UNITED NATIONS DEVELOPMENT PROGRAMME

Country: Kyrgyzstan

PROJECT DOCUMENT[1]

Project Title:	Protect human health and the environment from unintentional releases of POPs and mercury from the unsound disposal of healthcare waste in Kyrgyzstan
UNDAF Outcome(s):	UNDAF/CP Outcome # p : By the end of 2016 sustainable management of energy, environment and natural resources practices are operationalized
UNDP Strategic Plan Environment and Sustainable Development Primary Outcome:	The UNDP Strategic Plan "*Changing With the World*" (2014 – 2017): Scalable initiatives on sustainable productive capacities - Effective maintenance and protection of natural capital. • Conservation and sustainable use of natural resources and biodiversity as well as creation of employment and livelihoods. • Assistance for integrated water resources management and efficient use of water, efforts to protect and restore the health, productivity and resilience of oceans and marine ecosystems, sustainable land management and restoration of degraded land, and management of chemicals and waste.
Executing Entity:	Ministry of Health (MoH) State Agency for Environment Protection and Forestry (SAEPF)
Implementing Entity:	UNDP

Brief Project Description

The objective of the project is to implement and adopt Best Environmental Practices (BEP) and Best Available Technologies (BAT) in healthcare facilities throughout the City of Bishkek to improve the management, treatment, and disposal of healthcare waste, as well as support a number of rural health posts (~ 100) in Chui and Issykul Oblast.

The project will assist Kyrgyzstan in meeting its obligations under the Stockholm Convention on Persistent Organic Pollutants (POPs) by adopting environmentally friendly treatment options for healthcare waste, which will lead to a reducing in UPOPs emissions controlled under the Convention (currently unintentionally POPs (UPOPs) are produced when healthcare waste are incinerated or burned in the open).

Another project objective is to reduce mercury releases from the health sector (generally caused by the breakage of Mercury containing thermometers), by supporting the phase out of Mercury containing medical equipment and the introduction of Mercury-free alternatives. This activity will assist Kyrgyzstan in meeting its obligations to the Minamata Convention on Mercury once it enters into force.

Besides reducing releases of UPOP and Mercury, the project has many socio-economic benefits. Improved management of healthcare wastes in and outside of hospitals, generally leads to a reduction in occupational exposure of healthcare staff to pathogens, reduces the occurrence of nosocomial infections (hospital acquired infections) which jeopardizes the health of patients and their visitors, and reduces exposure of waste handlers, recyclers, waste-pickets, etc. who face hazardous working conditions when in contact with infectious and toxic healthcare waste. Communities living close to waste disposal sites (municipal waste dumps and landfills) or incinerators will also benefit. Finally, most hospitals which have participated in similar projects have experiences that the HCWM model promoted under this project reduces operating costs and proves more sustainable.

The project consists of 4 main components:

Component 1: Strengthening of the National Regulatory and Policy Framework for Health Care Waste Management

Component 2: Implementation of Best Available Technologies (BAT), Best Environmental Practices (BEP) for

[1] For UNDP supported GEF funded projects as this includes GEF-specific requirements

Component 1: Strengthening of the National Regulatory and Policy Framework for Health Care Waste Management

Component 2: Implementation of Best Available Technologies (BAT), Best Environmental Practices (BEP) for HCWM Systems.

Component 3: Implement Mercury Waste Management and Reduction Activities for the City of Bishkek.

Component 4: Monitoring, Adaptive Feedback, Outreach and Evaluation.

It can be safely assumed, that when the GEF project comes to an end, thanks to joint efforts of the Swiss Red Cross, the GEF and the Global Fund and 95% of HCW in Kyrgyzstan, will be treated by non-incineration. In combination with import restriction on certain PVC containing medical supplies and improved recycling of disinfected waste materials (plastics), the GEF project is expected to result in a reduction of UPOPs emissions of about 3 g-TEQ/yr. By putting import restrictions on Mercury containing thermometers and adopting the use of Mercury-free thermometers in healthcare facilities, the project could result in reducing Mercury emissions from the healthcare sector by 160 kg/yr.

Programme Period:	2013 - 2016	**Total allocated resources (US$):**	
Atlas Award ID:	00078201	**GEF**	1,425,000
PIMS #:	5155	**Co-financing:**	
		MOH	1,700,000
Start Date:	August 2014	**SAEPF**	900,000
End Date:	July 2017	**Swiss Red Cross**	3,425,011
Management Arrangement:	DIM[2]	**Global Fund**	416,439
PAC Meeting Date:	18 April 2014	**Ekois (NGO)**	56,698
		Ecological Expertise (NGO)	34,000
		UNICEF	500,000

Agreed by (UNDP):

Mr. Pradeep Sharma,
UNDP Resident Representative a.i.

3 July 2014

Date/Month/Year

[2] According to DIM Authorization for Kyrgyzstan Country Programme 2012-2016, Kori Udovički, Regional Director, dd. 11 January 2012.

Table of Contents

LIST OF ACRONYMS

APR/PIR	Annual Project Review / Project Implementation Review
AWP	Annual Work Plan
BTOR	Back to Office Report
CO	Country Office
CP	Country Programme
EBRD	European Bank for Reconstruction and Development
FAP	Health Dispensaries (*only exist in rural areas*)
FMC	Family Medicine Centers
FGP	Family General Practitioners
GEF	Global Environment Facility
HCWM	Health Care Waste Management
HCF	Health Care Facility
Hg	Mercury
I-RAT	Individualized Rapid Assessment Tool
M&E	Monitoring and Evaluation
MOH	Ministry of Health
MoU	Memorandum of Understanding
NGO	Non-Governmental Organization
NAP	National Action Plan
NIP	National Implementation Programme
PAC	Project Approval Committee
PA	Project Assistant
PB	Project Board
PC	Project Coordinator
PIU	Project Implementation Unit
POP	Persistent Organic Pollutant
PPG	Project Preparation Grant
PPG	Personal Protection Gear
PPR	Project Progress Report
PRF	Project Results Framework
QPR	Quarterly Progress Reports
RCIC	Republican Center for Infection Control
RCU	Regional Coordination Unit
SAEPF	State Agency on Environmental Protection and Forestry
SOP	Standard Operating Procedures
SRC	Swiss Red Cross
SWAp	Sector Wide Approach
TOR	Terms of Reference
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Organization
UNEP	United Nations Environment Programme
WHO	World Health Organization

I. SITUATION ANALYSIS

Context and Global Significance

As health systems are strengthened and healthcare coverage expands in developing countries, an increasing amount of waste is generated, however as a negative side effect the release of persistent organic pollutants (POPs) such as dioxins and other toxic substances, like Mercury, to the environment can increase substantially. This is often an unintended consequence of choices in materials (e.g. Mercury and PVC containing products) and waste treatment processes (low technology incineration and open burning).

Incineration and open burning of healthcare waste are the main sources of dioxins resulting from the healthcare sector, and are major sources of mercury[3] pollution. Other pollutants from incineration and open burning include acid gases, heavy metals and particulates.

Dioxins are highly toxic and can cause reproductive and developmental problems, damage the immune system, interfere with hormones and also cause cancer, while mercury and its various compounds have a range of serious health impacts including brain and neurological damage especially among the young. Other health impacts include kidney damage and damage to the digestive system (WHO[4], 2013).

Contaminants such as dioxins and Mercury are transported globally on air currents and by other means; they are toxic in small quantities; they bio-accumulate up the food chain; and they have caused documented harm to public health and the environment at locations far from the original source of their release. Because of their harmful properties and local as well as regional and global impact, the Stockholm Convention on POPs aims to reduce releases of dioxins, while the recently adopted Minamata Convention on Mercury aims to reduce releases of Mercury.

Although the recently adopted Minamata Convention has not yet entered into force, once does it will allow countries to continue to use mercury in medical measuring devices until 2030 under certain special circumstances. However, WHO and the nongovernmental organization Health Care without Harm (HCWH) believe that the potential negative health consequences from mercury are so great that parties should strive to meet the main target date of 2020 set out in the Convention.

Incineration, open burning and improperly handled mercury spills are not the only problems with medical waste treatment, however. Infectious waste, especially sharps, poses a risk to anyone who comes into contact with it. The WHO estimates that 40% of hepatitis cases and 12% of HIV cases worldwide are the result of occupational exposure. Some urban and many rural hospitals and clinics in the developing world discard their medical waste with regular trash, which risks the spread of diseases especially among waste handlers, recyclers, and communities living near dump sites.

As health programs expand, safer systems of medical waste treatment and disposal must also expand in order to prevent harming the very populations these programs are intending to serve.

The case of Kyrgyzstan

Kyrgyzstan ratified the Stockholm Convention on Persistent Organic Pollutants (POPs) on 17 July 2005 and with GEF funding and UNEP support developed its National Implementation Plan (NIP) including a National Action Plan (NAP) on POPs[5]. The NIP was approved by the Kyrgyzstan Presidential Decree No -371 as of 3 July 2006 and transmitted to the Stockholm Convention on 4/2/2009.

[3] Mercury is found in thermometers, blood pressure devices, lab chemicals, cleaners and other products used in healthcare and substantial releases of mercury to the environment occur as a result of breakages, spills, improper disposal and other means.

[4] http://www.who.int/mediacentre/news/notes/2013/mercury-medical-devices-20131011/en/index.html

[5] GEF/UNEP: "Enabling Activities for the Stockholm Convention on Persistent Organic Pollutants (POPs): National Implementation Plan for Kyrgyz Republic"

As part of the NIP's preparation, an assessment of unintentional POPs releases (PCDD/PCDF) was undertaken. In 2003 the total releases of dioxins were determined to be 30.5 g-TEQ, of which releases into air accounted for 14.37 g TEQ (47.11%), water - 10.87 g-TEQ (35.63%), and soil - 0.16 g-TEQ (0.52%). The majority of releases were indicated to be the result of combustion practices, with the greatest contribution made by incineration of medical wastes (7 g-TEQ)[6]. The issue of UPOPs releases was taken up as one of Kyrgyzstan's main priorities in the NIP.

With respect to UPOPs releases originating from the inadequate disposal of healthcare waste, it is assumed that UPOPs emissions have since 2003 significantly increased, due to population growth (1.5 times) and an increase in the number of private health clinics and clinic visits, all resulting in increased use of disposable syringes and single-use items. Due to a high concentration of Healthcare Facilities (HCFs), Bishkek produces 60% of the country's healthcare waste (HCW) and is assumed to release a proportional share of the nations UPOPs emissions.

In Kyrgyzstan, 189 health care facilities (with different forms of ownership) provide inpatient services, while 205 organizations provide outpatient medical services. In addition care is provided by 37 independent dental clinics, 900 dispensaries (FAPs), more than 40 sanatoria as well as 62 sanitary-epidemiological organizations. The country counts more than 2,500 pharmacies.

In Bishkek, there are a total of 57 public health organizations (both republican and city managed) of which 25 health care facilities provide inpatient care; 23 organizations provide outpatient medical services (including 99 groups of Family General Practitioners (FGPs) linked to 19 Family Medicine Centers (FMCs); 5 organizations provide dental services; 4 organization provide sanitary services (Refer to Annex V for an overview of the total number and type of healthcare facilities in Bishkek).

In Kyrgyzstan private healthcare services are provided by more than 637 licensees (192 businesses and 455 individuals), of which about 50% are located in Bishkek. Currently, there are 20 private hospitals, with a total hospital bed capacity of 300 beds, 155 of which are located in Bishkek[7].

Disposal/treatment of infectious healthcare waste in Kyrgyzstan

It should be noted that there is a significant difference in how infectious HCW is being treated at HCFs located in Bishkek, as compared to hospitals (> 25 beds) located in rural areas (for the latter see the Swiss Red Cross project described below). The treatment of HCW in rural FAPs (dispensaries), although little waste is generated, also presents many challenges.

For years, the primary method of treating potentially infectious medical waste in hospitals has been disinfection by chemical decontamination (sodium hypochlorite solutions). Different types of infectious waste (syringes, bandages, etc.) are soaked for variable periods of times in sodium hypochlorite solutions of a certain concentration. This results in each healthcare unit having to manage various buckets and containers, which contain different concentrations of the solution and different types of wastes. After the required disinfection period, the chlorine solution is discarded in the sink/regular sewerage. Not only poses the use of chemical disinfection a health hazard to the healthcare (HC) staff because of its hazardous properties, it also poses a threat to the environment because of the way the solution is discarded.

On a daily basis HCFs and HC units prepare a range solutions with varying concentrations. In certain cases it happens though that that HCF staff doesn't take/have the time to prepare these solutions, and instead add the disinfectant in dry powder form to the infectious waste. In the latter case the disinfectant is unable to permeate the waste volumes and only disinfects the outer parts of the waste, posing a health

[6] There was a great deal of uncertainty in the calculations due to the lack of accurate data on burning practices.
[7] Djumalieva, G. (2013)

threat to HCF staff as well as anyone else coming into close contact with it (waste handlers, waste pickers, patients, etc.).

After disinfection, waste is picked up along with regular municipal waste by the municipality's waste collection trucks and transported to the Bishkek dumpsite. The Bishkek dumpsite though is continuously on fire (mostly caused by spontaneous ignition and fuelled by the flow of landfill gas), which leads to the formation of dioxins and furans, partly because of PVC containing plastics that make up an important percentage of HCW, but also due to the presence of chlorinated disinfectants. As the dumpsite is not engineered and not fenced, waste pickers living on adjacent plots, have free access to pick through the waste, and as such expose themselves and their families to improperly treated waste.

Disposal of Immunization/vaccination wastes

The treatment of immunization/vaccination waste follows a different practice. Annually approximately 1,700,000 vaccinations are given (mostly at the primary level, e.g. FMC, FGP and FAPs[8]) resulting in nearly 543 tons of waste at national level (WHO, 2012). As part of the preparation of the 2006 NIP (GoK/UNEP, 2006) the UPOPs inventory indicated that only in Bishkek, health services use 357.600 disposable syringes and 61.900 single-use systems monthly, corresponding to 24 tons of plastic waste per month.

At the primary healthcare level, immunization waste, collected in sharps containers or makeshift boxes/containers, is either burned in the open (in rural areas) or in the case of Bishkek either mixed with regular household waste ending up on the Bishkek dumpsite or transported to a boiler house for incineration.

In Bishkek, boiler house KP "Bishkekteploenergo", produces thermal energy for residential houses, government institutions and commercial enterprises. The boiler uses coal and is located near the center of the city. Due to the unavailability of disposal options for immunization wastes, this boiler house has entered into contracts (with the approval of the Ministry of Health due to a lack of alternative options) with several HCFs[9]. Costs are calculated based on the time it takes to burn the waste (15 minutes = 35 US$). Even though syringes in general do not contain PVC, low-temperature burning still leads to the formation and release of POPs into the environment (UNDP/WHO/GEF, 2009). It should also be noted that although incineration of healthcare waste is in principle prohibited by law, immunization wastes continue to be treated like this.

The wastes (vaccination waste contained in sharps containers and sometimes pharmaceuticals wastes) are inadequately transported, often using a regular passenger car, which is also used for the transportation of patients, medical staff, laboratory tests, household goods, service accounts for the bank, delivery of letters, etc. It is also expected that certain HCFs dispose of their sharps wastes at the boiler houses of private baths or saunas.

At hospital level, in some cases the needles are cut with needle cutters and subsequently the individual parts are chemically disinfected, sometimes even separating the plunger of the syringe (High Density Poly Ethylene - HDPE) from the cylinder (Polypropylene – PP). Subsequently, the disinfected syringes are picked up by a recycling company, which has entered into written agreements with a number of hospitals as well as individuals and pays them for these raw materials[10]. If the plunger of the syringe is separated from the cylinder, the recycling company pays more for the waste, then when they are not separated. According to rough estimates the company receives between 30 – 50 tonnes of plastic a year

[8] FAPs are only present in rural areas and are often run by nurses.

[9] At the start of 2012, the following HCFs had agreements in place with PES "Bishkekteploenergo" to dispose of sharps boxes in their boiler: FMC № 2; № 9; № 10; № 12; № 13; № 15; № 16; № 19; BNITSTO; relatives house number 2. Continue to dispose of by incineration at a given boiler , combustion method , due to the lack of funds in the following health care facilities : UCM number 2 ; № 3 ; № 4 ; № 5 ; № 6 ; № 7 ; № 8 ; № 9 ; № 10 ; № 11 ; № 12 ; №; № 13 ; № 15 ; № 16 ; № 18 ; BNITSTO , GHB , GSP number 4 ; № 5 ; № 6. In the city perinatal center in 2008 involved muffle furnace for incineration of bio-waste.

(of which 4 – 5 tonnes from syringes), resulting after sorting in 3 – 3.5 tonnes of pure raw materials. In turn it makes various products such as buckets, flowerpots, yarn cones, hangers, drinking bowls for chickens, etc.). The only medical wastes the recycling company receives are syringes, it doesn't receive any other types of medical wastes.

Note: as part of the Swiss Red Cross supported HCWM related activities in hospitals located in rural areas, the sale of disinfected syringes (using autoclaves) to recycling companies, has actually proven quite successful. Not only did such practices reduce the amount of plastic waste that ultimately needed to be disposed of, but sale of such plastics waste to recycling companies also provided some income to hospitals, reducing the total costs for HCWM. Please refer to Annex X and Figure 2 for more information on this good practice.

Swiss Red Cross and Global Fund supported HCWM activities

In 2007, the Swiss Agency for Development and Cooperation (SDC) mandated the Swiss Red Cross (SRC) to develop a health care waste management (HCWM) model and to replicate it in rural hospitals in the Kyrgyz Republic. In collaboration with the Republican Center for Infection Control of the Ministry of Health, a HCWM model was developed that uses needle destroyers, segregates infectious waste at the point of generation and stores the waste in enamel-coated metal waste containers that can in their entirety be put in an autoclave, used as the treatment technology (for more information on the SRC HCWM model, please refer to Annex IX).

The 2007 – 2014 SRC project implemented 119 HCWM systems in all rural hospitals with 25 beds or greater (except for approximately 17 specialized hospitals) in all parts of the country except for Bishkek. HCWM treatment systems that were installed were sometimes shared with Family Medical Centers, dental facilities, private clinics and some specialized hospitals. The cost of the project amounted to 0.61 US$ per covered population, about a third to a half of the cost per capita of similar projects in other countries.

As part of the project's evaluation (Emmanuel, J., 2013), 6 hospitals were assessed[11], each of these received a score of 92 to 97 out of a total of 100 points. These are high scores compared to those of many low- and middle-income countries. The evaluation concluded that the HCWM system developed in for rural Kyrgyzstan is outstanding and can serve as a model for other countries, as well as Kyrgyzstan's capital city Bishkek.

Following the success of the SRC project, the Republican Center for Infection Control of the Ministry of Health in conjunction with the MoH's Preventive Medicine Unit, applied for a Global Fund Grant to improve the situation with respect to healthcare waste management in Bishkek and Osh City. As part of the Global Fund project "*Promotion of the availability and quality of prevention, treatment, detection and care services for HIV-infected people among the most vulnerable population of the Kyrgyz Republic*", 27 gravity autoclaves (Type VK -75 Russian production)[12] for the disinfection of infectious waste were installed in 24 health facilities in Bishkek (For an overview of the HCFs which received autoclaves, pls refer to Annex V). In addition, two ambulances (Ford transit) were purchased for the transportation of infectious waste in Bishkek and Osh city (one per city).

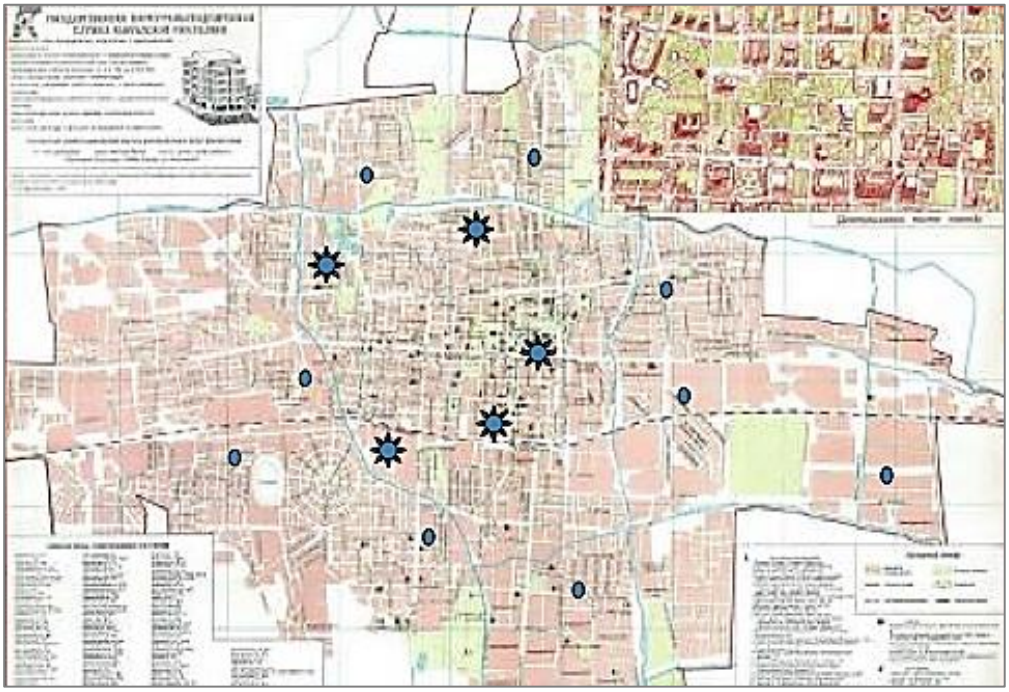
Initially the intention of the project was to organize HCW by zone/cluster, where hospitals with autoclaves would treat the waste of FMC/FGP/dentist offices and hospitals which did not receive HCWM treatment technologies, as per a zoning chart developed by the MoH and a working group on HCWM (see figure 1). In Annex V is presented in table 10 the organization of these clusters (the hospitals which would function as a hub and those satellites that would have their waste treated at the hub). Table 11 in the same Annex lists the healthcare facilities, which would operate a decentralized system of healthcare waste treatment.

[11] Using the Individualized Rapid Assessment Tool (I-RAT) developed by UN/GEF Global Healthcare Waste Project. Available on-line at:

http://www.gefmedwaste.org/downloads/I-RAT%20May%202009%20UNDP%20GEF%20Project.xls

[12] Same type as the autoclaves used by the SRC project

Figure 1: HCWM Zoning map for Bishkek City



However, besides providing non-incineration treatment technologies, the installation of these technologies and the training of their operator, the project did not provide for any other support, leaving HCFs to their own devices to start mastering the new HCWM system[13]. As such, the progress as expected from the Global Fund supported project was not as significant as hoped, and requires additional follow-up and interventions. The challenges encountered by Bishkek based HCFs in general as well as those that received some support from the Global Fund, are highlighted in the subsection on *challenges* below.

However, that said, the Global Fund, based on recommendations made by the national committee on HCWM, did procure technologies and HCWM supplies that were consistent with those as procured as part of the Swiss Red Cross programmes. By relying on non-incineration technologies (VK-75 Russian made autoclaves), that have a proven track record, and for which national maintenance teams are in place and spare parts are available, maintenance costs can be kept low and continued operation of these technologies can be ensured beyond the duration of projects.

In Annex IV the amount of infectious HCW produced by each HCFs (if known) is indicated, which adds up to 1,082.1 kg/day for the city of Bishkek.

In Table 1 below is presented the total amount of infectious HCW generated on a daily basis for hospitals (calculated based on the average amount of HCW generated by number of beds).

Table 1: Total amount of infectious healthcare waste produced per year in Bishkek

Total beds in Bishkek	**kg / day in bed**	**kg / day**
6 711	0.156	**1 046,9**

Source: Presentation Djumalieva during second PPG stakeholder meeting (24 October 2013)

It can be concluded that the indeed on a daily basis approximately **1,050 kg** of infectious HCW is generated per day, resulting in **383,000 kg/year**. If assuming this waste is ultimately all burned in the open on the Bishkek landfill, while all vaccination waste (non-PVC syringes contained in cardboard

[13] The Ministry of Health has applied for Global Fund funding for a second phase of the GFATM project (2014-2015 gg.) with the objective to purchase and equip health facilities with additional waste treatment technologies and supplies (e.g. waste containers, needle cutters, etc.) and conduct training sessions for healthcare staff. The proposal also includes an activity related to needle exchanges for drug addicts.

safety boxes amounting to **288 tonnes of waste a year** (24 tonnes/month) are disposed of in boiler houses, based on the values contained in table x below, total UPOPs releases would amount to:

Open burning on landfill: 2.5 g-TEQ/yr (Air) & 0.23 g-TEQ/yr (Residue)
Burning of vaccination waste in boiler houses : 0.095 g-TEQ/yr (Air) & 0.057 g-TEQ/yr (Residue)

Table 2: Emission Factors for Different Combustion Methods for Healthcare Waste

Combustion Method	**Emission Factor (microgram TEQ/tonne)**	**Emission Factor (microgram TEQ/tonne)**
	AIR	**RESIDUE**
Open Burning	6,600	600
Small box-type batch incinerator with no afterburner	40,000	200
Small box-type incinerator with no afterburner but used only for burning cardboard boxes with non-PVC syringes	330	200

Source: Guidance on Estimating Baseline Dioxin Releases for the UNDP Global Healthcare Waste Project (UNDP/WHO/GEF, 2009)

The current HCWM situation in Bishkek

In order to obtain a good overview of the current situation pertaining to HCWM in Bishkek, as part of this Project Preparation Grant (PPG), a quick assessment was caried out among a limited number of hospitals. Six (6) HCFs[14] were selected, representing different profiles, capacities, inpatient services versus primary health care services, different patient categories, a central location as well as a satellite location, participant in the Global Fund Project versus no participation in the Global Fund project, located at different distances from the city center. The results of these assessment are presented in table 3 below. In row 18 are presented the I-RAT results (representing a scoring out of 100).

