
| 20 | RH (Rif - Isioniazid) 150 x 75 | tab | 67,200 |
| 21 | RH (Rif - Isioniazid) 150 x 75 | tab | 20,160 |
| 22 | Determine HIV rapid test | kit | 42 |
| 23 | Determine HIV rapid test | kit | 65 |
| 24 | Determine HIV rapid test | kit | 32 |
| 25 | RH (Rif - Isionia) 150 x 75 | kit | 271,728 |
| 26 | Cyclosenne 250 mg | tab | 42,900 |

## 9.6 Net weight of exemplary products purchased in 2012-2013

| # | Type of products | Potential Waste Class | Net Weight (kg) in 2012 | Net Weight (kg) in 2013 |
|---|---|---|---|---|
| 1 | ARV pharmaceuticals | Pharmaceuticals | 1,335.54 | 1,235.26 |
| 2 | Second line TB medicines | Pharmaceuticals | 6,698.52 | 5,698.00 |
| 3 | Side affect medicines | Pharmaceuticals | 2,080.54 | 789.25 |
| 4 | STI medicines | Pharmaceuticals | 1,002.34 | 987.56 |
| 5 | Detox and substitution treatment medicines | Pharmaceuticals | 854.65 | 890.00 |
| 6 | Opportunistic medicines | Pharmaceuticals | 2,002.54 | 984.00 |
| 7 | Diagnostics test kits | Infectious | 3,562.48 | 2,854.56 |
| 8 | Laboratory consumables | Chemicals / Infectious / Sharps | 4,005.64 | 1,658.94 |
| 9 | Harm reduction materials (safety box, syringes, filter, sterile swabs, water for injection) | Infectious | 96,545.00 | 85,620.41 |
| 10 | Male/female condoms and water based lubricant | Infectious | 24,560.00 | 26,564.00 |
| 11 | Hygiene kits | Infectious | 89,125.98 | 82,365.54 |
| 12 | Gynecological kits | Infectious | 6,589.25 | 1,654.21 |
| **Total net kg** | | | **238,362.48** | **211,301.73** |

Source: UNDP GF procurement department country office Tajikistan

*Empowered lives.*
*Resilient nations.*