Table 3: PPG Hospital Assessment results

№	**Description**	**A**	**B**	**C**	**D**	**E**	**F**
1.	Number of employees	193	759	902	169	62	467
2.	Number of beds	201	473	469	0	8	265
3.	Number of treated patients	7,171	14,065	12,805	0	478	8,729
4.	Number of outpatients		86,928	12,938	98,686	19,370	3,220
5.	The percentage of completion of patient days	110,8	90,6	101,9	53	72	96,6
6.	Method of disinfection	Autoclave	Autoclave	Autoclave	Chemical Disinfection	Chemical Disinfection	Chemical Disinfection
7.	Company with whom the HCF has a contract to pick-up/treat waste	Tazalyk	Tazalyk	Tazalyk	Tazalyk	Cuban Medical Academy	Tazalyk
8.	Actually amount paid for the year in Kyrgyz Soms (KGS)	124,100	80,000	299,114	60,000	unknown	366,101

[14] A – Average size psychiatry hospital for adults, located near the city centre, satellite; B - Hospital with a large number of beds, somatic/abdominal surgery for children, southern outskirts of the city, central location; C – Large hospital, surgery for adults, western edge of the city, central location; D - Outpatient facility for adult dental care in the eastern part of the city; E - Family Medicine Centre (outpatient) for adults and children in the southern part of the city, satellite; F – Average sized hospital with surgical facilities for adults in the city center, satellite.

9.	Actually amount paid for the year in United States Dollars (US$)	2,540.75	1,637.87	6,123.88	1,228.40	unknown	7,495.33
10.	The volume of disposed waste (M^3)	725.7		1,749.2			265
10.	No. of Mercury thermometers (in stock)	476	575	380	4	50	225
12.	Fluorescent lamps (available)	262	97	514	50	85	224
13.	Mercury thermometers (purchased during the year)	500	300	1,100	0	0	0
15.	Fluorescent lights (purchased during the year)	30	0	830	0	0	360
16.	Syringes (purchased during the year)	207,400	381,900	137,500	4,811	0	300,000
17.	IV Systems (purchased during the year)	63,000	120,000	67,800	0	0	66,000
18.	**I-RAT Results**	**76**	**57**	**82**	**43**	**51**	**76**

Source: Interim Report on the Situation of HCWM in selected HCFs in Bishkek (Nurjan Toktobaev)

In the section "*Summary of the threats, fundamental causes and barriers for the environmentally sound management and treatment of healthcare waste and Mercury containing medical devices*" the challenges, which are faced by the assessed HCFs and HCFs generally in Bishkek, are discussed in more detail. However it is interesting to note, that although not much capacity building/training was provided to Global Fund, but support mostly focussed on equipment provision, nevertheless, the average scoring of the GF hospitals is on average 72 while for non-GF hospitals it is 56 out of a score of 100. Although this is a too small sample size to draw definite conclusion, it could be remarked that the provision of the right technologies and equipment have already made a significant difference, while at the same time we need to remark that even supported HCFs have a long way to go to match the I-RAT results from the SRC supported HCFs.

Import of Hg and PVC containing devices

The Department of Drug and Medical Technology from the Ministry of Health keeps track of the amount of imported medical products (medical devices as well as medical technologies).

For the years 2011 and 2012, Table 4 summarizes the number of syringes, IV systems for fluids and blood transfusion (PVC containing) and other medical devices made of plastic. The break down of the importations of these products by company/country of origin are provided in Annex VIII in table 15 (2011) and table 16 (2012).

Table 4: Import of plastic containing medical devices/products (2011, 2012) [in million pieces].

№	Type of medical devices	2011	2012
1.	Syringes	55,5	54,3
2.	IV Systems	5,6	7,3
3.	Other PVC containing medical devices	0,53	1,06

Source: Database of the Department of Drug and Medical Technology from the Ministry of Health.

For the years 2011 and 2012, Table 5 summarizes the number of Mercury containing thermometers. It should be noted that Mercury containing sphygmomanometers have not been in use for approximately the last 10 years, which was confirmed by the PPG assessment of 6 hospitals which confirmed that in none of the HCFs any Mercury containing sphygmomanometers were encountered.

Table 5: Import of Mercury containing thermometers (2011, 2012)

Type of medical devices	**2011**		**2012**	
Thermometers	203,121		116,034	
Min/Max Hg content[15]	Min (0.5 g Hg)	Max (1.5 g Hg)	Min (0.5 g Hg)	Max (1.5 g Hg)
Total Mercury content	101 kg	305 kg	58 kg	174 kg

Source: Database of the Department of Drug and Medical Technology from the Ministry of Health.

The quantity of imported Mercury containing thermometers reduced dramatically from 2011 to 2012. It is unclear what the reason of this reduction is, and whether or it is a temporary one.

Management and Disposal of Mercury Containing Wastes in the Healthcare Sector

In the healthcare sector in general, Mercury is found in thermometers, blood pressure devices, lab chemicals, dental amalgam, fluorescent lights, ultraviolet lamps, cleaners and other products. Substantial releases of Mercury to the environment occur as a result of breakages, spills, improper disposal and other means.

In the case of Kyrgyzstan, and Bishkek in particular, the issue of waste management of Mercury containing products is not being addressed, whether in the healthcare sector or any other sector. When products that contain Mercury break or need to be disposed of, such wastes are being discarded along with regular municipal waste. No special measures are taken to protect healthcare facility staff, the environment or people/communities coming in close contact with such wastes.

As part of this Project Preparation Grant (PPG), a quick assessment was caried out among 6 hospitals. The assessment also took stock of the amount of Mercury containing products bought throughout the year as well as those in stock/use. The results of this assessment, and those related to Mercury containing products, are presented in table 3.

All 6 hospitals assessed during the PPG phase used mercury containing thermometers and fluorescent bulbs. However none of the hospitals had any guidelines/manuals available on what to do in the event of a breakage/spill or other type of Mercury involving emergency. Only one of the hospitals collects Mercury from broken thermometers using a drop pipet or a syringe, and would store all collected Mercury wastes in a separate container (in the open though). However the collected Mercury would subsequently be disposed along with regular municipal waste and thus end up on the bishkek dump.

Mercury containing energy efficient light bulbs

Some of the healthcare facilities engaged in the proposed project are big institutions and as such use a large number of Mercury containing energy efficient light sources, which when they break are disposed of along with regular municipal waste and thus end up on the Bishkek dump. In Table 3 are summarized the number of lights purchased throughout the year and the number of lights currently in use.

The disposal of Mercury containing light sources such as CFLs and tubes presents a particular challenge in Kyrgyzstan, as no local sound disposal solutions are available.

Until 2011, on the premises of JSC "KWWF" a demercurization facility was operating. In 2011 it was shut down as the territory on which the facility was located was sold. Subsequently the demercurization equipment was disassembled. When still in operation, the facility decontaminated Mercury containing lamps for businesses, treating approximately 16,000 bulbs a year (for more information on this process see Annex VIII).

[15] Based on the guidance as provided by the UNEP Mercury Inventory Toolkit, a Mercury containing thermometers contains between 0,5 to 1,5 g Hg/device.

To provide an overview of the pressing situation in Kyrgyzstan, related to the disposal of Hg containing lamps, Annex VIII gives an overview of import figures, waste generation rates for large enterprises and general disposal practices.

It will be important for the proposed project to advocate for a storage/disposal/treatment solution for spent Mercury containing lamps as well as other Hg containing wastes, as no current solutions exist. In Kazakhstan for example, a GEF/Climate Change Project supported by UNDP will promote energy saving and reduced GHG emissions by transforming the lighting production market, including the phase-out of incandescent lamps, while providing a solution for spent mercury lamps. In light of the future Kyrgyzstan EBRD project, the GEF HCWM proposed project should activily lobby for a national solution for spent Hg lamps as well as other Hg containing and hazardous wastes.

Disposal of other types of Healthcare Wastes

Although less relevant to this particular project, there are other waste streams resulting from the healthcare sector which also pose significant challenges. However, because these types of wastes do not result in UPOPs or Mercury releases and are not eligible for GEF funding, they will not directly be tackled. However improved HCWM practices implemented by the project will also have a positive impact on the management/treatment and disposal of these types of wastes.

Table 6: Disposal of other types of healthcare wastes

Type of Waste	Disposal Method
Laboratory wastes	Highly infectious waste from laboratories is chemically disinfected, after which the liquid portion is discharged into the sewer and the solid portion disposed of along with regular municipal waste and transported to the Bishkek municipal dumpsite.
Anatomical wastes	Anatomical waste (surgery wastes, biopsies, placentas, etc.) from hospitals in Bishkek are collected and transported to the morphological center for analysis. After analysis they are buried in specially designed pits to allow for natural decomposition. The transportation of anatomical waste is highly inadequate though, as it is the responsibility of patients and/or relatives to transport body parts/anatomical samples/wastes to the morphological center. Of the six (6) assessed hospitals, some hospitals add formaldehyde, some add sodium hypochlorite or calcium hypochlorite, or distilled water. No special transportation is provided for anatomical waste, so it's either given to patients or relatives for them to take the morphological center or it is disposed of through the sewer or general waste. Only one hospital collects such wastes in specialized bags with the hazard symbol (most other HCFs put such wastes in cut-open water bottles before it is handed to the patients/relatives). One hospital assures regular transportation of anatomical wastes (3x a week), by a hospital staff member. However, no specialized transportation is used for this purpose.
Chemical Wastes/Pharmaceuticals	Chemical waste, such as used disinfectants, reagents, expired drugs/medications are either disposed of in drains or burned in the boiler houses if possible (depending on their chemical composition). However certain types of expired medications and chemical wastes cannot be burned and thus are brought to the landfill where they are crushed by a compactor truck (which runs over the waste a few times).
Radioactive wastes	Disposed of in a special landfill.

Policy, Legislation and Regulations

Regulatory Framework

Within the current regulatory framework, the removal of wastes from health care organizations is based on municipal waste management regulations as well as acts governing the operation of healthcare organizations.

The most significant regulation pertaining to HCWM is the Law "*On Production and Consumption*." According to Article 8 of the Act, the unauthorized disposal of wastes, which can be a source of environmental pollution, is prohibited. Under the same law, the burning and incineration of wastes on the

premises of enterprises, institutions, organizations, and communities is also prohibited. Under this act, a "*National Programme for the use of waste production and consumption*" was approved in 2005, which provides for a strategy for a sector-wide system of collection and processing of medical wastes.

The Law "*On the sanitary-epidemiological welfare of the population*" (2003) defines the powers of the state in this area, as well as requirements for the collection, use, processing, transportation, storage and disposal of production and consumption.

Medical waste management issues are also reflected in the Law "*On protection of the health of citizens in the Kyrgyz Republic*" (2005). According to this law, local administrations in the field of public health protection ensure the destruction of biological and medical waste. Article 39 states that the national authority in charge of health care shall describe the management and storage of biological material and medical waste.

In addition, the regulation of waste management is reflected in many other legal documents. Annex VI provides an overview of all the laws, regulations and degrees, which have a bearing on the management of Healthcare wastes.

However, as will be further elaborated upon in the section on "*threats, causes and barriers for the environmentally sound management and treatment of healthcare waste and Mercury containing medical devices*" the absence of an approved/adopted national strategy on Health Care Waste Management as well as the need for the elaboration of a number of standards and regulations, currently hampers the sound management of healthcare wastes in Kyrgyzstan and need to be urgently addressed.

Policy Framework

Issues regarding the management of healthcare waste are included in the National Health Reform Programme (2012-2016), entitled "Den Sooluk", which is a logical continuation of the preceding National Health Reform Programs "Manas" (1996 – 2005) and "Manas Taalimi" (2006 – 2011).

Since 2006, health system reform has been implemented under a Sector Wide Approach (SWAp). Under the SWAp, MOH departments and agencies have been driving the implementation of the National Health Reform Programme, development partners have channeled their support to program priorities, and joint processes and instruments have been developed to monitor progress.

"Den Sooluk" (2012-2016) lists specific priorities with respect to HCWM under priority 3 and 4 (see table 7), as such priorities related to HCWM have already been integrated "mainstreamed" into national sectoral health plans. However the precarious financial situation of the Government of Kyrgyzstan does unfortunately not allow for a large amount of budget allocated to these priorities.

Table 7: Den Sooluk (2012 – 2016) HCWM priorities

3. Expected results and core services for priority health programs			
	3.5. HIV infection Provision of individual services: Poor material provision of health care organizations for activities related to infection control and **medical waste recycling (personal protection equipment, instruments etc.)**		
4. Overcoming systemic barriers through strengthening all functions of the health system			
	4.1 Public Health		
		4.1.3. Optimization of the public health system	
			4.1.3.5. **Intensification of activities** related to safe medical procedures and **medical waste recycling**

Summary of the threats, fundamental causes and barriers for the environmentally sound management and treatment of healthcare waste and Mercury containing medical devices

The baseline presented in the previous sections already touches upon some of the challenges pertaining to HCWM that are encountered in Kyrgyzstan. In summary these challenges can be summarized as follows:

- **Absence of an approved/adopted national strategy on Health care Waste Management**

  In 2007, a working group of experts set up under the Ministry of Health, developed a 2008-2012 HCWM Strategy. The strategy/plan were agreed upon by 18 ministries and agencies. However, due to lack of funding and supporting letters from potential donors, this strategy was not adopted. The Ministry of Health does however use the strategy as guidance for the implementation of HCW related activities although financing for it's full implementation has not yet been secured. The fact that no funding was available for the strategy's implementation is assumed to be the main reason the strategy has never been adopted.

  First and foremost, the Strategy requires updating to cover the current "*Den Sooluk*" timeframe, but also requires the inclusion of other types of hazardous waste generated by the healthcare sector (e.g. pharmaceutical and chemicals wastes as well as Mercury containing wastes), which so far are not yet covered by the strategy. The strategy should also be updated to accurately reflect the current HCWM situation in Bishkek, as well as propose an implementation strategy for the roll-out of HCWM activities in rural areas (in particular FAPs). Finally, the strategy should include a realistic action plan based on available financing (both national as well as donor funding) to ensure adoption of the strategy.

- **Inadequate regulatory framework for the management of medical waste**

  The regulatory framework does require to be enhanced. In particular the following standards and regulations need to be developed:
  - Standards for medical waste management in offices, which predominantly undertake immunizations (FAPs/FGPs and FMCs).
  - Standards for the management, clean-up, storage, transport and disposal of waste containing mercury and mercury compounds in health care settings.
  - Standards for the management, clean-up, storage, transport and disposal of chemical and pharmaceutical wastes.
  - Technical regulations for HCWM equipment and supplies.
  - Standards for the monitoring of HCWM practices, procedures, etc. in HCFs.

- **Lack of a systematic approach to training medical and nursing staff on HCWM resulting in a lack of awareness on the dangers of HCW and increases risks to human health and the environment.**

  A major challenge related to the successful implementation of improved HCWM practices is training and awareness. In all of the 6 hospitals surveyed, staff in charge of infection control had not received any training on HCWM nor had been trained on the implementation of the HCWM model for Bishkek/Kyrgyzstan[16]. Almost all of the hospitals revealed violations related to the sorting and classification of wastes (e.g. sorting waste by hand, sometimes without using gloves), overfilling bins beyond the 75% max level, disposing of infectious waste along with regular municipal waste, disassembling needles by hand without using needle cutters, no separate bins for infectious and non-infectious waste, etc. None of the surveyed hospitals had posters on proper segregation practices on display.

  Staff responsibilities for HCWM had not been clearly defined per facility/unit/department, etc. Of the 6 hospitals only one kept records on the number of needle stick injuries or incidences involving HCW. Most hospitals do not keep records of the amount of waste they generate on a day-to-day level. In a few of the assessed hospitals, plans on infection control did exist, however

[16] Even those HCFs, which had received support from the Global Fund.

in most cases no guidance on how to conduct the monitoring and evaluation of infection control in the hospital was available.

No systematic approach to Hepatitis B vaccinations for healthcare staff has been established. In the situation that staff has been vaccinated, it is often as part of international donor support, but normally employees are left to their own devices.

- **Absence of sufficient and adequate HCWM supplies (e.g. personal protection gear, containers, liners, boxes, etc.) to collect and transport HCW.**

  The hospitals budgeting departments have great difficulties in costing and planning for HCWM supplies, often resulting in staff purchasing their own supplies. Although some personal protection gear was worn (gowns, caps, masks, medical gloves) no aprons, respiratory protection, safety shoes/gum boots, heavy duty gloves/anti-needle stick gloves were available.

  The hospitals, in particular those that do not dispose of autoclaves but disinfect waste by chemicals disinfection, use a large number of different types of containers for waste collection (pots, plastics buckets). In some of these hospitals more than 10 different types of containers are used for disinfecting different types of wastes, e.g. syringes, IV systems, flushing water, cotton balls, medical gloves, household gloves, rags, etc.. The hospital which do dispose of an autoclave mostly use enameled buckets, although some do collect infectious waste in plastic containers and before autoclaving transfer the waste to enameled buckets.

  Vials and ampoules are often kept in separate containers along with their packaging. None of the hospitals had containers marked with the biohazard sign.

- **Management, disposal, storage, clean-up and phase-out of Mercury containing medical devices and products.**

  As indicated in the baseline, in the case of Kyrgyzstan the management of Mercury containing products is not being addressed, whether in the healthcare sector or any other sector. When products that contain Mercury break or need to be disposed of, such wastes are being discarded along with regular municipal waste. No special measures are taken to protect healthcare facility staff, the environment or people/communities coming in close contact with such wastes.

  Currently there are no solutions for the (temporary) storage, treatment/decontamination of Mercury containing products in Kyrgyzstan or Bishkek, and at HCF level no safeguarding procedures have been put in place to ensure the safe clean-up, management and storage of such wastes.

  The safest and preferred way to minimize releases of Mercury and reduce exposure to healthcare staff and patients is to phase-out Mercury containing medical devices altogether, avoiding the need for storage and treatment of such waste.

  However, while a phased-approach is being implemented to replace Mercury-containing devices with Mercury-free ones, there remains a need for the storage/disposal/treatment of phased-out/broken Mercury containing devices and wastes.

  Currently there are no existing storage or disposal solutions for Mercury containing wastes. There the proposed project should look into several options that might be worth exploring.

- Firstly, advocate for the allocation of a hazardous waste cell at the new EBRD financed landfill site (See also Annex XI), which could subsequently accept Mercury containing wastes as well as other types of hazardous waste;

- Advocate for the installation of a Mercury decontamination facility to be sited at the future engineered landfill (similar to the situation in Tajikistan where EBRD financed demercurization technologies for installation at the landfill site);
- Explore opportunities for the interim storage of Mercury containing wastes at national level (e.g. interim storage of Mercury containing wastes at the PCB interim storage facility);
- Explore options for the disposal/treatment of Mercury containing wastes abroad, e.g. construction plans for the hazardous waste plant in Kazakhstan (with World Bank financing) are expected to ahead, opening up opportunities for hazardous waste disposal at regional level; and finally
- Exploring the possibility with still operating Khaidarkan Mercury Mine and Plant to accept on a one-time basis the phased-out Mercury containing thermometers (if storage or recycling opportunities for this type of waste exist at the facility).

- **Treatment and disposal of single use medical supplies (in particular syringes, IV-systems, etc.)**

  Some of the larger HCFs, in particular those that make use of needle cutters and chemical disinfection, sell disinfected syringes to a local recycler. These activities provide for some additional income for the HCFs and reduce the amount of waste that ultimately ends up on the Bishkek landfill. The same recycling practices have been encouraged throughout the implementation of SRC programme, and have proven quite successful.

  However, at the primary healthcare level (e.g. FAPs in rural areas and FGPs and FMC in urban centers), immunization waste, often collected in sharps containers or makeshift boxes/containers, is encouraged to be destroyed. Even though open burning and incineration are against the law, immunization waste is burned in the open (in rural areas) or in the case of Bishkek either mixed with regular household waste ending up on the Bishkek dumpsite or transported to a boiler house for incineration. There is thus an urgent need for treatment option of immunization wastes for rural FAPs as well as for FGPs and FMC in Bishkek, as also indicated in the 2012 WHO study.

  Another challenge remains the disposal/treatment of IV-system and other medical disposable products, which contain PVC. Because of their PVC content they produce significantly more dioxins when burned as compared to PVC-free plastics. However, their PVC content also makes them much harder to recycle. The recycling of PVC containing plastics can pose serious occupational health dangers when not undertaken under well-controlled and safe conditions (due to the presence of toxic softeners). Currently, there is no facility for the recycling of PVC containing plastics in Bishkek. PVC containing plastics currently end up on the landfill along with other residual wastes and lead to the formation of dioxins as the landfill is most of the time on fire.

  It would therefore be preferable to start phasing-out PVC containing medical products with cost-effective PVC-free alternatives to the extent possible (e.g. through changing procurement practices as well as legislative action at national level).

  Secondly, based on recommendations from the SRC external project review (Emmanuel, J., 2013) in small rural hospitals and clinics where the amounts of health care waste are small and a VK-75 autoclave is cost prohibitive, the use of small pressure cookers as a practical and affordable version of an autoclave for waste disinfection should be considered (see Annex X for more information).

  Finally, it would be advisable to increase recycling rates for non-PVC containing items (e.g. syringes) by improving practices surrounding the steps necessary for recycling (e.g. introducing needle cutters, disinfection by autoclave/pressure cooker, safe storage, transport and subsequent hand-over to recyclers). This would reduce the volume of waste to be disposed of and also provide for some income generation.

- **Existing Bishkek landfill not fit to receive residual/disinfected HCW**

  The majority of medical waste generated by HCFs (the % of HCW that is not recycled) ultimately ends up on the municipal landfill, whether it is infectious, chemically disinfected or autoclaved HCW. The Bishkek dumpsite though is continuously on fire (mostly caused by spontaneous ignition and fuelled by the flow of landfill gas), which leads to the formation of dioxins and furans, when (PVC containing) plastics that make up an important percentage of HCW, are burned. The presence of chlorinated disinfectants present in the waste further contributes to the formation of dioxins, which such wastes are burned. Similarly, because there is no separate/special treatment for Hg containing wastes, these also end up on the Bishkek landfill.

  The dumpsite is not engineered and not fenced, and waste pickers living on adjacent plots, have free access to pick through the waste, and as such expose themselves and their families to inadequately treated and toxic waste.

  Preferably, disinfected healthcare wastes that cannot be further recycled would be discarded in a section "cell" of the landfill that will not be burned. This could be feasible within the framework of a newly planned engineered landfill site (currently being designed and to be funded by the EBRD (22 million Euro, of which a 11 million grant and a 11 million loan) and managed by the Bishkek Mayor's office[17]) through the allocation of a designated area/cell for HCW, and regularly covering it with soil or regular solid waste. As the Bishkek Solid Waste Feasibility Study (CEMI, April 2013) pointed out, currently infectious HCW is mixed with other solid waste at municipal collection points, creating a risk of injuries from sharps for waste handlers and scavengers at the disposal site. The mixed collection of solid and medical waste also prevents the establishment and safe operation of a waste sorting plant.

  In Annex XI the EBRD engineered landfill investment plan for Bishkek is presented, however as can be noted, no special mention is made of a special cell allocation for HCW or hazardous waste. Further lobbying by the proposed project, UNDP and other stakeholders, of the Bishkek Mayor's office, is therefore needed to ensure the City of Bishkek properly plans for the disposal of hazardous wastes.

- **Cluster-hub system and HCW transportation system not yet operational**

  A zoning system and its grouping was decided upon for the city of Bishkek (See Annex VI, table 10 and table 11) and figure 1: HCWM Zoning map for Bishkek City. Since then autoclaves were purchased through the Global Fund programme to equip some of the HCFs that would function as the centralized hubs, as well as equip some of the HCFs that had been indicated to be functioning as decentralized facilities.

  However some of the HCFs that would be serviced by a hub ("satellites"), have instead been supplied with autoclaves as well. As such there is a need to update the zoning plan based on current HCW generation rates and installed treatment capacity.

  Even though some treatment capacity has been installed and one transportation vehicle has been funded by the Global Fund to ensure transportation of HCW, the hub/zoning system is currently not yet functioning. This is due to a number of constraints:

  - "Cost-sharing" agreements between hospitals that have treatment technologies at their disposal and those that have not are not yet in place. Up to date, designated "hub" hospitals have refused to accept and treat infectious healthcare waste from other facilities. Currently, payment systems and accounts between HCFs and the City's Health Department (which will assume the responsibility of HCW transportation) are being set-up.

[17] http://www.ebrd.com/pages/project/psd/2013/41712.shtml

- The transportation routes between the hubs and the satellites is currently being finalized. It is expected that each facility will be serviced approximately twice a week.

- In certain cases the capacity installed at certain hubs is insufficient to even treat they own waste, let alone the waste of other facilities. An in-depth assessment of required capacity for each of the healthcare facilities in Bishkek is needed, first of all to update the zoning plan, secondly to assess the need for an increase in treatment capacity at certain facilities.

- Most of the HCFs, which are expected to have their waste treated at a hub facility, have not received the necessary HCWM supplies or the training to properly prepare for the collection of waste. Even if the zoning system would be working, these facilities would not be able to supply their infectious waste in a segregated and safe manner.

- The infectious healthcare waste that will be collected from the "satellites" is expected to be collected in PE bags (for easy carrying) that will be placed on the floor of the transportation vehicle. That said, there is an obvious need for the regular washing/decontamination of the transportation vehicle. To date such a wash location/facility has not yet been identified/made available.

Preferably, the zoning system would be operationalized the soonest starting which one "Zone" at a time, which requires among else hub facilities having sufficient treatment capacity, satellite facilities to be able to supply the infectious waste in a segregated and safe manner, cost-sharing agreements to be in place, and the transportation routes up and running. Once a "zone" has reached an adequate level of functioning, lessons-learned and experiences can be used in getting other zones up to speed.

- **Sub-optimal operation of the HCWM model in HCFs where treatment technologies have been installed.**

  During the PPG Phase of this project, six (6) hospitals were assessment. Three (3) of which had not received support from the Global Fund and three (3) did. The I-RAT scoring of these facilities ranked from 43 to 82, with an average ranking of 72 for HCFs that had received GF support and 56 for HCFs that did not receive GF support (see also table 1).

  It should be noted, that six (6) rural HCFs, which received SRC support, during a recent evaluation obtained I-RAT scores, which ranged from 92 to 97 out of a total of 100 points. These are high scores compared to those of many low- and middle-income countries, however such ranking should also be feasible for Bishkek based HCFs.

  Some of the reasons why GF supported HCFs receive lower I-RAT ranking, is summarized below:
  - Rooms where autoclaves have been installed often have no air ventilation.
  - Insufficient storage room (e.g. racks) for infectious waste buckets and disinfected waste buckets.
  - Absence of separate "clean" and "dirty" rooms.
  - Transferring of infectious waste from plastic or enameled buckets to other receptacles for autoclaving (e.g. transferring needles to cloth bags).
  - Inadequate disinfection of enabled buckets containing little waste (placing them inside each other, making steam penetration very difficult).
  - Inadequate use and operation of autoclaves (without purging and pulsing).
  - Lack of personal protective equipment for operators.
  - Insufficient quality control of the degree of disinfection.

  It is clear then even though capacity has been built as part of the Global Fund grant, further

assistance is definitely required to get the HCFs to a level where they are required to be (I-RAT ranking > 90), especially in light of the fact that these HCFs will be functioning as the backbone of the zoning system.

- **Inadequacies in waste flows and transportation of waste on the premises of HCFs**

  The assessment concluded that none of the hospitals had designed and agreed upon routes for the transportation of waste within and outside of the HCF. Sometimes, waste is being transported through long and crowded corridors; sometimes hall walls are uneven creating the risk of accidents. None of the hospitals use ways to secure the lids of the buckets when waste is being transported. Some of the hospitals have schedules for the removal of waste, but they are of an informal or chaotic nature.

  It would be advisable, to design and agree upon safe HCW transportation routes on the premises of the HCF and include these in the individual HCWM plans for each HCF.

- **Insufficient training opportunities**

  One of the major challenges related to HCWM at HCF level is that there is limited training available on HCWM. Although curricula for waste management are taught at the Environmental Engineering Faculty, and modules on HCWM and POPs have been added as part of the GEF-PCB project, HCWM practices and procedures are not yet taught at medical facilities and nursing schools. As a result, most medical and nursing staff learn how to deal with HCW on the job, often copying bad practices from other staff. In a best case scenario staff have had the opportunity to learn about good HCWM practices through international/donor-supported initiatives.

  Recently the Ministry of Health, its Preventive Medicine Unit, and partners like UNICEF, have been working on building the capacity of MoH staff related to hospital infection control and quality of medical service. For this purpose training modules were developed which include HCWM aspects.

  In order to ensure that HCWM training is not provided on a piece meal basis when funding is available through international programmes and projects, but is halted when such programmes come to an end, it is important to ensure that a continuous and consistent approach to training is implemented.

  It would therefore be advisable to establish and institute training curricula at national level to ensure that future generations of medical and nursing staff have received appropriate training before starting work on the job.

II. STRATEGY

Project Components, outcomes and outputs

COMPONENT 1: STRENGTHENING OF THE NATIONAL REGULATORY AND POLICY FRAMEWORK FOR HEALTH CARE WASTE MANAGEMENT (GEF funding 145,000 US$; Co-financing: xxxxx US$))

This project components will support government entities in enhancing the policy and regulatory framework pertaining to HCWM.

Outcome 1.1: The policy framework for Health Care Waste Management enhanced (30,000 US$)

As elaborated in the *baseline*, first and foremost, the 2008 – 2012 Strategy requires updating to cover the current Den Sooluk timeframe, but also requires the inclusion of other types of hazardous waste generated by the healthcare sector (e.g. pharmaceutical and chemicals wastes as well as Mercury containing wastes), which so far are not yet covered by the strategy.

The strategy should also be updated to accurately reflect the current HCWM situation in Bishkek, as well as propose an implementation strategy for the roll-out of HCWM activities in rural areas (in particular FAPs).

Finally and most importantly, as part of the strategy's preparation a realistic action plan with accompanying budget based on available financing (both national as well as donor funding), should be included to ensure adoption of the strategy.

- **Activity 1.1.1:** Revise, update and finalize the national strategy on Healthcare Waste Management

In most hospitals in Bishkek, anatomical waste (surgery wastes, biopsies, placentas, etc.) is generated. Such wastes are supposed to collected and transported to the morphological center for analysis. After analysis they are to be buried in specially designed pits to allow for natural decomposition.

However, the ways in which the collection, safeguarding and transport of such waste is being assured is highly inadequate, as described in the baseline.

In collaboration with stakeholders from the Ministry of Health, the City Department of Health, the National patoloanatomicheskogo Bureau, Bureau of Forensic Medicine, and the HCFs, a joint strategy will be developed for the temporary storage, transport, testing and final disposal (landfill or other) of anatomical wastes.

- **Activity 1.1.2: Prepare a Strategy for Anatomical Waste**

Outcome 1.2: The regulatory framework for Health Care Waste Management enhanced

Waste management and the management of healthcare waste is reflected in many laws, regulations and degrees, Annex VII provides an overview of all the legal documents which have a bearing on the management of Healthcare wastes. There do however remain a few important gaps related to the current regulatory framework.

Firstly, legislation is merely functioning as a framework and reflects the general requirements to prevent adverse effects on health and the environment. However most of these are guidelines do not have any legal status and as such are not enforceable.

Secondly, the current regulatory framework does not cover all medical waste management challenges, which the country is facing, especially those related to UPOPs and Mercury releases. Outstanding needs are:

- Standards for medical waste management in offices, which predominantly undertake immunizations (FAPs/FGPs and FMCs).
- Standards for the management, clean-up, storage, transport and disposal of waste containing mercury and mercury compounds in health care settings.
- Standards for the management, clean-up, storage, transport and disposal of chemical and pharmaceutical wastes.
- Technical regulations for HCWM equipment and supplies.
- Standards for the monitoring of HCWM practices, procedures, etc. in HCFs.
- Import ban on PVC containing syringes and other medical products for which cost effective alternatives are available.

Thirdly and lastly, a major challenge remains the implementation and enforcement of regulations and guidelines. Often these are issued without providing HCFs or stakeholders with any support or capacity building to enable them to implement improved practices so that they can actually meet the requirements set-out in these regulations and their guidelines.

Therefore the project will support the development of the below listed standards and other regulatory measures. In addition (see project component 2) the project will support HCFs in implementing these standards and other related measures pertaining to HCWM so that HCFs are in compliance with national requirements.

- **Activity 1.2.1**: Development of standards on technologies for the processing and final disposal of HCW (5,000 US$)
- **Activity 1.2.2**: Development of standards on HCW in immunization offices (5,000 US$)
- **Activity 1.2.3**: Development of standards on DoD (5,000 US$)
- **Activity 1.2.4**: Development of standards on t1
  2reatment of chemical and pharmaceutical waste (5,000 US$)
- **Activity 1.2.5**: Development of standards on monitoring HCWM practices (5,000 US$)
- **Activity 1.2.6**: Development of job descriptions for those responsible for HCWM at HCFs (3,000 US$)
- **Activity 1.2.7**: Drafting of an import ban on PVC containing syringes and other medical products for which cost effective alternative are available (5,000 US$)

COMPONENT 2: IMPLEMENTATION OF BEST AVAILABLE TECHNOLOGIES (BAT), BEST ENVIRONMENTAL PRACTICES (BEP) FOR HCWM SYSTEMS (970,500 US$)

After careful consideration with the Ministry of Health and based on the assessment and evaluations of HCWM programmes and activities that have been carried out in the past and an assessment of Bishkek HCFs as part of the project PPG phase, all stakeholders agreed that the best approach for the project's implementation would be to promote the use of autoclaves for the treatment of infectious Healthcare waste.

Advantages of autoclaving would be that it's an internationally accepted Best Available Technology (BAT) for the treatment of Healthcare Wastes (as per Stockholm Convention and Basel Convention guidelines) which avoids the generation of any dioxins. Secondly, in Kyrgyzstan, operators, technicians and maintenance personnel are used to and comfortable with the Russian-made autoclaves and spare parts are readily available in the country. This will warrant better sustainability of any installed technology capacity as compared to opting for a new unfamiliar technology. In the case that larger capacity is required, the project will opt for multiple autoclaves, rather than installing a larger capacity autoclave, to ensure that HCFs have a back-up option when an autoclave requires maintenance or needs repairs.

Considering the precarious situation of the government budget, the project will exclusively support public healthcare facilities (republic and city Healthcare facilities). However private sector HCFs will be invited to participate in training and capacity-building events to ensure that they too have an opportunity to improve their HCWM practices.

The project will consist of two phases, a two-year phase I (before the Mid-term evaluation) and a two year phase-II (after the mid-term evaluation). **Mid-way during the project's implementation, an in-depth evaluation will be carried out which will inform the project on the progress made on its various interventions (see details below), to determine which components need additional support and attention during the second part of the project's implementation, or whether remaining project funds can be redirected to supporting additional rural healthcare facilities (the 17 not yet covered by the SRC support, or additional rural FAPs)**.

During the first phase of the project it is foreseen to support:

8 individual HCFs and 3 policlinics: First and foremost, the project will support HCFs, which have not yet received any support in the past whether from the MoH, the Global Fund and the SRC. Although during the PPG phase a limited number of HCFs were assessed, detailed assessments would have to be conducted for each of the healthcare facilities to be supported, to ensure that they each receive the right support. The seven (7) HCFs that have not yet benefitted from support are indicated in Annex V.

Global Fund HCFs: In addition, the project will also support HCFs which have already benefitted from Global Fund / MoH support, but which are not yet quite there. A pre-defined project budget amount would be set-aside for add-on interventions, most likely involving the installation of additional treatment capacity, training and capacity building for HCF staff to adequately implement the HCWM model, upgrading infrastructure needs ("clean and dirty storage rooms, providing HCWM supplies (e.g. needle cutters) and increasing recycling opportunities and phasing-out the use of Mercury containing medical devices. Activities would be designed and carried out on a case-by-case basis

Support to 1 zone/cluster: Although the cluster approach is not yet functioning at the time of writing this proposal, the project anticipates to support one (1) zone (including the zone's hub treatment facility, its satellites as well as decentralized facilities) in putting in place a fully functioning HCWM treatment zone system (at this time of writing this project document it is anticipated that this would be the "new settlements" zone), which can function as an example to other zones and generate lessons-learned and best practices. A certain amount of project funds would be allocated for supporting this zone, however exact funding needs will largely depend on the interventions that are required for each of the HCFs in this zone. During the mid-term evaluation, if necessary, additional support can be allocated to this zone, or it could be decided to support additional zones during Phase II of the project.

Support to 100 FAPs: Finally, as indicated in the baseline, treatment of in particular immunization wastes remains a challenge for HCFs in rural areas (FAPs). The waste they generate mostly consists of immunization/vaccination wastes, which is either burned in the open or discarded along with regular municipal waste. The project therefore proposes to support a pilot intervention in which 100 (of the total 1,500 FAPS present in rural areas) would be receiving HCWM support from the project. Considering it is a pilot phase, FAPs that would be supported will be selected in Chui and Issukul Oblast, considering these are the regions relatively close by Bishkek which during the pilot phase would allow for better monitoring by the implementing and executing agencies. Add on something on the pressure cookers.

Outcome 2.1: I-RATs completed in HCFs

First and foremost it is important to obtain a very good sense of HCWM practices and approaches and technologies used in each of the facilities the project will work with. As can be deducted from the

baseline assessments that were conducted as part of the project's PPG phase (see results presented in table 1), the current status of HCWM varies widely, due to many reasons. In order to ensure that facilities receive the right support, each facility that will be supported by the project (whether large or small), will undergo a detailed assessment, using the Individualized Rapid Assessment Tool (I-RAT)[18] as developed and applied under the GEF/UNDP/WHO/HCWH Global Medical Waste Project.

- **Activity 2.1.1**: Conduct I-RATs in each of the HCFs supported by the project (**25,000** US$)

Outcome 2.2: Allocation of HCWM technologies, devices, supplies and technical assistance determined for each HCF

Based on the outcomes of the I-RATs the number of non-incineration technologies, Mercury-free medical devices, HCWM supplies, and capacity building needs will be determined for each of the assessed facilities.

- **Activity 2.1.2**: Calculate for each HCF HCWM equipment, capacity and funding needs that are required for phase I of the project.

Based on the outcomes of the I-RAT results and the technology needs, calculated under the previous two activities, the HCF "Treatment Zoning Plan" of the Ministry of Health (see ANNEX VI: Bishkek Clusters, Satellites and Decentralized HCFs for HCW treatment) will likely require to be revised/updated (Activity 2.1.3).

- **Activity 2.1.3:** Updating of HCF "Treatment Zoning" plan (using GIS/Remote Sensing)

Outcome 2.3: UPOPs and Green House Gas Emissions (GHG) reduced as a result of improved HCWM systems in supported HCFs (850,000 US$)

Outcome 2.3 is the most significant component of the project. This outcome will focus on supporting the HCFs, which have been described earlier in this section. As such outcome 2.3 contains a significant number of sub-activities, which are described below.

Following a best practice applied by the Global Medical Waste Project, each HCF[19], which will receive support from the project, will be required to enter into a Memorandum of Understanding (MoU) between the project and the HCFs. The MoU describes the responsibilities of both the project and the support it will provide as well as the responsibilities of the healthcare facility[20].

- **Activity 2.3.1:** MoUs signed between project and each HCF (5,000 US$)

[18] Individualized Rapid Assessment Tool (I-RAT) is a rapid assessment tool – developed under the GEF/UNDP/WHO Global Medical Waste Project - used to obtain an initial indication of the level of healthcare waste management at an individual healthcare facility. The tool results in an overall score that can be used to compare and rank healthcare facilities for the purpose of prioritizing interventions, and can also be used as a quick tool to identify possible areas for improvement within a single facility (http://www.gefmedwaste.org/downloads/I-RAT%20May%202009%20UNDP%20GEF%20Project.xls).

[19] As previously described the project will support: 7 individual HCFs located in Bishkek; HCFs that have already received support from the Global Fund but are net quite yet there; 1 entire HCWM zone/cluster in Bishkek; and, 100 FAPs.

[20] Template for an MOU between the UN/GEF Healthcare Waste Project and a Healthcare Facility, available on-line at: http://www.gefmedwaste.org/downloads/MOU%20template%20for%20the%20model%20facility%20June%202009%20UNDP%20GEF%20Project.pdf

In order to prepare HCFs for the receipt of the non-incineration technologies, mercury-free medical devices and HCWM supplies, the following HCWM related capacity building, training and support will be provided to the HCFs supported by the project:

- HCWM responsibilities assigned to staff.
- HCWM committees established and operationalized in each project HCF.
- HCWM plans drawn up for each project HCF (20,000 US$)
- HCFs and staff trained in best HCWM practices (waste classification, segregation, labeling, packaging, storage, treatment, transportation, composting, etc.)
- Managers and professionals trained on HCWM related procurement, accounting and budgeting; monitoring and reporting; and HCWM related record keeping (incidents, accidents, waste recording, etc.)

- **Activity 2.3.2:** HCF staff trained in best practices for HCWM

In parallel to the capacity building and training of HCF staff, procurement of the HCWM supplies, mercury-free medical devices (see Project Component 3), non-incineration technologies, will be procured and physical infrastructure works (e.g. interim storage spaces, infrastructure preparation for the installation of non-incineration technologies) will be initiated to ensure that spaces are fit and ready for the installation of autoclaves.

Note: It will be important to ensure that technologies and HCWM supplies procured as part of this project, are consistent with technologies and supplies procured as part of the Swiss Red Cross and Global Fund funded programmes and those procured by the MoH centralized procurement department. By relying on non-incineration technologies (VK-75 Russian made autoclaves) that have a proven track record, and for which national maintenance teams are in place and spare parts are available, maintenance costs can be kept low and continued operation of these technologies can be ensured beyond the duration of the project. Regular maintenance and capacity for repair, in combination with budget allocation for HCWM, are the single most important aspects for the sustainability of these type of projects.

- **Activity 2.3.3:** Support 8 hospitals and 3 policlinics located in Bishkek in refurbishing waste storage locations and prepare locations for technology installation (110,000 US$)

For each of these facilities the project will (based on the results and outcomes of **Activity 2.1.2**) procure:

- Non-incineration technologies for 8 hospitals and 3 policlinics to treat their own waste (275,000 US$) as well as HCWM supplies[21]
- Additional non-incineration technologies and/or HCWM supplies for Global Fund recipient HCFs (100,000 US$)
- Non-incineration technologies as well as HCWM supplies for 1 Bishkek treatment cluster/hub* (1 hospital + FMCs/FGPs in its zone) (100,000 US$)
- (Pilot) provide 100 FAPs in rural areas (e.g. Chui and/or Issyk-Kul Oblast) with necessary capacity building, HCWM supplies and pressure cookers (see Annex XI) to treat small amounts of infectious waste (40,000 US$).

- **Activity 2.3.4:** Procure/install non-incineration technologies and HCWM supplies.
- **Activity 2.3.5:** Prepare/revise Standard Operating Procedures (SOPs) for the procured technologies.
- **Activity 2.3.6:** Train autoclave operators and other staff involved on SOPs, safety precautions, and quality control of the new technology

[21] e.g. reusable autoclavable waste containers, personal protection gear, waste carts, segregation posters, needle cutters, etc.

By increasing recycling rates (e.g. by starting of composting on hospital premises, as successfully implemented by rural HCFs in the SRC project, and sale of disinfected syringes to plastic recyclers), HCFs could keep waste collection rates charged by the municipal service providers (e.g. Talalyk) lower, while generating some additional income.

- **Activity 2.3.7:** Train HCFs and staff in composting and preparation of disinfected syringes for supply to plastic/metal recyclers (e.g. introducing needle cutters, disinfection by autoclave/pressure cooker, safe storage, transport and subsequent hand-over to recyclers).

- **Optional: Install 2 centralized schredders at new landfill (80,000 US$) – *towards the end of the project when the landfill is being contructed.***

As described in the baseline, the Ministry of Health in agreement with stakeholders, had agreed upon the zoning of Bishkek City (see Annex IV). However, at the time of writing of this proposal, the zoning system was not yet operational. Therefore, the project anticipates to support 1 zone ("the new settlements zone"), to improve the practices and procedures pertaining to HCWM that would make a hub/cluster approach workable. The project will support all the HCFs (hospitals, FMC and FGPs) located in that one particular zone. HCWM supplies and technologies for this particular zone will be procured and installed (including those necessary for transportation) as part of activities 2.3.3 to 2.3.5. In addition the following measures will be taken to ensure the functioning of the HCWM zone:

- **Activity 2.3.8:** Develop draft cost-sharing agreements for infectious waste treatment between hub "service" HCF and "client" HCF.
- **Activity 2.3.9:** Support the MoH, City Health Department (in charge of HCW transport within zones) in determining optimum transportation routes (using GIS/Remote sensing) to reduce transportation costs (10,000 US$)
- **Activity 2.3.10:** Explore through the City Health Department/MoH the possibility of involving private sector involvement (through a PPP arrangement) to take on the transport of HCW within zones (xxxx US$)
- **Activity 2.3.11:** Train staff involved in transportation on the safe transportation and handling of Healthcare Waste and Mercury Waste (20,000 US)

Outcome 2.4: National training modules on HCWM available and being used by the MoH (Preventive Medicine), national training centers and Medical Faculties.

As was indicated in the baseline, one of the major challenges related to HCWM at HCF level is that there is limited training available on HCWM. In order to ensure that HCWM training is not provided on a piece meal basis when funding is available through international programmes and projects, it is important to ensure that a continuous and consistent approach to training is implemented. It is for this reason that the project aims to establish and institute training curricula at national level to ensure that future generations of medical and nursing staff have received appropriate training before starting work on the job.

- **Activity 2.3.12:** Revise national training modules developed by Preventive Medicine as well as those used by the National Training Centre based on the GEF/UNDP/WHO/HCWH Healthcare Waste Project Global Training Materials (10,000 US$)
- **Activity 2.3.13:** Design training modules on HCWM and subsequently embedd these in the curricula of the Medical Academy as well as the Medical Facility of the Kyrgyz-Russian-Slavik University and potentially a number of nursing schools (20,000 US$)

COMPONENT 3: IMPLEMENT MERCURY WASTE MANAGEMENT AND REDUCTION ACTIVITIES FOR THE CITY OF BISHKEK (120,000 US$)

As indicated in the baseline, in the case of Kyrgyzstan the management of Mercury containing products is not being addressed, whether in the healthcare sector or any other sector. When products that contain Mercury break or need to be disposed of, such wastes are being discarded along with regular municipal waste. No special measures are taken to protect healthcare facility staff, the environment or people/communities coming in close contact with such wastes.

Currently there are no solutions for the (temporary) storage, treatment/decontamination of Mercury containing products in Kyrgyzstan or Bishkek, and at HCF level no safeguarding procedures have been put in place to ensure the safe clean-up, management and storage of such wastes.

The safest and preferred way to minimize releases of Mercury and reduce exposure to healthcare staff and patients is to phase-out Mercury containing medical devices altogether, avoiding the need for storage and treatment of such waste.

The most effective way to phase-out Mercury containing medical devices is by adjusting the policy and regulatory framework which can support a gradual phase-out of Mercury-containing medical devices and the adoption of Mercury-free alternatives in the health sector.

Outcome 3.1: Strengthened policy and regulatory framework to enable the phase-out/down of mercury containing products and encourage Hg-free or lower level Hg products (20,000 US$)

In this respect the project will support the following activities:

- **Activity 3.1.1:** Develop a national action plan on the LCM of Mercury containing products.
- **Activity 3.1.2:** Develop national standards/guidelines on the management, storage and disposal of mercury containing products developed for large public and private entities, as well as HCFs.
- **Activity 3.1.3:** Develop a MSP degree prescribing a phased approach/total phase-out for the use of Hg-containing thermometers.
- **Activity 3.1.4:** Transpose EU RoHS directives for lighting products into national regulations through a degree (restricting importation of high Hg content lamps).
- **Activity 3.1.5:** Conduct an assessment of potential Cost-Recovery Mechanisms for future disposal/treatment of Mercury containing products.

In addition to a strengthened policy and regulatory framework is it important to demonstrate HCFs how affective and easy to use Mercury-free devices are. In Kyrgyzstan, Mercury-containing sphygmomanometers were already replaced about 10 years ago and therefore there is excellent potential for a sustained phase-out of Mercury-containing thermometers.

Outcome 3.2: Improved Mercury management practices at HCFs and phase-out of Mercury containing thermometer (90,000 US$)

In order to improve Mercury management practices at HCFs and support the phase-out of Mercury containing thermometers, the project will undertake the following activities:

- **Activity 3.2.1:** Complete a Hg baseline assessments for each project HCF (as part of the I-RATs, see Activity 2.1.1).
- **Activity 3.2.2:** Develop and implement a Mercury management and phase-out plans for each project HCF (included in the development of HCWM plans as part of Activity 2.3.2).

- **Activity 3.2.3:** Train 500 medical personnel in the clean-up, storage and safe management of Mercury wastes.
- **Activity 3.2.4:** Produce a training video on "Cleanup and Temporary Storage of Mercury Waste for Health Care Facilities" in Kyrgyz and Russian and use it in training activities.
- **Activity 3.2.5:** Conduct a study on staff preferences on cost-effective Mercury-free alternatives at some of the project HCFs.
- **Activity 3.2.6:** Procure and introduce Mercury-free thermometers (types/brands will be determined based on the outcomes of the staff-preference study) for the project's HCFs and train healthcare staff in their use.
- **Activity 3.2.7:** Train emergency response teams (Ministry of Emergencies) on how to respond to large Mercury spills.

In the past a demercurization plant was operating on the JSC "KWWF" permises called "Worsted Mill" which decontaminated mercury-containing lamps. However, the premises have been sold, and the demercurization installation has been disassembled. As such there is currently no facility in Kyrgyzstan which can safety accept Mercury containing spent products for disposal, storage or treatment.

In addition there are no financial mechanisms in place, which could possible cover the (future) costs for the storage, decontamination and disposal of Mercury containing products. As was described in the baseline section of this document and in Annex IX, either large entities store such wastes on their own premises or such products are disposed along with regular municipal waste, and end up on the Bishkek dump site. Unfortunately the Bishkek dumpsite is not engineered. Mercury can therefore be released to soil and ground waste through leachate. As the dumpsite is not fenced, waste pickers living on adjacent plots, have free access to pick through the waste, and as such expose themselves and their families to inadequately treated and toxic waste.

Although there is not much funding available under the project to fully address long-term solutions for the (interim) storage, decontamination and final disposal of Mercury containing waste, the proposed project could certainly make a contribution to identify better interim and long-term solutions to a number of challenges that are currently not being addressed or even considered at national level.

In this respect there might be several options worth exploring:

- Khaidarkan Mercury Mine and Plant to accept on a one-time basis the phased-out Mercury containing thermometers (if storage or recycling opportunities for this type of waste exist); or
- Advocate for the allocation of a hazardous waste cell at the new EBRD financed landfill site, which could also accept Mercury containing wastes or alternatively advocate for the installation of a Mercury decontamination facility to be sited at the future engineered landfill (similar to Tajikistan); or
- Explore opportunities for the interim storage of Mercury containing wastes at national level (e.g. storage at the PCB interim storage facility)
- Explore options for the disposal/treatment of Mercury containing wastes abroad, e.g. construction plans for the hazardous waste plant in Kazakhstan (with World Bank financing) are expected to ahead, opening up opportunities for hazardous waste disposal at regional level.

Outcome 3.3: Intermediate and long-term storage options for Mercury containing wastes identified (10,000 US$)

- **Activity 3.3.1:** Conduct an assessment for short-term, interim and long-term storage and disposal options for Mercury containing spent products and Mercury containing wastes.
- **Activity 3.3.2:** Identify a solution for the Mercury-containing equipment phased-out as part of the project.

COMPONENT 4: MONITORING, ADAPTIVE FEEDBACK, OUTREACH AND EVALUATION (60,000 US$)

The component aims at monitoring and evaluation of results achieved to improve the implementation of the project and disseminate lessons learnt at national, regional and international level.

Outcome 4.1: Project's results sustained and replicated

Mid-way during the project's implementation, an in-depth evaluation will be carried out which will inform the project on the progress made on these various interventions (support to 7 HCF, 1 zone support, 100 FAP support and "add-on" support for Global Fund recipients), to see which components need additional support and attention during the second part of the project's implementation, or whether remaining project funds can be redirected to supporting rural healthcare facilities (the 17 hospitals not yet covered by the SRC support or additional FAPs).

- **Activity 4.1.1:** Conduct a Mid-term Evaluation. M&E results and insights are applied to provide feedback to the project coordination process, and inform the design and implementation of the second phase of the project
- **Activity 4.1.2:** Lessons learned and best practices are accumulated, summarized and replicated at the country level.

Further details are provided in chapter VI Monitoring Framework and Evaluation.

Key indicators, risks and assumptions

The overall risks and risk mitigation measures that will be applied throughout the project's implementation are presented in Annex I "*Risk Analysis and Risk Mitigation Measures.*" A detailed description of assumptions organized by project activity can be found in section III (*Project Results Framework).*

Project indicators are related to expected performance achievements and on the fulfillment of desired outcomes that lead to meeting the following project goals and objectives:

1. National regulatory and policy framework for Health Care Waste Management strengthened.
2. Best available technologies (BAT), best environmental practices (BEP) for HCWM systems implemented,
3. Mercury waste management and reduction activities for the City of Bishkek implemented
4. Monitoring, learning, adaptive feedback, outreach and evaluation.

Incremental reasoning and expected global, national and local benefits

The initial capital investment costs and "start-up" costs for migrating from current unsafe and environmentally polluting practices to the use and application of non-incineration technologies and the phase-out of mercury containing devices cannot be covered by national budget allocations and contribution of healthcare facilities alone, due to severe budget constraints at national level.

It is for this reason that funding from the Global Environment Facility, in addition to support provided by the Global Fund and the Swiss Red Cross, is absolutely critical in functioning as an "agent of change" to assist Kyrgyzstan, and in particular its capital (where 60% of the country's HCW is being generated) in putting in place environmentally sound practices for healthcare waste management and treatment.

Not only will project activities reduce and eliminate unintentional releases of UPOPs and Hg and support the country in meeting its obligations under the Stockholm Convention and the future Minamata Convention, but also allow the country to continuously improve HCWM practices in the future, which also has significant infection control benefits.

Without funding from the Global Environment Facility (GEF), HCFs located in the capital Bishkek as well as the 100 FAPs targeted by the project, would be unable to transition away from current health care waste management practices. To date, no initiatives, has been undertaken to phase-out the use of mercury-containing healthcare devices. The proposed project component on Mercury is therefore entirely complementary.

As UPOPs and Mercury are global contaminants, a reduction in their release is not only beneficial for healthcare staff, patients, visitors and surrounding communities but also beneficial for global communities. Without the GEF project, those communities currently being exposed to UPOPs and mercury emissions resulting from health care, as well as the global environment, will continue to remain at risk.

The expected global, regional and local benefits are many and varied. A local level, through good coordination between the Global Fund and Swiss Red Cross support pertaining the HCWM, it is expected that the entire city of Bishkek will be able – by the end of the project - to have adopted best HCWM practices and non-incineration technologies for the treatment of healthcare waste. Keeping in mind that the SRC has already supported almost all rural hospitals, and the GEF projects also aims to support 100 FAPs:

It can be safely assumed, that when the GEF project comes to an end, 95% of HCW in Kyrgyzstan, will be treated by non-incineration.

In combination with import restriction on certain PVC containing medical supplies and improved recycling of disinfected waste materials (plastics), the project is expected to result in a reduction of UPOPs emissions of about 3 g-TEQ/yr.

By putting import restrictions on Mercury containing thermometers, entirely phasing the use of Mercury containing thermometers and adopting the use of Mercury-free thermometers in healthcare facilities throughout Kyrgyzstan, the project could result in reducing Mercury emissions from the healthcare sector by 160 kg/yr[22] (this is based on the assumption that such an import degree would be effective by the end of the GEF project).

Besides reducing releases of UPOPs and Mercury, infectious waste, especially sharps, pose a risk to anyone who comes into contact with it, in particular when it is not properly managed. By adopted best HCWM practices, hospital staff and patients, but also waste handlers, recyclers, and communities living near dumpsites, will be better safeguarded from potential infections, such as Hepatitis B, C and HIV.

Socio-economic benefits including Gender dimensions

Human and Environmental Health Benefits: The health sector in Kyrgyzstan is the main source of UPOPs emission in the country (NIP, 2006) as well as a signficant source of other toxic substances (e.g. mercury), impacting local and global human and environmental health. The project will benefit healthcare workers (such as doctors, nurses and hospital cleaning staff, 86% of them women[23]), patients (through infection control as a result of good waste handling practices in HCFs) as well as waste handlers, collectors, recyclers and scavengers who face hazardous working conditions when in contact with infectious and toxic healthcare waste. Communities living close to waste disposal sites (municipal waste dumps and landfills) or incinerators will also benefit.

While it is too early to determine the impact of the HCWM system on hospital-acquired infections and infection control in general, data from hospitals supported by the Swiss Red Cross project show a significant decrease in needle-stick injuries and cuts reported by health workers. The HCWM system as developed by the SRC and applied for this GEF project will also decrease the exposure of hospital staff to chemical disinfectants and makes their work easier by eliminating the need to prepare many batches of chemical disinfectant solutions as required under the old system. This allows healthcare staff to spend more time with their patients.

Gender considerations: This GEF project emphasizes building awareness of the links between waste management and public health (including occupational exposures), with a special focus on the health implications of exposure to dioxins and mercury for vulnerable populations, such as women workers, pregnant women, and children. In addition to relevant national ministries, hospital, and health clinics, key partners in the program include health care professionals, waste workers, and providers of waste management services (among the most vulnerable subpopulations), as well as NGOs and civil society organizations operating in the area of health, women and the environment with no more than 70% of the same sex, in accordance with the law of the Kyrgyz Republic on State Guarantees of Equal Rights and Equal Opportunities.

Women represent a large portion of workers employed in health care services (according to the U.S. Bureau of Labor Statistics, 73% of medical and health service managers are women[24]). According to the similar

[22] This assumption is based on an average import of 160,000 Mercury containing thermometers a year (see table 3), containing on average 1 gram of Mercury. Assuming that imports equal the amount of thermometers broken on a yearly basis, this result in 160 kg of Mercury released into the environment on a yearly basis.

[23] National Statistic committee, Women and men of KR, 2012, page 19

[24] Forbes (June, 2012) available at: http://www.forbes.com/sites/davechase/2012/07/26/women-in-healthcare-report-4-of-ceos-73-of-managers/

statistics for Kyrgyzstan, most health care workers are women, and more specifically 94% of the staff nurses who work mostly with medical waste are women. Therefore, the "nature" of the target beneficiaries instinctively lends itself to target women as key stakeholders.

In both developed and developing countries, many healthcare workers (such as nurses) receive low remuneration and face hazardous working conditions, including exposure to chemical agents that can cause cancer, respiratory diseases, neurotoxic effects, and other illnesses. As developing countries strengthen and expand the coverage of their health care systems, associated releases of toxic chemicals can rise substantially, magnifying the risks experienced by health care workers and the public.

As part of this project capacity building, training, curricula, etc. are developed and tailored to different training recipients within the healthcare sector, such as i) Trainers; ii) Medical staff, such as doctors, nurses and paramedical staff, iii) Hospital maintenance and sanitary staff iv) Administrators, etc. Training is also tailored and provided to support services linked to healthcare facilities, such as laundries, waste handling and transportation services, treatment facilities as well as workers in waste disposal facilities. At national level awareness campaigns are conducted to provide information to the general public, patients and family with regard to HCWM.

Through gender dimensions the project will benefit in reducing:

- incidence of male and female-related disease issues and disposal of medical waste, respectively, the cost of their treatment;
- loads on women associated with the implementation of hygiene and disposal of waste;

In this connection, it is important to allocate dedicated activities aimed at empowering women.

Economic benefits: A key aspect of the project will be to ensure that HCWM for Bishkek will be developed in such a way to keep annual operating/recurring costs (disposable HCWM supplies, electricity, maintenance, transport, etc.) as low as possible, by i) improving waste segregation practices (which allows for composting, sale of disinfected recyclable materials, and reduces the costs for collection of residual waste), ii) by grouping of hospitals in "centralized treatment hubs", maximizing the use of the waste treatment system, expanding its coverage, in combination with the most efficient transportation schedules and routes; and iii) minimizing costs for HCWM related supplies, by using reusable items where feasible, and iv) relying on non-incineration technologies (VK-75 Russian made autoclaves) that have a proven track record (with national maintenance teams in place and spare parts available, maintenance costs can be kept low).

In particular the last point is important, as regular maintenance and national capacity for repair, in combination with budget allocation for HCWM at HCF and MoH level, are the single most important aspects for the sustainability of these type of projects. By ensuring that technologies and HCWM supplies procured as part of this project, are consistent with technologies and supplies procured as part of the Swiss Red Cross and Global Fund funded programmes as well as those procured and encouraged by the MoH centralized procurement department a coherent approach for all HCFs can be adopted, facilitating training, capacity building and ensuring continuity.

The project supported by the Swiss Red Cross "*"Implementation of non-burn technologies (autoclaves) for medical waste treatment and syringes in rural healthcare facilities in Naryn, Issyk-Kul,Chui, Osh, Jala-abad and Batken Oblast"* (2009 – 2013)" proved that hospitals on average saved 33% in costs spent on HCWM, by improving waste segregation, replacing chemical desinfection with autoclave treatment, introducing the use of enamaled buckets for waste collection and treatment, introducing composting, placenta pits and sale of desinfected syringes to recycling companies[25].

[25] Currently such plastics are in certain cases sold to plastics recyclers for production of clothes hangers, pots for plants, battery covers, yarn thread spools, and other items, such as covers for electrical wiring distribution.

A survey of 30 hospitals shows an average annual cost savings of 50858 KGS as a result of the new HCWM system (~ 33% savings compared to their costs before the project). Moreover, hospitals generate revenues from the sale of the recycled plastics and metals, amounting to 29140 KGS in the case of one hospital.

Besides cost savings related to HCWM, improving HCWM practices can significantly improve infection control at healthcare facilities and reduce occupational exposure, lowering the number of hospital aquired infections for patients and minimizing needle stick injuries for staff which might lead to Hepatitus B, C and HIV infections. Restricting the use of products with PVC or Mercury, avoids the need and costs to dispose of these later on.

Finally, project's efforts will reduce the burden of Mercury and UPOPs exposure on human health and the environment both at national and international level, in turn reducing costs related to abatement activities, healthcare costs and other socio-economic costs resulting from Mercury and UPOPs exposure and pollution.

Cost Effectiveness

The proposed project will be cost effective in achieving its objectives because of several aspects.

Firstly it will build upon previous efforts aiming to improve the sound management of healthcare waste (see also Table 9: Overview of HCWM related programme and projects).
Secondly, as part of the SRC project, the most cost-effective approach to HCWM in Kyrgyzstan has been tested and evaluated. Based on evaluation result from the SRC the proposed approach by the GEF project is deemed the most cost-effective.

Finally, the proposed interventions, collaborating with SRC and Global Fund activities, could result in the entire country migrating to the use of non-incineration technologies and phasing-out the use of Mercury containing thermometers. The proposed project therefore, goes far beyond the more conventional HCWM project HCF-by-HCF interventions and demonstration project, but instead will hopefully result in an entire country converting its practices in a very sustainability and cost-effective manner.

Stakeholder Analysis

The development of national capacity for the environmentally sound management for Mercury containing products and their disposal requires the participation of a multitude of different stakeholders, ranging from public institutions and actors, to large-scale private sector users to educational and research partners. Throughout the PPG process these stakeholders have been consulted extensively and detailed roles and responsibilities throughout project implementation were agreed upon (see also Annex II: Responsibilities of National Project Partners).

a) World Health Organization (WHO): WHO office in Kyrgyzstan as well as the Department for Public Health and Environment with support from other divisions (e.g., Occupational and Environmental Health).
b) Ministry of Health:
c) State Agency for Environmental Protection:
d) Swiss Red Cross:
e) UNDP/Global Fund:
f) Municipality of Bishkek/Mayor's office
g) Ministry of Economic Regulations and Trade
h) Recycling companies:
i) Health care facilities: The project will partner with the HCFs identified in this proposal.

j) NGO Preventive Medicine: as well as ther NGOs/CSOs: including environmental organizations, recycling networks, and groups representing the rights of people and communities affected by waste disposal
k) Training institutions (Universities): offering education and training in HCWM at national and facility level.
l) Private sector: for example, service providers involved in hospital cleaning, waste collection, and disposal; entrepreneurs/enterprises involved in the manufacture, sale, distribution, installation, servicing, etc. of non-incineration and mercury-free technologies and related equipment; laboratories for the testing and certification, as well as recycling companies purchasing plastics from hospitals.
m) Professional associations and health alliances: including professional societies of doctors, nurses, dentists, laboratory technicians, infection control professionals, and hospital administrators; associations of hospitals and clinics (e.g. Hospital Association of Kyrgyzstan).

Financial Modality

The project will be applying the Direct Implementation Modality (DIM) and will follow standard UNDP rules and regulations, as per the DIM authorization for the Kyrgyzstan Country Programme 2012-2016.

Sustainability

The most important aspect to ensure sustainability of project results are keeping the recurring and operating costs for HCWM as low as possible. Based on SRC experiences HCWM costs on average (for the proposed HCWM system) account for 0.68% of the operating budgets of the hospitals, making it affordable on the long run. The cost per capita of the planned activities amounts to 0.61 USD per covered population, about a third to a half of the cost per capita of similar projects in other countries.

Other project activities/components, which will contribute to ensure project sustainability, among else:

- Further dissemination/spread of well-known autoclave technologies, rather than introducing new technologies. Relying on proven technologies will ensure that local technical experts are available and capable of undertaking maintenance and repairs and spare parts are easy to come by.
- Ensure the adoption and approval of an update HCWM strategy at national government level, through inclusion of an Action Plan, which is based on actual funding available.
- Instituting import restrictions on Mercury containing thermometers, while at the same time conducting a study on staff preferences on cost-effective Mercury-free alternatives at some of the project HCFs, so that staff has a say in which devices they will use in the future. Mercury-free devices will be procured based on the outcomes of the staff-preference study).
- Instituting import restrictions on PCV containing products for which cost-effective alternatives exist.
- Incorporating of HCWM modules/training into teaching programmes of medical facilities as well as nursing schools.
- Instituting regular “refresher” training at HCF to ensure HCWM practices are kept at a sufficiently high level.
- Use of reusable HCWM items where possible (e.g. the use of enamelled buckets).
- Introduction of cost-sharing agreements between HCFs (which send their waste for treatment elsewhere) and HCW treatment hubs (which receive HCW from other HCFs for treatment at their facility).
- Promotion of waste reduction efforts focussing on opportunities like composting and plastics recycling, to keep waste disposal costs at a minimum.
- Work with the Mayor’s office on the improvement of the Bishkek landfill site in light of upcoming EBRD funding, to incorporate disposal options for Mercury containing wastes as well as disinfected healthcare waste.

- Publication and dissemination of lessons-learned, in particular with respect to the costs incurred and saving achieved by hospitals through switching to autoclaving, recycling of plastics, composting, etc.

Replicability

It is expected that when the GEF project is fully implemented (assuming excellent collaboration with the SRC and Global Fund activities) the majority of HCFs in Bishkek will have at their disposal either a non-incineration technology to treat their own waste or would have been connected to a hub in a sustainable manner, where their healthcare waste can be treated for an affordable cost.

Keeping in mind that the Swiss Red Cross project has already introduced non-incineration technologies throughout Kyrgyzstan's rural area (in hospitals with more than 30 beds), and the GEF project might support the provision of non-incineration treatment (using pressure cookers) at FAPs, this could result in the entire country having migrated to the use of non-incineration technologies.

Initially, a shift towards PVC-free medical products (where feasible) and Hg-free thermometers will be supported by the project at the project HCFs. In combination with an import ban/restriction on Mercury containing medical thermometers and a nationally enforced reduction in PVC containing medical supplies, replication of such activities are expected to gradually cover public healthcare facilities across the country.

Replicability of project results at national level will therefore mostly focus on disseminating success stories of HCFs that with similar support as provided to other facilities, have achieved particular successes or have introduced additional practices and measures, which have proven successful and could be taken up by other HCFs.

Project outcomes will also be disseminated with the help of project partners WHO, Swiss Red Cross, UNDP/Global Fund and the Republican Infection Control Centre as part of activities pertaining to HCWM and infection control. Lessons-learned will be of particular interest to Central Asian countries as they face similar challenges with respect to HCWM and mercury phase-out.

Country Ownership, country eligibility and country drivenness

Kyrgyzstan ratified the Stockholm Convention on Persistent Organic Pollutants (POPs) on 17 July 2005 and with GEF funding and UNEP support developed its National Implementation Plan (NIP) including a National Action Plan (NAP) on POPs[26]. The issue of UPOPs releases was taken up as one of Kyrgyzstan's main priorities in the NIP. The majority of releases were indicated to be the result of combustion practices, with the greatest contribution made by incineration of medical wastes, as such the proposed project addresses pressing national POPs priorities.

Even though the government of Kyrgyzstan disposes of limited resources, the amount of effort towards improving the management of healthcare wastes over the past few years clearly demonstrates their commitment towards improving the current situation (see table 6). In particular the Ministry of Health has been actively lobbying for the integration of HCWM related activities in the SWAp, and has been successful in doing so, while at the same time it has as also been exploring international and bi-lateral funding opportunities to complement national budget allocations for HCWM, which remain limited.

Coordination with other initiatives

There are a number of HCWM related initiatives in Kyrgyzstan (on-going and future), both in Bishkek as well in the rural areas. For an overview of these activities please refer to Table 6 below.

[26] GEF/UNEP: "Enabling Activities for the Stockholm Convention on Persistent Organic Pollutants (POPs): National Implementation Plan for Kyrgyz Republic"

Considering this project is building upon the model for HCWM as developed by the Swiss Red Cross project, it will ensure regular communication and solicit inputs from the SRC Office in Bishkek as well as the experts is has employed in the area of HCWM.

Secondly, the project will also ensure close coordination with the Global Fund Phase I and Phase II projects, which also contain important HCWM project components and are managed by the Republican Center for Infection Control and Preventive Medicine (Ministry of Health), while UNDP, which is the primary Global Fund Recipient in Kyrgyzstan, assures the procurement and financial management of Global Fund grant implemented through the Ministry of Health. Considering the Ministry of Health is also the primary implementing agency for this GEF project, coordination with the Global Fund activities can be relatively easy to ascertain.

In addition there is the support provided by the Ministry of Health through the "National Programme to Reform the Health Care Sector of Kyrgyzstan – Den Sooluk" (2012 – 2016), with funding provided through the Sector Wide Approach (SWAp). In the past support has also been provided by the Green Cross in partnership with the NGO EKOIS, as well as WHO and UN.

As such, the strategy of this project will be to ensure that support, which is not provided by one partner or the other, is picked-up by another stakeholder/donor, in the end ensuring the provided support is consistent among the beneficiary health care facilities.

Table 8: Overview of HCWM related programme and projects (past, on-going and planned).

Entity / Organization	Activities	Period
Ministry of Health *Target program for the management of medical waste and control of nosocomial infections in the Kyrgyz Republic* (MoH number 393 of 18/09/02), which was extended to a 2nd phase implemented in the period 2007-2011 (MoH number 87 of 28.02.2007).	As part of this program pilot projects were carried out in the Naryn region with the support of the Swiss Red Cross (see also below) for the development and testing of autoclave technologies for the treatment of HCW intended for hospitals in rural areas. Since 2011, the "Naryn model" has been replicated/introduced in other parts of the country (rural areas) within the framework of the Kyrgyz-Swiss project on HCWM.	2002-2006 & 2007 - 2011
Republican Center for Infection Control (RCIC) and the Scientific and Production Association "**Preventive Medicine**", both under the **Ministry of Health**. National Health Care Sector Reform program "Den Sooluk" (2012-2016). Approved by order of the Ministry of Health number 59 from 18.02.2013.	▪ Designed and introduced a zoning/hub system for HCWM in Bishkek and Osh. ▪ Developed a HCWM system for FAPs and FGPs in partnership with WHO (see below). ▪ The Republican Center for Infection Control conducted research projects to test the different modes of autoclaving medical waste.	2012 - 2016
Swiss Red Cross (in partnership with the Ministry of Health, RCIC and Preventive Medicine) Funding provided by the Swiss Agency for Development and Cooperation (SDC), Department for the Cooperation with Eastern	(SRC, February 2013) In the beginning of 2006, the Kyrgyz-Swiss-Swedish Health Project (KYSSHP), in conjunction with the Republican Center for Infectious Control (RCIC), piloted a low-cost health care waste management (HCWM) and infection control (IC) model in hospitals in Naryn and Talas. Waste treatment technologies were put in place in medical facilities in Naryn (7 hospitals) and Talas (9 hospitals) over the period 2006-2008. In 2009 the MoH included the model into the national medical waste	2006 – 2008 2010 - 2011 2011 – 2014

Europe and CIS	strategy «"Strategy for Medical Waste Management in the Kyrgyz Republic (2008-2012)[27]» and asked donors to support its extension throughout the country. As a first response, SDC financed the extension of the HCWM model to 18 hospitals in Issyk-kul and Chui oblasts during 2010, implemented by KYSSHP. Based on achieved successes, the programme was further extended starting in April 2011. In the period April 2011 – March 2014 the on-going project will be installed in 119 hospitals in 4 oblasts (including Osh and Jalalabat cities) and will benefit 181 medical facilities[28]. Except for FAPs, and 17 specialized hospitals, the entire rural area will be using the SRC model. Upon specific request of the MoH, the project seeks to continue the successful work on control of hospital-acquired infections in Naryn and Talas hospitals focussing on the reduction of high infection rates in maternity hospitals. For more detailed information on the implemented please refer to Annex VII.	
Global Fund	As part of a Global Fund project entitled "*Promotion of the availability and quality of prevention, treatment, detection and care services for HIV-infected people among the most vulnerable population of the Kyrgyz Republic*" 27 gravity fed autoclaves (Type VK-75 Russian make) were procured for the treatment of infectious healthcare waste. The 27 autoclaves were installed in 22 medical institutions in Bishkek (See appendix V), and 4 autoclaves were installed at HCFs in Osh. In addition, the global Fund also provided funding for two ambulance cars (Ford transit) for transporting of infectious HCW between points of generation and points of treatment (one for Bishkek and one for Osh). To ensure that HCFs also dispose of the necessary HCWM supplies and staff is properly trained on HCWM, the Ministry of Health (RCIC and Preventive Medicine) have applied for a second grant from the Global Fund, which would also include support for a needle exchange programme. Note: *At the time of writing of this proposal, the second phase GF grant was not yet approved, so it is uncertain whether or not it will be funded.*	Phase I: 2012 – 2013 Phase II: 2014 - 2015
Green Cross in partnership with the NGO "EKOIS"	Since 2012, the Green Cross in partnership with the NGO «Ekois» have been implementing a project entitled «Reducing Adverse Effects of Medical Waste on Health and Security in Kyrgyzstan by Improving Health Care Waste Management». The project supported two (2) round tables and a 2-day seminar on issues related to HCWM for specialists from national and regional health facilities. In 2013, the project provided the gynecological hospital in Bishkek with a VK-75 autoclave and other HCWM supplies (needle cutters, infectious waste containers, etc). With the savings that the hospital made by switching from chemical desinfection to autoclaving, it is expected that it will be able to to purchase a second autoclave within two years (the project also supported the budgetting unit of the hospital, to help monitor and safeguard savings, for	2012 - 2013

[27] Unfortunately the strategy has never been approved, although it has guided the implementation of HCWM related activities since its completion.

[28] In many sites the rayon Family Medicine Centre (FMC) on campus can share the system

	either technology procurement or maintance of autoclaves).	
WHO Kyrgyzstan with financial support provided by the WHO Regional Office for Europe.	The WHO Regional Office for Europe continues to provide technical assistance to Kyrgyzstan in strengthening the national strategy on HCWM. A mission support by national and international experts, the WHO Kyrgyzstan office and the Ministry of Health: 1. Reviewed existing regulations pertaining to HCWM and advised the national working group on ways to recycle/dispose of syringes used in the immunization campaigns. 2. Provided recommendations to strengthen the national HCWM strategy, as well as provide assistance in the development of guidance documentation on occupational safety related to needle stick injuries. 3. Make recommendations for the treatment/disposal of infectious HCW in FAPs located in rural areas. A summary of the findings and recommendations are presented in the report "*Management of HCW in Kyrgyzstan – WHO Regional Office for Europe*" (WHO, 2012)	2012
UNICEF	The Ministry of Health has an agreement with UNICEF for the procurement of medical supplies to support vaccination campaigns (~ 300,000 US$ a year). In addition, UNICEF is also supporting programs, which aim to improve the quality of health services and infection control in maternity and children's healthcare facilities. In partnership with the MoH's Preventive Medicine, UNICEF also supports a wide range of capacity-building activities, including training for staff of the Ministry of Health on hospital infections control and quality of medical service. Training modules have been developed for this purpose and include HCWM aspects.	2012 - 2013

III. PROJECT RESULTS FRAMEWORK

This project will contribute to achieving the following Country Programme Outcome as defined in CPAP or CPD:
Country Programme Outcome Indicators:
Primary applicable Key Environment and Sustainable Development Key Result Area (same as that on the cover page, circle one): 1. Mainstreaming environment and energy OR 2. Catalyzing environmental finance OR 3. Promote climate change adaptation OR 4. Expanding access to environmental and energy services for the poor.
Applicable GEF Strategic Objective and Program:
Applicable GEF Expected Outcomes:
Applicable GEF Outcome Indicators:

	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
Project Objective: Implement best environmental Practices (BEP) and Best Available Technologies (BAT) in the health-care sector to assist Kyrgyzstan in meeting its obligations under the Stockholm Convention to reduce UPOPs as well as Mercury releases.	UPOPs emissions reduced as a result of improved HCWM treatment systems used by HCFs benefitting from the project.	Kyrgyzstan's NIP, calculated that the total releases of dioxins in 2003 were 30.5 g-TEQ. The majority of releases were indicated to be the result of combustion practices, with the greatest contribution made by incineration of medical wastes (7 g-TEQ)[29].	In total the project expects to reduce UPOPs emissions by 3-TEQ/yr.	The I-RATs that will be conducted for each of the project's HCFs before project interventions will take place will provide insight in the amount of UPOPs produced and Mercury released on a yearly basis.	
	Country capacity built to effectively phase out and reduce releases of POPs	The current regulatory framework does not cover all medical waste management challenges, which the country is facing, while existing guidelines do not have any legal status and as such are not enforceable.	Legal and regulatory framework enhanced through the revision of the national HCWM strategy, the development of a national strategy for anatomical waste, and the development of standards and degrees pertaining to HCWM.	Draft of the two National Strategies as well as drafts for the standards and degrees available.	
	Mercury emissions reduced as a result of the phase-out of Mercury containing medical thermometers and improved management of Mercury containing wastes.	No national Mercury Assessment has been undertaken yet, but based on 2011 and 2012 import figures, between 58 and 305 kg of Mercury, contained in medical thermometers, is imported yearly (see table 3).	The phase-out of Mercury containing thermometers will result in sustained Mercury reductions of approximately 160 kg Hg/year.	Guidance on "*Measurements and Documentation*[30]" as developed under the Global Medical Waste Project will be used to provide for a before and after snap-shot.	
COMPONENT 1: STRENGTHENING OF THE NATIONAL REGULATORY AND POLICY FRAMEWORK FOR HEALTH CARE WASTE MANAGEMENT (145,000 US$)					

[29] There was a great deal of uncertainty in the calculations due to the lack of accurate data on burning practices.
[30] Insert link if available

Outcome 1.1 The policy framework for Health Care Waste Management enhanced	National Health Care Waste Management Strategy revised and updated. National Strategy for Anatomical Waste developed.	Although a National Strategy (2008-2012) on HCWM was elaborated, it has never been approved/adopted due to lack of funding for its implementation. The collection, safeguarding and transport of anatomical wastes is highly inadequate.	National Strategy on Healthcare waste management in the Kyrgyz Republic finalized. National Strategy for Anatomical Waste drafted.	National Strategy on HCWM available. National Strategy for Anatomical Waste available.	**Assumption**: The project will be able to support the development of a strategy and accompanying Plan of Action that is based on actual HCWM funding available to ensure that the strategy can be adopted.
Outcome 1.2 The regulatory and policy framework for Health Care Waste Management enhanced.	Number of approved and adopted standards and degrees developed as part of the project.	HCWM related legislation is merely functioning as a framework and reflects the general requirements to prevent adverse effects on health and the environment. However most of these are guidelines do not have any legal status and as such are not enforceable. The current regulatory framework does not cover all medical waste management challenges, which the country is facing. A major challenge remains the implementation and enforcement of regulations and guidelines, which are often issued without providing HCFs or stakeholders with any support or capacity building to enable them meet the requirements set-out in these regulations /guidelines.	Standards on technologies for the processing and final disposal of HCW developed. Standards on HCW in immunization offices developed. Standards on DoD developed. Standards on treatment of chemical and pharmaceutical waste developed. Standards on monitoring HCWM practices developed. Job descriptions for those responsible for HCWM at HCFs developed. Import ban drafted on PVC containing syringes and other medical products for which cost-effective alternative are available.	Standards on technologies for the processing and final disposal of HCW available. Standards on HCW in immunization offices available. Standards on DoD available. Standards on treatment of chemical and pharmaceutical waste available. Standards on monitoring HCWM practices available. Job descriptions for those responsible for HCWM at HCFs available. Import ban on PVC containing syringes and other medical products for which cost-effective alternative are available.	
COMPONENT 2: IMPLEMENTATION OF BEST AVAILABLE TECHNOLOGIES (BAT), BEST ENVIRONMENTAL PRACTICES (BEP) FOR HCWM SYSTEMS (970,500 US$)					
Outcome 2.1 Accurate insight in the HCWM situation at each of the HCFs supported by the project.	I-RATs completed for each of the HCFs supported by the project	Some baseline information is available mainly from prior HCWM assessments as well as from the project's PPG phase.	All HCFs have participated in a HCWM assessment. An accurate UPOPs and Hg baseline has been established for each HCF[31].	I-RAT reports (incl. Hg assessments) available for all assessed HCFs.	Assumption: All HCFs are willing to participate in baseline assessments and are open to sharing information related to their current HCWM practices.
Outcome 2.2: Allocation of HCWM technologies,	Detailed procurement and TA plan for the implementation of Phase	Some information is available on the type of TA and equipment/supplies that would be required for HCFs	For each HCF, HCWM equipment, Technical Assistance (TA) and funding needs have been	Detailed budget for each of the project's HCFs has been prepared.	**Assumption**: Ministry of Health would be willing to update/revise its zoning plan based on information,

[31] Guidance on "*Measurements and Documentation*" as developed under the Global Medical Waste Project will be used to provide for a before and after snap-shot.

devices, supplies and Technical Assistance (TA) needs determined for each HCF	I. Updated Zoning Plant	(see also Annex V), however detailed information for each HCFs will be required to draw up a sound procurement and TA plan. A Zoning Plan was developed in 2012 (see Annex VI) but is currently out-dated. The Zoning Plan will also require revision to reflect the outcomes of the I-RATs.	determined/calculated for the first phase of the project. The HCF "Treatment Zoning" plan (using GIS/Remote Sensing) has been revised/updated. A detailed procurement and TA plan has been drawn up for the first phase of the project's implementation.	An updated "Zoning Plan" is available. Procurement/TA plan is available.	lessons-learned and experiences as they become available.
Outcome 2.3: UPOPs releases reduced as a result of improved HCWM systems in supported HCFs (850,000 US$)	*% as compared to I-RAT baseline established at the start of the project (outcome 2.1)* Waste segregation improved by xx % Number of HCFs that send their disinfected syringes to recyclers increased by xx % Average HCF infectious waste volumes reduced by xx % No of project HCFs practices composting increased by xx % Percentage of project HCFs that have introduced non-incineration technologies xx % Waste monitoring installed. No. of incidences/accidents involving infectious waste reduced by xx %	At the primary healthcare level, immunization waste is either burned in the open (in rural areas) or in the case of Bishkek mixed with regular household waste ending up on the Bishkek dumpsite or transported to a boiler house for low temperature incineration. At Bishkek hospital level in Bishkek, the primary method of treating infectious medical waste is by chemical disinfection after which the waste ends up on the Bishkek dumpsite, which is continuously on fire, leading to the formation of dioxins and furans. Common HCWM challenges faced by HCFs are: • Lack of awareness on the dangers of HCW and the risks to human health and the environment in combination with absence of training opportunities. • Absence of sufficient and adequate technologies, devices and supplies to manage HCW soundly. • Sub-optimal operation of the HCWM model in HCFs where treatment technologies have been installed. • Inadequacies in waste flows and	MoUs signed between project and each HCF. HCF staff trained in best practices for HCWM, including: • Responsibilities for HCWM assigned and waste management committees operationalized in each project HCF. • HCWM plans drawn up for each project HCF. • Xx HCFs and xxx staff trained in best HCWM practices related to waste identification, classification, segregation, labelling, packaging, storage, treatment, transportation, etc. at HCF level[32]. • Xx managers and professionals trained on HCWM related procurement, accounting and budgeting; monitoring and reporting; and HCWM related record keeping (incidents, accidents, waste recording, etc.) 8 Bishkek hospitals and 3 policlinics supported in refurbishing/preparing waste storage locations and locations for technology installation (110,000 US$) Non-incineration technologies and	Signed MoUs. Certificates of training completion and attendance sheets of training sessions. • List of committee members and copy of regular meeting minutes available. • HCWM plans available. • Certificates of training completion and attendance sheets of training sessions. • Monitoring and reporting systems in place in each HCF and daily updated. • Logbook available on number of incidents and waste generation rates for each of the HCFs. Photo materials (before and after)	**Assumption:** Project HCFs are willing to sign MoUs. **Assumption**: Treatment hubs and satellites located in the zone supported by the project are willing to sign cost-sharing agreements for the treatment of their infectious waste.

[32] Although private sector HCFs will not figure among the project's beneficiaries, they will be invited to participate in trainings, workshops, visits, etc.

	Transportation of infectious and anatomical waste exclusively assumed by authorized vehicles. Average costs for HCWM reduced by xx%	transportation of waste on the premises of HCFs • Cluster-hub system and HCW transportation system not yet operational. Certain HCFs have a contract with a local recycler, which collects chemically disinfected syringes. Although the SRC/MoH has successfully demonstrated composting at the rural level, none of the HCFs in Bishkek undertake composting. Transportation of infectious HCW in the city of Bishkek is extremely inadequate, more often than not, using passenger cars or ambulances, which are also used to transport patients, healthcare staff, etc. The City Health Department has received 1 transport vehicle through the phase I Global Fund project, which will soon be used to transport infectious HCW, between HCFs and treatment hubs. However the delivery/pick-up schedule has not yet been worked out in detail.	HCWM supplies procured and installed for all project HCFs (11 HCFs in Bishkek, 1 zone and 100 FAPs): • Project HCFs[33] equipped with HCWM supplies and non-incineration technologies[34]. • xx Global Fund recipient HCFs equipped with additional non-incineration technologies/HCWM supplies[35] • (1) zone equipped with sufficient treatment capacity/HCWM supplies (including the zone's hub treatment facility, its satellites as well as decentralized facilities). • (Pilot) 100 FAPs in rural areas equipped with pressure cookers and necessary capacity building and HCWM supplies. Standard Operating Procedures (SOPs) for the procured technologies prepared/revised. Autoclave operators and other staff trained on SOPs, safety precautions, and quality control of the new technology. Draft cost-sharing agreements for infectious waste treatment between service HCF and recipient HCF developed. Optimum transportation routes determined Staff involved in infectious waste transportation trained on the safe handling of HCW and Mercury	Photos of HCWM supplies and installed treatment technologies. SOP for procured technologies available in each project HCF. Certificates of training completion and attendance sheets of training sessions. Signed cost-sharing agreements. Optimized route schedule available. GIS/Remote Sensing maps available of the Bishkek transportation routes, clusters and treatment technologies. Waste logs kept at recipient hub indicating the amount, origin and state of waste received from the cluster HCFs.	

[33] This includes project HCFs, FHC/FGPs and Policlinics participating in the pilot cluster treatment, and potentially some of the HCFs supported by the Global Fund Project (although Phase II is expected to entirely cover expenses in this regard).

[34] Only HCFs that have signed an MoU, implemented BEP, instituted a Waste Management Committee, prepared their storage facilities and autoclave locations and of which staff have participated in all necessary training, will receive autoclave technologies.

[35] For some HCFs which received autoclaves through the Global Fund Phase I, autoclave capacity was too low to treat all the waste, therefore some need additional autoclaves to reach a sufficiently high capacity.

			Waste Project HCF staff trained in in composting and plastics recycling. Environmentally sound agreement reached with the Bishkek Mayor's office and the EBRD on the handling of disinfected HCW and Hg containing wastes at the new engineered Bishkek landfill.	Certificates of training completion and attendance sheets of training sessions. Hospital records indicating the amount of disinfected waste sold to recyclers. Photos of composting stations.	
Outcome 2.4: National training modules on HCWM available and being used by the MoH (preventive Medicine), national training centers and Medical Faculties.	Training possibilities/opportunities on HCWM offered by national teaching institutions and schools.	Lack of a systematic approach to training medical and nursing staff on HCWM resulting in low awareness on the dangers of HCW and the risks to human health and the environment. As part of the Global Fund Phase II project, the MoH institute "Preventive Medicine" has developed training modules, with support of UNICEF and will be providing this training to various target groups. The "National Training Center" provides post-graduate training (continuous professional development) as well as educational training for healthcare staff, which contains modules on HCWM.	National training modules developed by Preventive Medicine as well as those used by the National Training Centre have been revised/improved based on the WHO Healthcare Waste Project Global Training Materials MoUs signed between the project and medical university faculties and nursing schools. Training modules on HCWM designed and subsequently embedded in the curricula of the Medical Academy as well as the Medical Facility of the Kyrgyz-Russian-Slavik University and potentially a number of nursing schools.	National training modules finalized and approved for use at national level. National training modules being used by Preventive Medicine and the National Training Centre. Signed MoUs HCWM modules/training embedded in curricula at the Medical Academy as well as the Medical Facility of the Kyrgyz-Russian-Slavik University Medical and nursing students are being tested on HCWM knowledge as part of their education.	**Assumption**: The Ministry of Health - Department on nosocomial infections and medical wastes, Preventive Medicine and UNICEF are open and willing to revise the national training modules based on the 2013 WHO *"guidelines "Safe management of wastes from health-care activities*" using the UNDP GEF Healthcare Waste Project Global Training Materials. **Risk**: Low **Assumption**: The Medical Academy, the Medical Facility of the Kyrgyz-Russian-Slavik University and the National Training Center are open to embedding/revising HCWM related modules in their programmes. **Risk**: Low
COMPONENT 3: IMPLEMENT MERCURY WASTE MANAGEMENT AND REDUCTION ACTIVITIES FOR THE CITY OF BISHKEK (120,000 US$)					
Outcome 3.1: Strengthened policy and regulatory framework to enable the phase-out/down of mercury containing products and encourage Hg-free or lower level Hg products	A regulatory framework pertaiing to the management of Mercury containing products is developing and available.	In Kyrgyzstan, the management of Mercury containing products is not being addressed, whether in the healthcare sector or any other sector. When products that contain Mercury break or need to be disposed of, such wastes are being discarded along with regular municipal waste. No special measures are taken to protect healthcare facility staff, the environment or people/communities	National action plan on the LCM of Hg containing products developed. National standards/guidelines on the management, storage and disposal of mercury containing products developed for large public and private entities, as well as HCFs. MSP degree drafted prescribing a phased approach/total phase-out for the use of Hg-containing thermometers.	Draft National Action Plan on LCM of Hg containing products available. Draft national standards/guidelines on the management, storage and disposal of mercury containing products available. Draft MSP degree prescribing a phased approach/total phase-out for the use of Hg-containing thermometers	**Assumption**: The Ministry of Health would be willing to start the phase-out of Mercury-containing thermometers. **Assumption**: The Ministry of Trade would be willing to introduce import restriction on high-level Mercury containing energy saving lamps.

		coming in close contact with such wastes. There are no restrictions on the importation of high Hg-content lamps (CFLs, tubes) or Hg-containing medical devices. Guidelines on the management, storage and disposal of Hg containing lamps are not available. Maximum permissible concentration (MAC) for metallic mercury (Hg) are set for air, water and soil.	EU RoHS directives for lighting products transposed into national regulations through a degree. Assessment of potential Cost-Recovery Mechanisms for the future disposal/treatment of Mercury containing products conducted.	available. Draft degree to transpose EU RoHS directives for lighting products into national regulations available. Assessment report of potential Cost-Recovery Mechanisms for the disposal/treatment of Mercury containing products available.	
Outcome 3.2: Improved Mercury management practices at HCFs and phase-out of Mercury containing thermometer	80% of project HCFs have introduced Mercury-free devices.	Mercury containing sphygmomanometers have been phased-out approximately 10 years ago, however Mercury containing thermometers are still in wide use. In 2011 and 2012, respectively 203,121 and 116,034 were imported. When products that contain Mercury break or need to be disposed of, such wastes are being discarded along with regular municipal waste. Currently there are no safeguarding procedures in place at HCF level to ensure the safe clean-up, management and storage of broken thermometers or other mercury containing wastes, as such exposing healthcare facility staff, patients or visitors to Hg exposure. .	Hg baseline assessments completed for each project HCF (as part of the I-RATs, see Activity 2.1.1). Mercury management and phase-out plans developed and implemented for each project HCF (included in the development of HCWM plans as part of Activity 2.3.2). 500 medical personnel trained in the clean-up, storage and safe transport of Hg wastes. Training video produced on "Cleanup and Temporary Storage of Mercury Waste for Health Care Facilities" in Kyrgyz and Russian and used in training activities. Study on staff preferences for cost-effective Hg-free alternatives conducted at a number of project HCFs. Mercury-free thermometers introduced at the project's HCFs and personnel trained in their use. Emergency response teams (Ministry of Emergencies) trained on how to respond to large Mercury spills.	I-RAT reports (incl. Hg assessments) available for all assessed HCFs. HCWM plans available for each project HCF (including Hg management and phase-out plans) Certificates of training completion and attendance sheets of training sessions. Videos posted on YouTube in both Russian and Kyrgyz. Report on Staff preference study available. Collected amount (no. and weight) of Hg-containing thermometers replaced with Mercury-free devices. Certificates of training completion and attendance sheets of training sessions.	**Assumption:** Healthcare facilities participating in the project are open to participating in the staff preference studies and subsequently phasing out Hg-containing thermometers and replacing them with Mercury-free alternatives. **Risk**: Low Cost-effective Hg-free alternatives for medical devices and low Hg content CFLs and tubes are available in the country. **Risk**: Low As co-financing, facilities allocate adequate storage space for interim Hg-waste storage, appoint waste management committee members, and allocate staff time to participate in training on Hg LCM, staff preferences study as well as the use of Hg-free alternatives. **Risk**: Low
Outcome 3.3: Intermediate and long-term storage options for Mercury containing wastes identified	Phased-out Mercury containing thermometers have been safely disposed of as possible within the limitations of the infrastructure present in	Currently such wastes end up at the Bishkek landfill site, which is not engineered and doesn't have any leachate control, allowing Mercury to seep into the leachate and end up polluting nearby soil and water	Assessment for short-term, interim and long-term storage and disposal options for Mercury containing spent products and Hg containing wastes completed *(e.g. Khaidarkan Mercury Mine and Plant, EBRD*	Assessment published. Written agreement signed for the storage or disposal of the	**Assumption:** Khaidarkan Mercury Mine and Plant would be willing to and has the capacity to recycle the Hg from the thermometers. **Assumption**: The Bishkek Mayor's

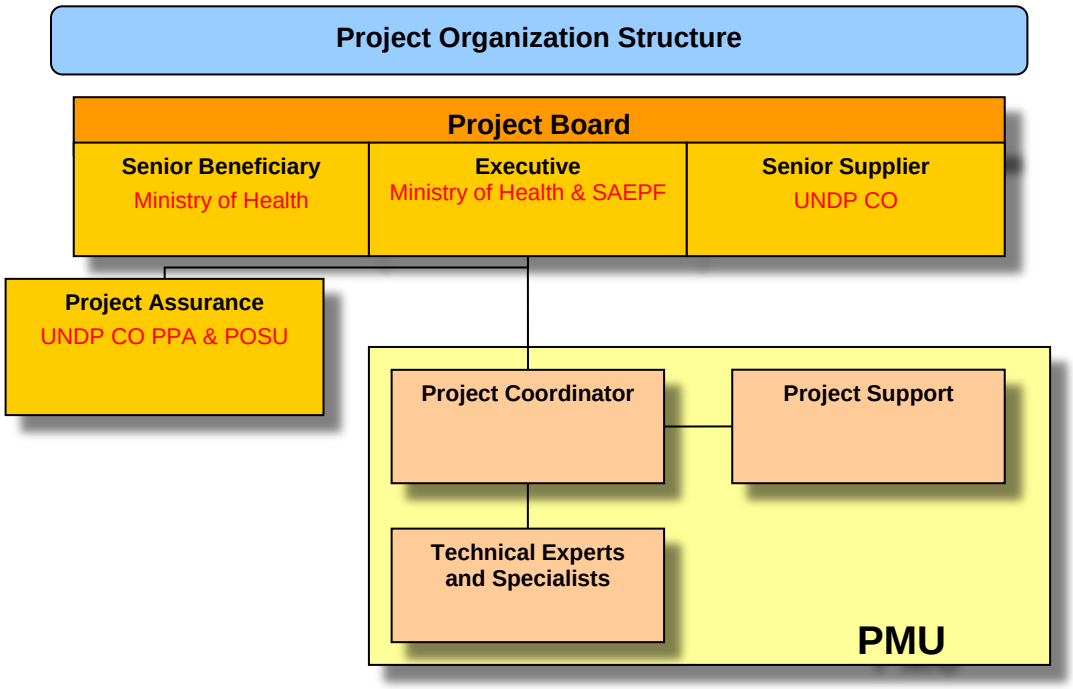
(10,000 US$)	Kyrgyzstan.	resources. The dumpsite is also not fenced and waste pickers living on adjacent plots, have free access to pick through the waste, and as such expose themselves and their families to Mercury containing wastes.	*hazardous cell, EBRD demercurization plant, interim storage, disposal abroad, etc.).* Treatment/Disposal solution identified for the Mercury-containing equipment phased-out as part of the project.	Mercury-containing equipment phased-out as part of the project.	office and the EBRD are willing to accommodate the thought for a specially allocated cell for hazardous waste or a demercurization facility. **Assumption**: by the time the project comes to an end, the construction of a hazardous waste disposal site has been completed in Kazakhstan. **Assumption**: by the time the project comes to an end, a interim storage facility for hazardous wastes (PCBs) has been established in Kyrgyzstan.
COMPONENT 4: MONITORING, ADAPTIVE FEEDBACK, OUTREACH AND EVALUATION (60,000 US$)					
Outcome 4.1: Project's results sustained and replicated	Number of high quality monitoring and evaluation documents prepared during project implementation.	No documents in baseline situation.	4 Quarterly Operational Reports submitted to UNDP each year 1 annual APR/PIR submitted to UNDP each year. 1 Mid-term project review. M&E results and insights are applied to provide feedback to the project coordination process, and have informed/redirected the design and implementation of the second phase of the project. **The MTE will inform on how many additional technologies would have to be purchased and how much additional capacity building would have to be carried out in the second half of the project.** 1 Final evaluation. MTE and FE must include a lessons learned section and a strategy for dissemination of project results. Lessons learned and best practices are accumulated, summarized and replicated at the country level.	4 QORs available for each project year. APR/PIR available for each project year. Mid-Term Evaluation Report available. Mid-Term Evaluation Report available. Lessons-learned from the project easily accessible and searchable on-line. Project related documentation, photos and videos posted on the project's website and Facebook page. Reports submitted to UNDP	**Assumptions**: It is assumed that the project manager will prepare all the reports that are required by the GEF and UNDP. **Risk**: Low

IV. TOTAL BUDGET AND WORKPLAN (FOR NOW, PLS SEE ATTACHED EXCEL SHEET)

Award ID:	
Award Title:	Protect human health and the environment from unintentional releases of POPs and mercury from the unsound disposal of healthcare waste in Kyrgyzstan
Business Unit:	UNDP Kyrgyzstan Country Office
Project Title:	Protect human health and the environment from unintentional releases of POPs and mercury from the unsound disposal of healthcare waste in Kyrgyzstan
Atlas Project ID:	
PIMS number: 5155	4934
Implementing Partner (Executing Agency)	Ministry of Health (MoH) and State Agency for Environmental Protection and Forestry (SAEPF)

V. MANAGEMENT ARRANGEMENTS

According to DIM Authorization for Kyrgyzstan Country Programme 2012-2016, Kori Udovički, Regional Director, dd. 11 January 2012, the project will be executed by the UNDP. The project organization structure (summarized in the figure below) will consist of a Project Board, Project Assurance, and a Project Management Unit (PMU). Roles and responsibilities are described below.



Project Board: The Project Board (PB) will be responsible for making management decisions for the project, in particular when guidance is required by the Project Coordinator. It will play a critical role in project monitoring and evaluations by assuring the quality of these processes and associated products, and by using evaluations for improving performance, accountability and learning. The Project Board will ensure that required resources are committed. It will also arbitrate on any conflicts within the project and negotiate solutions to any problems with external bodies. In addition, it will approve the appointment and responsibilities of the Project Coordinator and any delegation of its Project Assurance responsibilities. Based on the approved Annual Work Plan (AWP), the Project Board can also consider and approve the quarterly plans and approve any essential deviations from the original plans. The project will be subject to Project Board meetings at least twice every year. The first such meeting will be held within the first 6 months of the start of full implementation. At the initial stage of project implementation, the PB may, if deemed advantageous, wish to meet more frequently to build common understanding and to ensure that the project is initiated properly.

To ensure UNDP's ultimate accountability for project results, Project Board decisions will be made in accordance with standards that shall ensure management for development results, best value for money, fairness, integrity, transparency, and effective international competition. In case consensus cannot be reached within the Board, the final decision will rest with the UNDP Project Coordinator.

Members of the Project Board will consist of key national government and non-government agencies, and appropriate local level representatives. UNDP will also be represented on the Project Board, which will be balanced in terms of gender. Potential members of the Project Board will be reviewed and recommended for approval during the Project Appraisal Committee (PAC) meeting. The Project Board will contain three distinct roles:

- *Executive Role*: This individual will represent the project "owners" and will chair the group. It is expected that the

Ministry of Health will appoint a senior official to this role who will ensure full government support of the project.

- *Senior Supplier Role*: This requires the representation of the interests of the funding parties for specific cost sharing projects and/or technical expertise to the project. The Senior Supplier's primary function within the Board will be to provide guidance regarding the technical feasibility of the project. This role will rest with UNDP-Kyrgyzstan represented by the Resident Representative.
- *Senior Beneficiary Role*: This role requires representing the interests of those who will ultimately benefit from the project. The Senior Beneficiary's primary function within the Board will be to ensure the realization of project results from the perspective of project beneficiaries. This role will rest with the other institutions (key national governmental and non-governmental agencies, and appropriate local level representatives) represented on the Project Board, who are stakeholders in the project.

Project Assurance: The Project Assurance role supports the Project Board Executive by carrying out objective and independent project oversight and monitoring functions. The Project Assurance role will rest with the Programme and Policy Analyst of UNDP CO.

A Project Implementation Unit (PIU) will be established under the UNDP Project Management Unit (PMU) comprising of permanent staff including a Project Coordinator (PC) and a Project Assistant. The PIU will assist the MoH and SAEPF in performing its role as implementing partner. The Project Coordinator has the authority to run the project on a day-to-day basis on behalf of the Implementing Partner within the constraints laid down by the Board. The Project Coordinator's prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost. The PC will be recruited in accordance with UNDP regulations and will be based in Bishkek. S/he will report to the UNDP Dimension Chief on Environment and Disaster Risk Management. The PC will be responsible for overall project coordination and implementation, consolidation of work plans and project papers, preparation of quarterly progress reports, reporting to the project supervisory bodies, and supervising the work of the project experts and other project staff. Under the direct supervision of the PC, the Project Assistant will provide programme support and be responsible for administrative and financial issues, and will get support from both UNDP CO and National PMU Operations units.

The PIU, following UNDP procedures on implementation of DIM projects, will identify national experts and consultants, and international experts as appropriate to undertake technical work. The national and international companies may also be involved in project implementation. These consultants and companies will be hired under standard prevailing UNDP procedures on implementation of DIM projects. The PC, Technical Consultant, and project experts will spend a large portion of their time in the field, and the PC will be ultimately responsible for liaison with communities engaged in the project. The UNDP Country Office and National PMU will provide specific support services for project realization through the "Programme Oversight and Support" and "Operations" Units as required.

VI. PROCUREMENT ARRANGEMENTS

UNDP is the principal recipient for the Global Fund in Kyrgyzstan, in this capacity it has previously assumed procurement for HCWM related supplies and technologies as part of GF activities in Kyrgyzstan.

To ensure that procurement practices are transparent, speedy and most cost effective, technologies and HCWM supplies to be supplied by the project will be procured through UNDP Copenhagen. Procurement will be based on technical specifications drawn up by the project team and the national working group on injection safety and management of HCW under the lead of the Ministry of Health.

Technology and HCWM supply specifications will be drawn up in a manner consistent with technologies and supplies procured as part of the previous Swiss Red Cross and Global Fund funded programmes. By relying on non-incineration technologies (VK-75 Russian made autoclaves) that have a proven track record, and for which national maintenance teams are in place and spare parts are available, maintenance costs can be kept low and continued operation of these technologies can be ensured beyond the duration of the project. Regular maintenance and capacity

for repair, in combination with budget allocation for HCWM, are the single most important aspects for the sustainability of these type of projects.

VI. MONITORING FRAMEWORK AND EVALUATION

The project team and the UNDP Country Office (UNDP-CO) supported by the Montreal Protocol/Chemicals Unit part of the Regional Coordination Unit (RCU) in Bratislava will be responsible for project monitoring and evaluation conducted in accordance with established UNDP and GEF procedures.

The Project Results Framework (PRF) provides performance and impact indicators for project implementation, along with their corresponding means of verification.

The following sections outline the principle components of the Monitoring and Evaluation (M&E) plan and indicative cost estimates related to M&E activities. The project's M&E plan will be presented to all stakeholders at the Project's Inception Workshop and finalized following a collective fine-tuning of indicators, means of verification, and the full definition of project staff M&E responsibilities.

Project start

A Project Inception Workshop will be held within the first 2 months of project start with those with assigned roles in the project organization structure, UNDP country office and where appropriate/ feasible regional technical policy and programme advisors as well as other stakeholders. The Inception Workshop is crucial to building ownership for the project results and for finalizing the annual work plan for the first year. The Inception Workshop will address a number of key issues including:

- Assist all partners to fully understand and take ownership of the project. Detail the roles, support services, and complementary responsibilities of UNDP CO and RCU staff vis-à-vis the project team. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference (ToR) for project staff will be discussed again as needed.
- Based on the project results framework and the four tracking tools, finalize the first annual work plan. Review and agree on the indicators, targets and their means of verification, and recheck assumptions and risks.
- Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements. The Monitoring and Evaluation work plan and budget should be agreed and scheduled.
- Discuss financial reporting procedures and obligations, and arrangements for annual audit.
- Plan and schedule Project Board meetings: Roles and responsibilities of all project organization structures should be clarified and meetings planned. The first Project Board meeting should be held within the first 12 months following the inception workshop.
- Prepare and share the Inception Workshop report with participants to formalize various agreements and plans decided during the meeting; this will be a key reference document.

Quarterly

- Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform.
- Based on the initial risk analysis submitted, the risk log shall be regularly updated in ATLAS.
- Based on the information recorded in Atlas, a Project Progress Report (PPR) can be generated in the Executive Snapshot.
- Other ATLAS logs can be used to monitor issues, lessons learned etc. The use of these functions will be a key indicator in the UNDP Executive Balanced Scorecard.

Annually

Annual Project Review/ Project Implementation Reports (APR/PIR): This key report will be prepared to monitor progress made since project start and in particular for the previous reporting period (30 June to 1 July). The APR/PIR combines both UNDP and GEF reporting requirements. The APR/PIR includes, but is not limited to, reporting on the following:

- Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative)
- Project outputs delivered per project outcome (annual)
- Lesson learned/good practice
- AWP and other expenditure reports
- Risk and adaptive management
- ATLAS QPR
- Portfolio level indicators

Periodic Monitoring through site visits

UNDP CO and the UNDP RCU will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also join these visits. A Field Visit Report/BTOR will be prepared by the CO and UNDP RCU and will be circulated no less than one month after the visit to the project team and Project Board members.

Mid-term of project cycle

The project will undergo an independent Mid-Term Evaluation at the mid-point of project implementation. The Mid-Term Evaluation will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency, and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation, and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The management response and the evaluation will be uploaded to UNDP corporate systems, in particular the UNDP Evaluation Office Evaluation Resource Center (ERC). The four GEF tracking tools will also be completed during the mid-term evaluation cycle.

End of Project

An independent Final Evaluation will take place three months prior to the final Project Board meeting in accordance with UNDP and GEF guidance. The final evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term evaluation, if any such correction took place). The final evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The Terminal Evaluation should also provide recommendations for follow-up activities and will require a management response, which should be uploaded to PIMS and to the UNDP Evaluation Office Evaluation Resource Center (ERC). The various GEF tracking tools will also be completed during the final evaluation.

During the last three months, the project team will prepare the Project Terminal Report. This comprehensive report will summarize the results achieved (objectives, outcomes, outputs), lessons learned, problems encountered and areas where results may not have been achieved. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's results.

Learning and knowledge sharing

Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums. The project will identify and participate, as relevant and appropriate, in scientific, policy-based, and/or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and

implementation of similar future projects. Finally, there will be a two-way flow of information between this project and other projects of a similar focus.

Table 9: Project Monitoring and Evaluation Plan and Budget

Type of M&E activity	Responsible Parties	Budget (USD)		Time frame
Inception Workshop (IW)	Project Coordinator, SAEPF, UNDP-CO, UNDP-GEF		3,000	Within first two months of project start up
Inception Report	Project Team, Project Board, UNDP CO		None	Immediately following IW
Tracking of logframe indicators at objective level	Project Coordinator and Project Technical Advisor		None	Start, mid and end of project
Tracking of logframe indicators at outcome level	Project Coordinator and Project Technical Advisor			Annually prior to APR/PIR and to the definition of annual work plans
PIR	Project Team, Project Board, UNDP-GEF		None	Annually
Project Board Meetings	Project Coordinator		None	Following IW and annually thereafter
Technical and periodic status reports	Project team		None	Frequency to be determined by Project team and UNDP-CO
Mid-term External Evaluation	Project team, Project Board, UNDP-GEF RCU, External Consultants (Evaluation Team)	National evaluators	1,000	At the mid-point of project implementation
		International evaluators	15,000	
Final External Evaluation	Project team, Project Board, UNDP-GEF RCU, External Consultants (Evaluation Team)	National evaluators	1,000	At the end of project implementation
		International evaluators	25,000	
Terminal Report	Project team, Project Board, External Consultant		None	At least one month before the end of the project
Audit	UNDP-CO, Project Team		5,000	As per FRR of UNDP
Visits to field sites	UNDP-CO, UNDP-GEF RCU, Government representatives	UNDP staff travel costs to be charged to IA fees	None	UNDP Staff travel at least yearly; government representatives as needed
TOTAL COST (Excluding project and UNDP staff time costs)			50,000	Not including travel costs for the IC

VII. LEGAL CONTEXT

This project document shall be the instrument referred to as such in Article 1 of the SBAA between the Government of the Republic of Kyrgyzstan and UNDP, signed on September 14th, 1992

UNDP as the Implementing Partner shall comply with the policies, procedures and practices of the United Nations safety and security management system.

UNDP agrees to undertake all reasonable efforts to ensure that none of the pproject funds, UNDP funds received pursuant to the Project Document, are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via hthttp://www.un.org/sc/committees/1267/aq_sanctions_list.shtml. This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.

VIII. AUDIT CLAUSE

The Audit will be conducted in accordance with UNDP Financial Regulations and Rules and applicable audit policies on UNDP projects.

IX. REFERENCES

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(UNDP/WHO/GEF, 2009) "*Guidance on Estimating Baseline Dioxin Releases for the UNDP Global Health Care Waste Project*" (Annex C). Available on-line at http://www.gefmedwaste.org/downloads/Dioxin%20Baseline%20Guidance%20July%202009%20UNDP%20GEF%20Project.pdf

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(Toktobaev, N., 2013) "*Interim Report on the Situation of HCWM in selected HCFs in Bishkek*" Available through UNDP Kyrgyzstan.

(Burov, T., 2013) "Report on the data collection and visit to the JSC "KWWF" demercurization factory". Available through UNDP Kyrgyzstan.

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(SRC, February 2013) "*Healthcare Waste Management in Rural Hospitals in Kyrgyzstan – Annual Report*." Available through the SRC in Kyrgyzstan.

(Emmanuel, J., 2006) "*Medical Waste Management in Bishkek, Kyrgyzstan*" Report Prepared for the Swiss Red Cross.

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ANNEX I: RISK ANALYSIS AND RISK MITIGATION MEASURERS

Risks/ Assumptions	Level	Mitigation measures
1. Unclarity of the roles and responsibilities of the two key ministries (Ministry of Health and the State Agency for Environmental Protection and Forestry) in aspects of HCWM resulting in no leadership, conflicting decisions, duplication, or slow implementation of project components.	M	All project stakeholders will be involved in the project's proposal planning phase during which their roles and responsibilities will be clarified and agreed upon.
2. Slow or no enhancement, adoption and implementation of national policies, plans and strategies (including guidelines and standards) on HCWM which are key in creating an enabling environment for replication of BAT/BEP across the country. Experiences from the UNDP/GEF project on PCB management showed that due to constant restructuring of the government, legislation was challenges to get approved in a timely fashion.	M	The project will support project stakeholders in reviewing and strengthening the national policy and regulatory framework with respect to HCWM, and as such influence and facilitate the creation of an enabling environment. "Den Sooluk" includes HCWM components, which implies that upon approval State funding will be allocated to address HCWM. In addition, this project, in close collaboration with the MoH, is bringing together different donors (SRC, CDC, GEF, WHO) to provide incremental funding to allow the government to implement HCWM activities envisaged for Bishkek, which will ensure approval of strategies and plans. The approach will be to develop a HCWM strategy and accompanying Action Plan which are fully based on activities that will certainly receive funding (as it is a tendency in Kyrgyzstan, not to approve any plan/strategy, if there is not funding to actually implement it).
3. Slow or poor implementation of BAT/BEP practices in healthcare facilities, related infrastructures, technologies, mercury phase-out, and/or training programs.	M	MoUs with HCFs will outline responsiblities and timelines. The Component 4 evaluation will identify problems and recommend improvements (e.g. the midterm review will evaluate implementation of the "first phase", and make recommendation for implementation of the "second phase"). The evaluation and technology allocation formula will also incentivize healthcare facilities to implement project activities successfully and efficiently considering HCFs that have best and fastest institutionalized best practices wil be prioritized.
4. Technology procurement beset by delays, inadequate equipment, wrong specifications, lack of transparency, or non-compliance with UN bidding requirements and procedures.	L	The competitive bidding process will be centralized for all Bishkek facilities (to ensure economies of scale), will be transparent and adhere strictly to UN requirements and procedures. The project will ensure that technologies meet BAT/BEP and other standards. Considering UNDP is the principal recipient for the Global Fund in Kyrgyzstan, it has previously assumed procurement for HCWM related supplies and technologies for GF activities in Kyrgyzstan. To ensure that procurement practices are transparent, speedy and most cost effective, the project will ensure that procurement of technologies and HCWM supplies is undertaken by UNDP Copenhagen, based on technical specifications drawn up by the project and the national working group on injection safety and management of HCW lead by the Ministry of Health. Technology and HCWM supply specifications will be drawn up in a manner consistent with technologies and supplies procured as part of the previous Swiss Red Cross and Global Fund funded programmes. By relying on non-incineration technologies (VK-75 Russian made autoclaves) that have a proven track record, and for which national maintenance teams are in place and spare parts are widely available, maintenance costs can be kept low and continued operation of these technologies can be ensured beyond the duration of the project. Regular maintenance and capacity for repair, in combination with budget allocation for HCWM, are the single most important aspects for the sustainability of these type of projects.
5. Insufficient number of technology suppliers involved in the bidding and/or high purchase costs.	M	Ensuring sufficient outreach to vendors, also conducted within the scope of other UNDP/GEF/HCWM projects, will ensure sufficient vendors. Centralized high-volume procurement will help lower prices. Procurement facilitated by UNDP Copenhagen will ensure that long-term agreements with variuos international suppliers can be relied upon.
6. Little confidence of healthcare facilities and providers	L	The project will share technical specifications, standards, test results,

Risks/ Assumptions	Level	Mitigation measures
in non-incineration and mercury-free technologies, resulting in continued use of inadequate incinerators and mercury devices.		and experiences from the current UNDP GEF project. "Recipients facilities" will provide decision-makers at HCFs, national and regional evel with information on non-incineration and mercury-free technologies. Finally, the MoH, SDC and in particular the Republic Infection Control Center are currently strong advocates for non-incineration technologies.
7. Environmental risks, such as earthquakes as well as risks posed by landslides (exacerbated by deforestation and the conversion of flatlands to marshes in the southern region of the country) are of particular concern. These risks might impact the project itself as well as replication of project results, in the situation that non-incineration technologies are installed in areas prone to such risks.	L	As part of an I-RAT and facility baseline assessment, environmental/health risks posed by the management of healthcare waste at facility level will be assessed. These risks (in combination with a multitude of other aspects) will be considered as part of the allocation formula to ensure that non-incineration technologies are placed in secure locations.
8. The open burning of HCW at landfills or hospital sites creates greenhouse gas (GHG) emissions in the form of CO2, CH4, etc. In addition, the transportation of large amounts of HCW waste to landfill and dump sites, due to insufficient segregation practices, results in additional unnecessary GHG emissions. Finally, certain hospitals sell PVC containing medical plastics to recyclers, however inadequate thermal processes, both practiced at healthcare facilities and by recyclers, are sources of GHGs releases. All these aspects contribute to climate change risks.	L	The implementation of HCWM plans, training and BEP at HCFs will include components related to improved recycling rates and practices, based on a the results of a feasibility report on the recycling of medical wastes. Improved waste segregation and minimization practices, as well as improved recycling rates and practices will result in a significant reduction of waste volumes, and indirectly in GHG and dioxin emissions. Clusters will be served by treatment technologies installed on the premises of the most suitable facility within that cluster. In this manner, the most efficient set-up (minimum transportation requirements and optimum operation of centralized technologies) will enable to keep GHGs emission as a result of transportation and operation of technologies at a minimum and minimize costs. Non-incineration technologies to be installed, will be energy efficient and depending on the type of equipment selected, the use of renewable energy sources will be explored (in connection with climate change mitigation programmes implemented by municipalities in the project areas). Unrecyclable disinfected health-care waste, will be transported to the municipal landfill site, where two decentralized shredders will further reduce waste volumes and waste will be disposed of in a dedicate landfill space/cell to ensure that it's not burned in the open, further eliminating UPOPs and GHG emissions.
Overall Risk Rating	L	

ANNEX II: RESPONSIBILITIES OF NATIONAL PROJECT PARTNERS

Name of Entity	Description of Role at Nat. Level	Description of responsibilities in the project's implementation (*considered co-financing contributions*)
Ministry of Health	The Ministry is responsible for the development and implementation of health policies and regulations (including those pertaining to HCWM and Hg management in HCFs) and assumes responsibilities related to monitoring, control, regulation and standardization of HCFs as well as HCWM practices. In addition, the Ministry's Department of Drug and Medical Technology registers medical devices and drugs that are imported and distributed. The Ministry of Health's Preventive Medicine, is responsible for building the capacity of MoH staff related to hospital infection control and quality of medical service. The Republican Center for Infectious Control (RCIC) conducts workshops for decision makers (including training) and disseminates information on new trends and regulations and standards proposed by international bodies.	a. Project executing agency. b. Support the selection process of project healthcare facilities (HCFs) and a pilot zone in Bishkek as well as FAPS in Chui and/or Issyk-Kul Oblast. c. Provide guidance to the project team in the development of policy and regulatory activities (development of national strategies, standards, degrees, etc.) related to HCW and Hg management in the healthcare sector and subsequently support and lobby for their adoption. d. Provide guidance to the project on the implementation of BAT and BEP at selected HCFs and ensure allignment with the adopted HCWM model in Kyrgyzstan based on the SRC project. e. Ensure accessibility to HCFs by the project team and engagement of HCFs in the project's implementation. Facilitate dialogue regarding the zoning of HCFs, the responsibility of HCFs in the project and lobby for the development and signature of MoUs between the project and model HCFs f. Through the MoH Preventive Medicine Unit lobby with medical faculties and nursing schools for the inclusion of HCWM training and modules into existing curricula, and ensure the signing of MoUs between such training facilities and the project. g. At national level, dissemination of lesseons-learned and best practices will be led by the National Centre on HCWM and infection control.
State Agency for Environmental Protection and Forestry (SAEPF)	National environmental authority responsible for the development and implementation of policies and regulations pertaining to the environment. The agency has competence in (hazardous) waste management and has in the past supported multiple initiatives in the area of mercury management. The agency hosts the chemicals related MEA Focal Points.	h. Project executing agency. i. Provide guidance to the project team in the development of policy and regulatory activities (development of national actions plans, standards/guidelines, degrees, etc.) related to Hg management outside of the healthcare sector and subsequently support and lobby for their adoption. j. Support the training emergency response teams (Ministry of Emergencies) on how to respond to large Mercury spills. k. Guide the project in the training of staff involved in transportation of Mercury Waste. l. Conduct an assessment of potential Cost-Recovery Mechanisms for the disposal/treatment of Mercury containing products. m. Guide the project in identifying and assessing intermediate and long-term storage options for Mercury containing wastes. n. Advocate for the allocation of a cell at the new landfill site, exclusively for hazardous waste, which could also accept Mercury containing wastes or alternatively advocate for the installation of a Mercury decontamination facility at the future landfill.
SRC (Swiss Red Cross)	Since 2006 the Swiss Red Cross in collaboration with the Republican Center for Infectious Control (RCIC), has been implementing low-cost health care waste management (HCWM) and infection control (IC) models in hospitals in Kyrgyzstan's rural areas.	o. Provide co-financing to the project. p. Allow for the replication and use of the SRC HCWM model in Bishkek City. q. Provide input into the revision and updating of the National Strategy on HCWM and its Action Plan.
Green Cross / Ekois		a. Provide co-financing to the project through the Green Cross/NGO «Ekois» project «Reducing Adverse Effects of Medical Waste on Health and Security in Kyrgyzstan by Improving Health Care Waste Management».

		b. Share lessons-learned and best practices resulting from the support provided to the gynecological hospital in Bishkek, in particular experiences related to the budgeting of cost savings for future maintenance/replacement.
		c. Provide inputs and guidance to the 100 FAP pilot project.
Global Fund / UNDP	As part of a Global Fund project entitled "Promotion of the availability and quality of prevention, treatment, detection and care services for HIV-infected people among the most vulnerable population of the Kyrgyz Republic" HCWM equipment as well as HCWM technical assistance was provided. A second phase grant looks at expanding support and increasing capacity at HCFs supported in Phase I.	d. Provide co-financing to the project through the Global Fund (UNDP implemented) project entitled "Promotion of the availability and quality of prevention, treatment, detection and care services for HIV-infected people among the most vulnerable population of the Kyrgyz Republic"
		e. Ensure that information, lessons-learned and best practices resulting from the Phase I project are shared and applied in in the development of a HCWM system for the City of Bishkek.
		f. Ensure that if a Phase II Global Fund project will be approved, the GEF and Global Fund provide complementary support, avoiding overlap and ensuring that support is extended to all HCFs in Bishkek city.
UNICEF		g. Provide co-financing to the project through UNICEF programmes which aim to improve the quality of health services and infection control in maternity and children's healthcare facilities.
		h. Provide guidance to the project on HCWM, in particular with respect to the development of training for healthcare facility staff pertaining to infection control and HCWM as well as education modules on HCWM to be embedded in medical faculty and nursing school curricula.
WHO		a. Take on the implementation of the project at the rural level (FAPs) in partnership with Green Cross.
		b. Provide guidance to the project team in the development of policy and regulatory activities (in particular the national strategy on HCWM) and the implementation of the SRC HCWM model in Bishkek, ensuring allignment with the WHO BlueBook (2013) on the "Safe Management of wastes from healthcare activities).
EBRD/Bishkek Mayor's Office		a. Consider the allocation of a cell at the new landfill site, exclusively for disinfected HCW / or the installation of a centralized schredder.
		b. Consider the allocation of a cell at the new landfill site, exclusively for hazardous waste, which could also accept Mercury containing wastes or alternatively advocate for the installation of a Mercury decontamination facility at the planned engineered landfill.
Model Facilities (public healthcare facilities)	The project will work with public healthcare facilities located in Bishkek as well as 100 FAPs in Chui and Izzukul Oblast. The role, involvement and commitment of HCFs to the project is critical to	a. Sign an MoU with the project
		b. Allocate staff and staff time to conducing a detailed HCWM and Hg baseline assessments in the healthcare facility
		c. Ensure the establishment of a Waste Management Committee
		d. Assign HCWM responsibilities to staff
		e. Develop a HCWM Plan (including Hg management)
		f. Allocate sufficient staff and staff time for training purposes and the g. "Staff Preference Study"
		h. Make a commitment towards adopting procurement practices that exclusively procure Mercury-free medical devices.
		i. Allocate space for the installation of the non-incineration technology(ies), clean and "dirty" rooms, as well as storage areas.

ANNEX III: OVERVIEW OF CO-FINANCING AND SUPPORT LETTERS

Table 10: Status of co-financing at the time of project submission for CEO endorsement (co-financing letters have been submitted separately to the GEF)

Name of Entity	In-kind (US$)	Cash (US$)	Total (US$)
1. Swiss Red Cross (3,185,260 CHF)		3,425,011	
2. Ministry of Health	1,700,000		
3. Ekois (41,730 Euro)	56,698		
4. State Agency for Environmental Protection and Forestry (SAEPF)	900,000		
5. UNICEF	500,000		
6. Global Fund		416,400	
7. NGO "Ecological expertise" (SAICM GHS project)	34,000		
TOTAL	**3,190,698**	**3,841,411**	**7,032,109**

ANNEX IV: SUMMARY OF BISHKEK BASED HEALTH-CARE ORGANIZATIONS

№	Health Care Facility	Number of available autoclaves	Source of financing	Number of beds or visits	Volume of produced medical waste per day (kg)	Number of treated bucket per day by 1 autoclave	Volume of medical waste in one bucket	Treated volume of MW per 1 day by 1 autoclave	Total volume of treated waste her 1 day	Rest of non treated medical waste	Needs in additional autoclaves
1	Republican Clinical Hospital of Infectious Diseases*	2	Global Fund	400	62,4	20	2	41	82	-19,6	
2	National Hospital*	2	Global Fund	1075	167,7	20	2	41	82	85,7	1 (autoclave for 100 liters)
3	The National Center of Cardiology and Therapy	2	Global Fund	308	48,0	20	2	41	82	-34,0	
4	National Center for TB*	2	Global Fund	430	67,1	20	2	41	82	-14,9	
5	Kyrgyz Scientific Center of Hematology*	1	Global Fund	No Data	0,0	20	2	41	41	-41,0	
6	National Center for Maternal and Child	2	Global Fund	559	87,2	20	2	41	82	5,2	1 (autoclave for 80 liters)
7	National Surgical Center	1	Global Fund	242	37,8	20	2	41	41	-3,2	
8	Republican Centre for Addiction**	2	Global Fund	131	20,4	20	2	41	82	-61,6	
9	The National Centre of Oncology	1	Global Fund	420	65,5	20	2	41	41	24,5	1 (autoclave for 80 liters)
10	Republican Skin and Venereal Diseases**	0	(refused to receive autoclaves)	70	10,9	20	2	41	0	10,9	1 (autoclave for 80 liters)
11	Institute of Cardiac Surgery and Transplantation of Organs*	0	0	45	7,0	20	2	41	0	7,0	1 (autoclave for 80 liters)
12	National Center for Mental Health	0	0	600	93,6	20	2	41	0	93,6	1 (autoclave for 100 liters)
13	Maternity hospital number 1*	1	Global Fund	85	13,3	20	2	41	41	-27,7	
14	City Gynecology Hospital № 3*	1	Global Fund	30	4,7	20	2	41	41	-36,3	

15	City Perinatal Center*	1	Global Fund	230	35,9	20	2	41	41	-5,1	
16	City Clinical Hospital № 1*	1	Global Fund	60	9,4	20	2	41	41	-31,6	
17	Bishkek Research Center of Trauma and Orthopedics*	2	Global Fund	445	69,4	20	2	41	82	-12,6	
18	City Children TB № 2*	1	Global Fund	60	9,4	20	2	41	41	-31,6	
19	City TB Hospital**	1	Global Fund	220	34,3	20	2	41	41	-6,7	
20	Maternity hospital № 2**	1	Global Fund	150	23,4	20	2	41	41	-17,6	
21	City Children's Clinical b-ca emergency med. Help**	1	Global Fund	375	58,5	20	2	41	41	17,5	1
22	Hospital SSEP number 47	1	Global Fund	нет данных	0,0	20	2	41	41	-41,0	
23	Therapeutic recreation association with UDP KR	0	0	нет данных	0,0	20	2	41	0	0,0	
24	City Clinical Hospital № 6	0	0	195	30,4	20	2	41	0	30,4	1 (autoclave for 80 liters)
25	Road Hospital UKZHD	0	0	100	15,6	20	2	41	0	15,6	1 (autoclave for 80 liters)
26	City Clinical Hospital № 1	0	0	300	46,8	20	2	41	0	46,8	2 (autoclave for 80 liters)
27	KSC Human Reproduction	0	0	70	10,9	20	2	41	0	10,9	1 (autoclave for 80 liters)
28	City center of PBS**	1	Global Fund	220	34,3	20	2	41	41	-6,7	
29	Family Health Center № 5**	1	Global Fund	186	0,6	20	2	41	41	-40,4	
30	Family Health Center №14**	1	Global Fund	581	1,7	20	2	41	41	-39,3	
31	Family Health Center №10	0	0	153	0,5	20	2	41	0	0,5	1 (autoclave for 80 liters)
32	Family Health Center №11	0	0	220	0,7	20	2	41	0	0,7	1 (for 80 liters)
33	Family Health Center №7	0	0	95	0,3	20	2	41	0	0,3	1 (for 80 liters)
34	Family Health Center №8	0	0	348	1,0	20	2	41	0	1,0	1 (for 80 liters)
35	Family Health Center №9	0	0	351	1,1	20	2	41	0	1,1	1 (for 80 liters)
36	Family Health Center №4	0	0	343	1,0	20	2	41	0	1,0	1 (for 80 liters)
37	Family Health Center №19	0	0	266	0,8	20	2	41	0	0,8	1 (for 80 liters)
38	Family Health Center №6	0	0	292	0,9	20	2	41	0	0,9	1 (for 80 liters)
39	Family Health Center №15	0	0	292	0,9	20	2	41	0	0,9	1 (for 80 liters)
40	Family Health Center №18	0	0	126	0,4	20	2	41	0	0,4	1 (for 80 liters)
41	Family Health Center №16	0	0	211	0,6	20	2	41	0	0,6	1 (for 80 liters)

42	Family Health Center № 17	0	0	150	0,5	20	2	41	0	0,5	1 (for 80 liters)
43	Family Health Center №1	0	0	600	1,8	20	2	41	0	1,8	1 (for 80 liters)
44	Family Health Center №12	0	0	474	1,4	20	2	41	0	1,4	1 (for 80 liters)
45	Family Health Center №13	0	0	278	0,8	20	2	41	0	0,8	1 (for 80 liters)
46	Family Health Center №2	0	0	434	1,3	20	2	41	0	1,3	1 (for 80 liters)
47	Family Health Center №3	0	0	606	1,8	20	2	41	0	1,8	1 (for 80 liters)
48	Policlinic for students**	1	Global Fund	No Data	0,0	20	2	41	41	-41,0	
49	Policlinic for construction workers	0	0	No Data	0,0	20	2	41	0	0,0	1 (for 80 liters)
50	Policlinic of Internal Affairs	0	0	No Data	0,0	20	2	41	0	0,0	1 (for 80 liters)
51	Special policlinic	0	0	No Data	0,0	20	2	41	0	0,0	1 (for 80 liters)
52	Dental clinic №6	0	0	No Data	0,0	20	2	41	0	0,0	1 (for 80 liters)
53	Dental clinic №5	0	0	No Data	0,0	20	2	41	0	0,0	1 (for 80 liters)
54	Dental clinic № 3	0	0	No Data	0,0	20	2	41	0	0,0	1 (for 80 liters)
55	Dental clinic №2	0	0	No Data	0,0	20	2	41	0	0,0	1 (for 80 liters)
56	Dental clinic №4	0	0	No Data	0,0	20	2	41	0	0,0	1 (for 80 liters)
57	Republican AIDS Centre (RAC)**	1	Global Fund	No Data	0,0	20	2	41	41	-41,0	
58	Department of Sanitary Epidemiological Surveillance (SES)	1	M3	No Data	0,0	20	2	41	41	-41,0	
59	Department of Sanitary Epidemiological Surveillance – CITY BRANCH	1	M3	No Data	0,0	20	2	41	41	-41,0	
60	City AIDS Unit	1	M3	No Data	0,0	20	2	41	41	-41,0	
					1,082.1						

* Healthcare facilities indicated with a "*"were intended to function as a hub for the treatment of infectious healthcare waste as per table 10.
** Healthcare facilities indicated with a "**" were intended to function as a decentralized facility (exclusively treating their own waste, and not that of other satellites.

M3: autoclaves financed through the hospital budget of the Ministry of Health

Global Fund: autoclaves funded by the Global Fund to fight AIDS, Tuberculosis and Malaria through the Phase I project entitled "*Promotion of the availability and quality of prevention, treatment, detection and care services for HIV-infected people among the most vulnerable population of the Kyrgyz Republic*"

ANNEX V: BISHKEK CLUSTERS, SATELLITES AND DECENTRALIZED HCFS FOR HCW TREATMENT

Table 11: Intended Clusters and Hubs

№	Clusters	Name of Healthcare Facility
1	**Central Site**	**Republican Clinical Hospital of Infectious Diseases (Tolstoy 70)**
1.1	Satellite	UCM number 10 (Bokonbaeva 61)
2	**Central Site**	**National Hospital (T.Moldo 1)**
2.1	Satellite	NTsOMiD 2nd base (hospital) (T.Moldo 1a)
2.2	Satellite	UCM number 11 (Kiev 154)
2.3	Satellite	Clinic Builders (Manas 41)
3	**Central Site**	**Institute of Cardiac Surgery and Transplantation of organs (T. Moldova 3/1)**
3.1	Satellite	The National Center of Cardiology and Therapy (T.Moldo 3)
3.2	Satellite	Therapeutic recreation association with UDP KR (Kiev 110)
3.3	Satellite	UCM number 7 (Togolok Malden 3)
3.4	Satellite	Clinic of Internal Affairs (Moscow 102)
4	**Central Site**	**Maternity hospital number 1**
4.1	Satellite	UCM number 8 (Chui 40)
5	**Central Site**	**City Gynecology Hospital № 3 (street Logvynenko 30)**
5.1	Satellite	UCM number 4 (street Ibraimova 181)
5.2	Satellite	UCM number 9 (street Kurmanjan Datka and 109)
6	**Central Site**	**City Perinatal Center (street Suerkulova 1/1)**
6.1	Satellite	KSC Human Reproduction (district 7. 14/1)
6.2	Satellite	dental clinic number 5 (street Pudovkina 83)
6.3	Satellite	UCM number 19 (MRN 5, 16/1)
6.4	Satellite	UCM number 6 (Zhukeeva Pudovkina-75)
6.5	Satellite	UCM number 15 (MRN 6/1)
7	**Central Site**	**National TB Center (ul.Ahunbaeva 92)**
7.1	Satellite	National Cancer Centre (Ahunbaeva 92)
7.2	Satellite	National Center for Mental Health (St. Baitik Batyra 1)
7.3	Satellite	City Clinical Hospital № 6 (street Dzhantosheva 117)
7.4	Satellite	UCM number 18 (Tynystanov 1)
8	**Central Site**	**Kyrgyz Scientific Center of Hematology (Shakirov 4)**
8.1	Satellite	dental clinic number 3 (street Ahunbaeva 125)
8.2	Satellite	UCM number 16 (street Panfilov 4)

9	**Central Site**	**National Center for Maternal and Child Welfare (street Ahunbaeva 190)**
9.1	Satellite	National Surgical Center (St. 3-Line 25)
9.2	Satellite	UCM number 2 (street 3-Line 25)
9.3	Satellite	UCM number 17 (Chon-Arik, st. Semetei 151)
10	**Central Site**	**City Clinical Hospital № 1 (street Fucik 15)**
10.1	Satellite	UCM number 3 (Joly Jibek 495)
10.2	Satellite	Dental Clinic 6 (street Tynystanov 171)
10.3	Satellite	UCM number 1 (Fucik 15)
11	**Central Site**	**Bishkek Research Center of Trauma and Orthopedics (street Krivonosov 206)**
11.1	Satellite	UCM number 12 (Krivonosov 206)
11.2	Satellite	ZBH (street Krylova 35)
12	**Central Site**	**City Children tuberkul.b the sample number 2 (Young Guard-71)**
12.1	Satellite	Dental Clinic 2 (street Kiev 165)
12.2	Satellite	UCM number 13 (250 Toktogul street)

Table 12: Intended Decentralized HCFs

1	UCM number 5 (street Kolbaeva 42)
2	National Addiction Centre (street Suerkulova 1)
3	Clinic students (street Ryskulov 8)
4	UCM number 14 (street Namangan 28)
5	Republican Skin and Venereal Diseases
6	City TB Hospital (Elebesova 211)
7	Maternity hospital № 2 (Moscow 225)
8	RAC
9	City center of PBS (Toktogul 62a)
10	City Children's Clinical b-ca Emergency Medical Assistance (street Baitik batyra 8a)

ANNEX VI: OVERVIEW OF HCWM RELATED LAWS, REGULATIONS AND DEGREES

Table 13: List of legal acts in the field of health care waste management

№	Name of the document	Year signed
1.	The Basel Convention "On the Control of Transboundary Movements of Wastes and their Disposal"	1989, ratified by the Kyrgyz Republic in 1996
2.	The Stockholm Convention on Persistent Organic Pollutants	Ratified by the Kyrgyz Republic in 2006
3.	Law "On Environmental Protection"	June 16, 1999 number 53
4.	Law "On the Protection of the health of citizens in the Kyrgyz Republic"	From 09.01.2005, N6, additions and changes to the wording of the Laws of KR dated 28.12.2006 № 224, 17.02.2009 № 53, 17.04.2009 № 129
5.	Law "On the sanitary-epidemiological welfare of the population"	June 26, 2001 number 60
6.	The Law of the Kyrgyz Republic "On the basis of technical regulation in the Kyrgyz Republic"	On May 22, 2004 N 67 Revised on November 16, 2009 N 299, of 16.11.09, the number 299, 14.10.2011, number 171
7.	Law "On Production and Consumption"	On November 13, 2001 N 89
8.	Law "On Environmental Impact Assessment"	June 16, 1999 number 54
9.	The Law of the Kyrgyz Republic "On Licensing"	1996.
10.	Law "General Technical Regulations on environmental safety in the Kyrgyz Republic"	May 8, 2009 № 151
11.	Law "On Water"	January 14, 1994 № 1422-XII
12.	Law "On protection of atmospheric air"	June 12, 1999 number 51
13.	Law "On the rate of payment for environmental pollution (emissions, discharges of polluting substances and waste"	March 10, 2002 number 32
14.	Law "On radiation safety of the population of the Kyrgyz Republic"	June 17, 1999 number 58
15.	Law "On Energy Saving"	July 7, 1998 number 88
16.	Law "On renewable sources of energy"	December 31, 2008 № 283
17.	Law "General Technical Regulations" On the safe operation and utilization of machines and equipment "	December 29, 2008 № 280
18.	Code of the Kyrgyz Republic on administrative responsibility	1998
19.	Regulations of the State Sanitary and Epidemiological Service of the Kyrgyz Republic,	Approved by the Government of the Kyrgyz Republic December 10, 2001 number 778;
20.	"Instructions for infection control in health care organizations of the Kyrgyz Republic"	Resolution of the Government of the Kyrgyz Republic of 12.01.2012 № 32
21.	Health facilities: sanitary requirements for the placement, device, equipment, and operation of hospitals, maternity hospitals and other health care hospitals "SanPin 2.1.3.003-03.	2003
22.	Sanitary regulations on radiation safety personnel and the public during transportation of radioactive materials (substances) SanPin 2.6.1.001-03	2003
23.	Hygienic requirements for the placement and disposal of waste production and consumption. Sanitary protection of the soil. SanPin 2.1.7.010-03;	2003
24.	Sanitary Regulations contents of populated areas. Sanitary standard 4690-88;	1988 г
25.	Sanitary Regulations setting up and maintaining landfills for municipal solid	1983

	waste. № 2811-83;	
26.	Hygienic requirements for placement and maintenance of the device cemeteries, buildings and structures funeral purposes. SanPin 2.1.008-03;	2003
27.	Sanitary Regulations "stacking order, transportation, disposal and dumping of toxic industrial waste» № 3183-84, 1985.	1985
28.	SanPin 2.1.1.006-03 Sanitary protection zones and sanitary classification of enterprises, buildings and other facilities.	2003
29.	SanPin 2.1.6.009-03 Hygienic requirements to ensure the quality of ambient air in populated areas.	2003
30.	GN 2.2.5.1313-03 Maximum permissible concentration (MPC) of harmful substances in the air of the working area.	2003
31.	GN 2.1.6.1338-03 Maximum permissible concentration (MPC) of pollutants in the ambient air of residential areas	2003
32.	GN 2.2.5.1314-03 Exposure Limits (Shoes) of hazardous substances in workplace air	2003
33.	GN 2.1.6.1339-03 Exposure Limits (Shoes) of pollutants in the air of residential areas	2003
34.	MOH Order number 492 of 14.11.2005 "On improvement of post-mortem services in the Kyrgyz Republic."	Approved. Ministry of Justice of 08.12.2005 № 252
35.	MOH Order number 531 of 27.09.2012 "On the implementation of a safe system of medical waste management in health care organizations in Bishkek and Osh" (requirements for design point autoclaving MO)	2012
36.	MOH Order number 59 dated 18.02.2013 "On the improvement of safe medical waste management in health care organizations" (5 approved SOPs for hazardous potentially infectious medical waste).	2013

Source: MD Djumalieva GA, Republican Infection Control Centre, Ministry of Health

ANNEX VII: INFORMATION ON THE IMPORTATION OF MEDICAL DEVICES INTO THE KYRGYZ REPUBLIC (2011 & 2012)

Table 14: Number of imported medical devices in the year 2011

№	Manufacturing plant	Country	Syringes [1]	Systems [2]	Thermometers	Other medical devices [3]
1	Yu Shyn	China	29020300	4395500		
2	Jiangxi Hongda Medical Equipment Ltd.	China	11177760	590000		
3	Zhejiang Huafu Medical Equipment Co.Ltd	China	6620000			
4	Anhui Kangda Medical prodacts Co., Ltd	China	3753600	26500		
5	Chengdu Xinjin Shifeng Medical Apparatus&Instr. Co	China	1656600	329000		
6	Huadu Medical Products Ltd	China	1102000	135000		
7	Becton Dickinson S.A.Ispaniya		840000			
8	Shandong Zibo Shanchuan Medical Instrument Co.,Ltd	China	796600	600		
9	Chanchen Company for the production of honey's tools	China	567000			
10	Wuxi Medical Instrument Factory	China	3000		57420	
11	Zhejiang Yusheng Medical Instrument Co.,Ltd	China		62000		
12	Kahotest Citotest Labware Manufacturing Co Ltd	China			108	
13	Zhoushan Tongxin Instruments Co.Ltd	China			17200	
14	synthesis of	Russia		102600		
15	MiniMed Ltd.	Russia			350	
16	Steklopribor Ltd.	Russia			129	
17	Termopribor of	Russia			108474	
18	Scan Global Logistics,	Denmark	39600			
19	Apexmed International B.V.	Netherlands	190			
20	SFM Hospital Prodacts Gmbh	Germany		9000		
21	Medica project Ltd	United Kingdom			19440	
22	**Total**		**55576650**	**5650200**	**203121**	**536930**

Source: Database of the Department of Drug and Medical Technology from the Ministry of Health.

[1] Syringes: Disposable syringes

[2] Systems: disposable devices for transferring liquids and blood

[3] Other medical devices: Disposable medical products made of flexible plastic (probes, catheters of various types)

Table 15: Number of imported medical devices in the year 2012

№	Manufacturing plant	Country	Syringes [1]	IV Systems [2]	Thermometers	Other medical devices [3]
1	Yu Shyn	China	35371200	5862500		
2	Jiangxi Hongda Medical Equipment Ltd.	China	12304220	1082985		
3	Chengdu Xinjin Shifeng Medical Apparatus & Instr. Co	China	2036400	200200		
4	Beijing Fornurse Medical Equipment Co., LTD	China	2000000	20000		
5	Jiangsu Jichun Medical Devices Co., Ltd	China	1550300			
6	Huadu Medical Products Ltd	China	1045200	134000		
7	Apexmed International B.V.	Netherlands	516			
8	synthesis of	Russia		45900		
9	Termopribor of	Russia			83904	
10	Wuxi Medical Instrument Factory	China			26080	
11	Zhoushan Tongxin Instruments Co.Ltd	China			5500	
12	MiniMed Ltd.	Russia			550	
	Total		**54307836**	**7345585**	**116034**	**1066455**

Source: Database of the Department of Drug and Medical Technology from the Ministry of Health.

[1] Syringes: Disposable syringes

[2] Systems: disposable devices for transferring liquids and blood

[3] Other medical devices: Disposable medical products made of flexible plastic (probes, catheters of various types)

ANNEX VIII: IMPORT AND WASTE GENERATION RATES FOR HG CONTAINING LIGHT SOURCES

The State Customs Services keeps track of import data while the The State Agency for Environment Protection and Forestry (SAEPF) obtains hazardous waste related data on a yearly basis from large enterprises

According to data of the State Customs Service (RCC ref. № 29-9-9/1099) obtained on 10.10.2013, the number of imported mercury containing discharge lamps in 2012 was **1,524,257** units (equivalent to ~135.22 tons). During the first 8 months of 2013, **395,075** Mercury containing discharge lamps were imported (equivalent to ~ 55.08 tons).

The State Agency for Environment Protection and Forestry (SAEPF) obtains hazardous waste related data on a yearly basis from large enterprises. In table X are presented the results from this data collection effort for the years 2010 – 2012).

Table 16: Fluorescent and other mercury-containing waste in tons (2010, 2011, 2012)

Year	Quantity of Waste at the beginning of the year [tons]	Quantity of waste accumulated during the year [tons]	Quantity of waste treated at JSC "KWWF" for neutralization [tons]	Quantity of Waste at the end of the year [tons]	Quantity of waste present at enterprises at the end of the year [tons]
2010	7,428	0,634	0,010	8,052	2,743
2011	8,052	0,767	1,334	7,485	3,506
2012	7,485	1,690	0	9,175	4,067

Source: Report on the data collection and visit to the JSC "KWWF" demercurization factory (T. Burov, 2013).

As the table shows the percentage of mercury-containing waste is increasing every year. From 2010 to 2011 by 21 %, and from 2010 compared to 2012 by 67 %.

Table 17: Fluorescent and other mercury-containing waste in pieces (2010, 2011, 2012)

Year	Quantity of Waste at the beginning of the year [pieces]	Quantity of waste accumulated during the year [pieces]	Quantity of waste treated at JSC "KWWF" for neutralization [pieces]	Quantity of Waste at the end of the year [pieces]	Quantity of waste present at enterprises at the end of the year [pieces]
2010	35 204	3005	47	38209	13 000
2011	38 161	3635	6322	35474	16 616
2012	35 474	8100	0	43 483	19 275

Source: Report on the data collection and visit to the JSC "KWWF" demercurization factory (T. Burov, 2013).

Table 5 indicates that on a yearly basis the city of Bishkek generates 4914 pieces (~ 1.04 tons) of spent fluorescent and other mercury-containing lamps. These are mostly stored on the premises of enterprises and business entities. At the end of 2012 the amount of spent Mercury containing lamps had accumulated to 43,483 units (~ 4.07 tons), of which only a small portion (6369 pieces) was treated at a demercurization facility on the premises of the enterprise "KWWF". It is expected, that if this trend continues, by the year 2016 the city of Bishkek will have in interim storage approximately 63,139 pieces (~ 8.23 tons) of spent fluorescent and other mercury-containing lamps.

The difference between import data as compared with the spent lamps accumulated on enterprise premises (resulting from statistical reports) indicates that most mercury-containing lamps are discarded along with regular municipal waste.

Until 2011, on the premises of JSC "KWWF" a demercurization facility was operating. In 2011 it was shut down as the territory on which the facility was located was sold. Subsequently the demercurization equipment was disassembled. When still in operation, the facility decontaminated Mercury containing lamps for businesses, treating approximately 16,000 bulbs a year. The plant used a hydrometallurgical method, which consisted of a tank (which could hold 600 bulbs at once) and a crushing device that would be lowered into a tank filled with the bulbs and a chemical mixture for neutralization (Nitric acid 96 %, ferric chloride; Crystalline iodine; Yodit potassium; Potassium permanganate). After 12 hours the solution would be drained and discarded in the regular sewerage system, while the decontaminated bulbs were taken to the Bishkek dump. However studies show that mercury sulfide, produced during the demercurization is an unstable compound. When released to the environment mercuric sulfide is easily converted to sulfate, contaminating surface and ground water. Based on the facility visit and the report prepared (T. Burov, 2013) as part of this project's PPG phase, it was recommended that the facility would not be reinstituted, and instead a proper Mercury decontamination facility should be used. However the funding for this type of equipment cannot be covered under this project and the Government of Kyrgyzstan/SAEPF should consider developing and submitting a GEF project for this purpose.

ANNEX IX: SUMMARY OF SWISS RED CROSS EXPERIENCE IN THE IMPLEMENTATION OF A HCWM MODEL AND ITS REPLICATE IN RURAL HOSPITALS IN THE KYRGYZ REPUBLIC (J. EMMANUEL, 2013)

The Swiss Agency for Development and Cooperation (SDC) mandated the Swiss Red Cross (SRC) to develop a health care waste management (HCWM) model and to replicate it in rural hospitals in the Kyrgyz Republic.

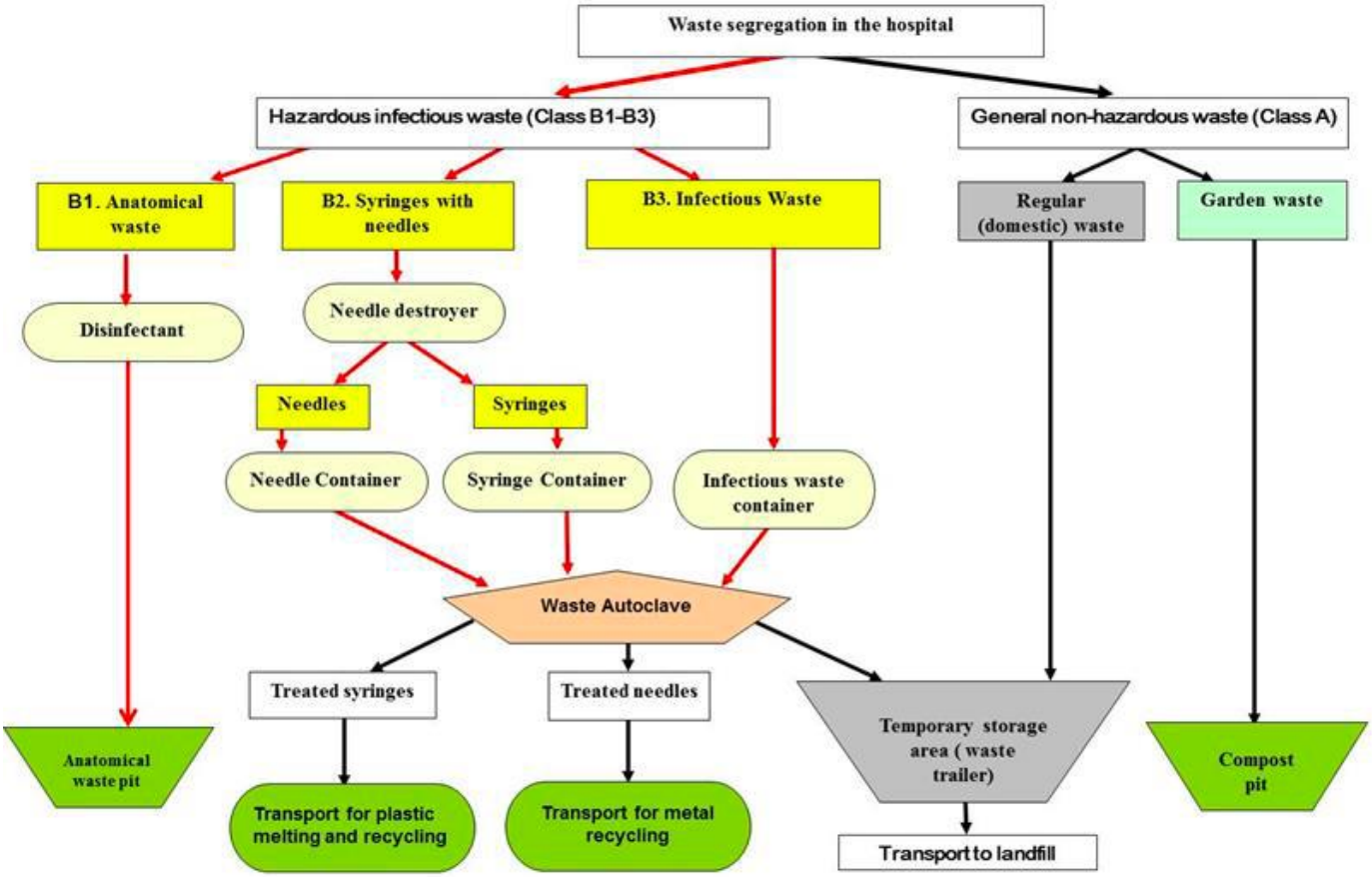
The Swiss Red Cross in collaboration with the Republican Center for Infection Control developed a HCWM model that uses needle destroyers, autoclavable enamel-coated metal containers, and an autoclave as the treatment technology. Infectious wastes are segregated at the point of generation in the enamel containers.

Sharps wastes from injections are first destroyed using mechanical needle cutters or destroyers immediately after an injection. The needle destroyer cuts the needle at the hub, allowing the needle to fall into an enclosed cup. The plastic part is then segregated by being placing in a separate enamel container. All enamel containers are labeled with the international biohazard symbol, the type of waste, the department that produced the waste, and a number.

Laminated posters are placed in strategic areas to remind health workers of proper segregation procedures. When the enamel containers are 3/4th full or at least every day, the enamel containers are covered with a lid affixed by a clip and transported to the autoclave room. When the needle destroyer cup is 3/4th full, it is closed and also brought to the autoclave room where the needles are carefully transferred to an enamel container. The infectious wastes including needles and plastic syringes are treated in the autoclave. After treatment, the plastic syringe parts are stored in sacks and sold to recyclers for re-melting into other products. In hospitals near metal recyclers, the treated needles are stored in metal drums and sold to the recyclers for melting. The rest of the treated waste is placed in plastic bags and stored in trailers along with regular wastes, which are subsequently hauled to a landfill. The trailer is under a shed next to cement pits for anatomical waste, and both the trailer and the pits are surrounded by a fence with a locked gate and warning sign.

Anatomical and placenta wastes are collected in hard plastic or enamel containers, disinfected with calcium hypochlorite, and then deposited in the secure pits to decompose. Empty glass ampoules and vials are collected in boxes and recycled where possible. Vegetable and garden wastes are placed in compost pits. The overall HCWM model is summarized in the schematic below.

Figure 2: Swiss Red Cross Approach to HCWM in rural hospital (schematic)



The mechanical needle destroyer is of good quality with a breakage rate of only 2% in seven years based on data from one hospital. The autoclave is a gravity-displacement Russian-built VK-75 autoclave which is affordable, familiar to the staff, compact, durable, and well-constructed with an internal chamber made of stainless steel and an internal boiler. One hospital operates a 29-year old VK-75 autoclave that was refurbished in 2006 and seems to be excellent condition.

Equipment life of the autoclave is expected to be 20 to 30 years with good maintenance. The autoclave treatment process involves multiple pressure pulses wherein steam is flushed through a porous metal filter. These steam flushing cycles remove air and result in good steam penetration as shown by tests wherein temperature was measured by thermocouples buried in the waste. The autoclave process exceeds the international STAATT criteria[36] by ten times or higher as shown by microbiological tests using Geobacillus stearothermophilus spores.

As part of the system, each hospital has a Safety & Quality Committee that oversees HCWM and related activities in the facility. The committee periodically reviews HCWM procedures, develops the budget, monitors activities, and implements training workshops. The infection control specialist and epidemiology specialist function as HCWM advocates in the hospital. They report a change in the mindset of health workers and a greater appreciation of the hazards of health care waste and the importance of HCWM among the staff.

[36] State and Territorial Association on Alternate Treatment Technologies (STAATT) report establishing a framework or guideline that defines medical waste treatment technology efficacy criteria and delineates the components required to establish an effective state medical waste treatment technology approval process. http://www.epa.gov/osw/nonhaz/industrial/medical/publications.htm

The HCWM model has all the major components of a good system: waste minimization (including inventory control of medicines, reusable containers, recycling, and composting), segregation, durable leak-proof containers, labeling and signage, safe collection and transport, use of personal protection equipment, emergency kits for accidental exposure to infectious waste, proper storage of waste, safe management of sharps and anatomical wastes, clear hospital policies, written HCWM guidelines, a committee and advocates to promote HCWM, regular training, documentation, record-keeping, monitoring and continuous improvement, and the allocation of human and financial resources.
The I-RAT scores of the six hospitals range from 92 to 97 out of a total of 100 points. These are high scores compared to those of many low- and middle-income countries. The HCWM system developed in Kyrgyzstan is outstanding and can serve as a model for other countries. Because of the project, Kyrgyzstan is well ahead of many developing countries in its management of health care waste.

By installing 119 HCWM systems and sharing the treatment systems with Family Medical Centers, dental facilities, private clinics and some specialized hospitals in the area, the project has effectively covered all hospitals with 25 beds or greater (except for a few specialized hospitals) in all parts of the country except for Bishkek, corresponding to 67% of all hospital beds in Kyrgyzstan. The project was well conceived, designed, planned, and implemented by SRC. The cost per capita of the project amounts to 0.61 USD per covered population, about a third to a half of the cost per capita of similar projects in other countries.

While it is too early to determine the impact of the HCWM system on hospital-acquired infections and infection control in general, data from one hospital already shows a significant decrease in needle-stick injuries and cuts reported by health workers. The HCWM system also decreases the exposure of hospital staff to chemical disinfectants and makes their work easier by eliminating the need to prepare many batches of sodium hypochlorite solutions as required under the old system. This means that health providers can spend more time with their patients—a major advantage of the new HCWM system from the perspective of the nursing staff. The new system also ends the burning of waste and in doing so, eliminates the problem of staff exposure to toxic smoke and complaints by neighbors.

Most hospital directors have found that the new HCWM system reduces their costs and generates income. A survey of 30 hospitals shows an average annual cost savings of 50858 KGS due to the HCWM system or 33% savings compared to their costs before the project. Moreover, hospitals generate revenues from the sale of the recycled plastics and metals, amounting to 29140 KGS in the case of one hospital. On average, the HCWM costs account for 0.68% of the operating budgets of the hospitals, making HCWM affordable for the hospitals. An indication of the degree of ownership of the project by the beneficiaries is the co-financing in cash and in kind provided by the hospitals. As project funding has ended, the hospitals are now covering the costs of maintaining their HCWM systems. Many have entered into cost-sharing arrangements with other facilities thereby maximizing the use of the treatment system, expanding its coverage, and enhancing sustainability.

Specific evaluations of the six hospitals found some minor inconsistencies and recommendations are made to address them. Recommendations for the near future are also presented to the Ministry of Health regarding possible refinements of the HCWM model. Long-term recommendations and suggestions are offered to cover areas that were outside the scope of the project, such as the replication of the model with some changes in small rural health posts and in the city of Bishkek, and the management of hazardous chemical waste, pharmaceutical and cytotoxic waste, radioactive, and mercury wastes from hospitals.

The project has yielded indirect benefits including a national decree by the Ministry of Health which incorporated input developed through the project and new guidelines by the Medical Accreditation Commission that are based on guidelines developed through the project. Several hospitals on their own have hosted HCWM trainings and tours of their HCWM systems for other hospitals. By doing so, they are helping to raise awareness of the importance of HCWM among the hospitals not covered by the project and even hospitals outside the country.

The project has fulfilled its stated objectives and achieved the expected outcome and outputs. The project has remained relevant, was highly effective and efficient, resulted in direct and indirect benefits to the target beneficiaries and to the country, and has a high likelihood of being sustained well after project termination.

The development of an exemplary HCWM system by the project and its expansion throughout most of Kyrgyzstan has enhanced the protection of patients, health workers, the community, and the environment from the hazards of health care waste. The project serves as a good model for other developing countries.

ANNEX X: PRESSURE COOKERS AS AUTOCLAVES FOR SMALL HEALTH FACILITIES

In small rural hospitals and clinics where the amounts of health care waste are small and a VK-75 autoclave is cost prohibitive, the use of small pressure cookers as a practical and affordable version of an autoclave should be considered. Most small, commercial pressure cookers found in markets operate at 1 bar pressure, corresponding to about 121 degrees Celcius, the minimum temperature used in autoclaves. The pressure cooker could serve as the waste container itself (Recommendations from the SRC external project Review "(Emmanuel, J., 2013)).

The project should test locally available pressure cookers to check the pressure, determine the amount of water to be added, and specify how long to expose the waste to pressurized steam to reach the minimum disinfection levels. A combination of a needle destroyer and pressure cooker painted with the biohazard symbol is a practical approach. Assuming a cost of US$ 30 per pressure cooker and US$ 35 per needle destroyer plus US$ 15,000 for training and monitoring, it may be possible to train and equip all 1500 FOPs and FGPs with a viable HCWM system with a budget of about US$ 113500.

Recommendations on the use of pressure cookers as autoclaves for small rural facilities

1. The inside walls of the pressure cooker can be smeared with a light coat of cooking oil to prevent sticking of any soft plastics or coagulated blood in the waste. We have found that placing scrap paper on the bottom and sides also helps.
2. The pressure cooker is used as the container for healthcare waste, including cotton swabs, bandages, gloves, and plastic syringes after the needles have been removed by the needle destroyer. The biohazard symbol and a label can be drawn on the outside of the pressure cooker.
3. During use, the pressure cooker could be left open or loosely covered with the lid while healthcare waste is being accumulated.
4. When the container of the needle destroyer is 3/4th full, the needles can also be placed in an open metal can and put inside the pressure cooker for treatment.
5. At the end of the day, the technician weighs the pressure cooker and records the net weight of waste.
6. A Class 1 color-changing indicator is placed on the waste and a prescribed amount of regular water is poured into the pressure cooker. The lid is then placed securely following the manufacturer's instructions.
7. The pressure cooker is placed on a stove and heated. Most pressure cookers can be heated on electric, gas, charcoal, wood, or others stoves; check with the manufacturer to make sure their cooker can be used with the heat sources available in the small facilities. As much as possible, a high efficiency stove should be used if charcoal or wood are used in order to minimize fuel and air pollution. Designs of locally manufactured high efficiency stoves can be found in the Internet.
8. Once the pressure cooker starts releasing a continuous flow of steam, the technician records the time and reduces the heat to maintain a moderate but steady steam flow. (An excessive flow of steam is a waste of energy and could result in evaporating all the water. If the pressure cooker loses all its water, the pressure cooker can be seriously damaged.)
9. After the prescribed duration is reached, the heat source is turned off and the pressure cooker is allowed to cool. The lid should only be opened when the cooker is no longer pressurized.
10. Treated wastes such as gloves, bandages, etc. can be discarded with regular waste. Treated needles can be collected in a can and buried later in a small waste pit. If the facility uses a lot of injections, the plastic syringe and needles can be collected, stored, and recycled.
11. The color-changing indicator is retrieved and placed in the journal as a record of treatment.

Recommendations on the selection of pressure cookers as autoclaves

1. The pressure cooker should be the right size. Estimate the daily rate of generation of infectious waste in small facilities. A pressure cooker with a capacity of 4 to 8 liters could be sufficient.
2. The pressure cooker should operate at the standard pressure of 1 atmosphere (1 bar or 100 kPa gauge pressure or about 15 psig). This corresponds to $121^{\mathbf{o}}$C for saturated steam at sea level. Some pressure cookers have two or more settings. At least one of those setting should correspond to the standard 1 atm pressure. If the pressure cooker has multiple settings, technicians should be instructed to use the setting corresponding to the standard 1 atm pressure.
3. Most pressure cookers release steam through a spring-loaded steam release valve or through a nozzle with a pressure regulating weight on top. These types of pressure cookers are easier to monitor. Some modern pressure cookers use rising indicators, pop-up indicators, or locking indicators to let the user know that the set pressure has been reached, and some of these do not show an obvious release of steam. These modern types of pressure cookers are generally more expensive and may be harder to monitor.
4. Most pressure cookers have a hard rubber plug or overpressure relief valve to prevent excessive pressure in the pressure cooker. This is a good safety feature to have although it may add cost.
5. Some pressure cookers have an interlock to prevent the user from opening the lid while the cooker is under pressure. This is also a good safety feature but increases the price. Another option, which may be cheaper, is a quick-release valve that allows the user to let out any remaining steam in a known direction. Technicians should be instructed to point the pressure cooker in a safe direction and open the quick-release valve to make sure the cooker is depressurized before opening the lid.
6. Pressure cookers are made of stainless steel, heavy-gauge aluminum, or anodized aluminum. Some have copper-clad aluminum or silver-clad stainless steel at the bottom for even heat distribution. Handles are generally made of hard plastic such as phenolic resin. Some have an inside non-stick surface which adds costs. Pressure cookers use rubber gaskets (usually silicone) except for special cast aluminum pressure cookers, which do not require gaskets. One would expect stainless steel pressure cookers be more durable. Spare gaskets and pressure regulating weights (if used) should be provided with the pressure cooker.

Recommendations on the testing of pressure cookers as autoclaves

1. Determine the amount of water needed for different durations of steaming. This is done by placing 0.5 liters of water (for pressure cookers with spring-loaded release valves) or 1 liter of water (for pressure cookers with nozzles), heating the pressure cooker, allowing the cooker to steam for 10 minutes (measured after the start of the steady flow of steam), removing the pressure cooker from the heat source, cooling it rapidly with cold water, and then measuring how much water remains. Record how much water was used up. Estimate the amount of water needed for 20 minutes of steaming, then repeat the experiment with more water, and calculate how much water was actually used up. As a general rule, pressure cookers with spring-loaded release valves use about 0.5 liters for every 15 minutes of steaming, while pressure cookers with nozzles use about 1 liter for every 20 minutes of steaming. Note that steaming duration should begin only after the pressure cooker releases a moderate steady flow of steam.
2. Prepare batches of surrogate medical waste to simulate a typical composition and amount of waste generated in a small facility. The amount of each batch of surrogate waste should be such that the pressure cooker is 3/4th full.
3. Wipe a small amount of cooking oil on the inside surface of the pressure cooker and lay scarp paper in the bottom. Place a batch of surrogate waste on top of the paper in the pressure cooker. Add enough water for 20 minutes of steaming. Bury thermocouples in the bottom, middle and top of the waste and heat the pressure cooker. (Unless a wireless thermocouple is used, the thermocouple wires may have to exit through the gasket. Monitor the change in temperature with time. Repeat the experiment with new batches of surrogate waste for 30 minutes, 40 minutes, etc. Determine the steaming duration that ensures that the coolest part of the waste reaches $121^{\mathbf{o}}$C for >12 minutes (assuming D value of 3 at $121^{\mathbf{o}}$C for G. stearothermophilus).
4. Repeat the experiment using microbiological indicators (G. stearothermophilus at a minimum 10_4 concentration) to validate the steaming duration for the pressure cooker.

5. Calculate different steaming times for different elevations. Because the boiling point of water decreases $1^{\mathbf{o}}$C for every 294 meters altitude, compute recommended steaming times for towns and cities at different elevations. To do this calculation, one has to know (1) the D value at a given steam temperature and (2) the z value of the bacterial spore used as provided by the vendor of the microbiological indicator. Typical z values for G. stearothermophilus are between 7.6 to 8.3. See sample calculation below.

SAMPLE: Given Geobacillus stearothermophilus spores with a D value of 3 at $121^{\mathbf{o}}$C of steam (equivalent to 12 minutes for a 4 Log reduction at $121^{\mathbf{o}}$C) and z value of 8, calculate the time t needed to obtain a 4 Log reduction at an elevation of 800 meters.
Bishkek has an elevation of about 800 meters and would need about 26 minutes. On the other hand, Naryn has an elevation of 2044 meters, so a pressure cooker at the standard 1 atm pressure would need about 86 minutes of steaming in Naryn to achieve a 4 Log reduction of the bacillus spores with the D and z values given above.

ANNEX XI: EBRD INVESTMENT PLAN FOR THE CONSTRUCTION AND OPERATION OF AN ENGINEERED LANDFILL SITE IN BISHKEK

Further information on the project can be accessed through this link: http://www.ebrd.com/pages/project/psd/2013/41712.shtml

SCHEDULE 1 – INVESTMENT AND IMPLEMENTATION PROGRAMME

No	Description	Estimated contract value (EUR)	Financing by EBRD (EUR)	Financing by others				Contract type	Procurement method	Time schedule (mm/yy)		
				Financier	Amount (EUR)	Financier	Amount (EUR)			Tender invitation	Contract award	Contract completion
	Parts A, B and C - Capital investment											
1	Rehabilitation and construction of waste collection points - Part A	1,260,000	630,000	SSF	630,000		-	Works	Open	Oct-13	Dec-13	Mar-16
2	Waste containers (assorted) - Part A and Part C	2,690,000	1,300,000	SSF	1,390,000			Goods	Open	Nov-13	Jan-14	Jan-16
3	Waste collection trucks (assorted) - Part A and Part C	1,960,000	980,000	SSF	980,000			Goods		Nov-13	Mar-14	Mar-15
4	GPS monitoring devices/ system - Part A	120,000	120,000		-		-	Goods	Open	Dec-13	Mar-14	Mar-15
5	Route optimisation software and payment collection software - Part A	250,000	250,000		-		-	Goods	Open	Mar-14	May-14	Feb-15
6	Compactor and specialised equipment for the landfill - Part B	730,000	365,000		-	IFCA	365,000	Goods	Open	May-14	Aug-14	Aug-15
7	Closure of existing landfill and construction of new sanitary landfill including access road to new landfill (slice and package) - Part B of the Project	10,820,000	5,410,000		-	IFCA	5,410,000	Works	Open	Feb-14	May-14	Dec-16
8	Extension of electricity supply - Part B	150,000	150,000		-		-	Works	Open	Feb-14	May-14	May-15
9	Extension of water supply - Part B	150,000	150,000		-		-	Works	Open	Feb-14	May-14	May-15
10	Waste recycling and composting facilities - Part B	3,010,000	1,160,000		-	IFCA	1,850,000	Supply & Install	Open	Feb-15	May-15	Dec-16
11	Expansion and upgrade of green waste composting site - Part C	750,000	375,000		-	IFCA	375,000	Works	Open	Dec-14	Mar-15	Feb-16
	Front end fee	110,000	110,000		-		-					
	Total Capex	**22,000,000**	**11,000,000**		**3,000,000**		**8,000,000**					
	Part D - Technical cooperation											
1	Project Implementation and Procurement Support	800,000	-		-	IFCA	800,000	Consultancy	Competitive selection	Feb-13	Jun-13	Dec-16
2	Corporate Development, City Support and Stakeholder Participation Programmes	600,000	-	Czech Republic	600,000		-	Consultancy	Competitive selection (tied)	Feb-13	Jun-13	Dec-15
	Total TC	**1,400,000**	**-**		**600,000**		**800,000**					
	TOTAL	**23,400,000**	**11,000,000**		**3,600,000**		**8,800,000**					

GEF Outcome/Atlas Activity	Responsible Party/ Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	See Budget Note:
COMPONENT 1: Strengthening of the national regulatory and policy framework for healthcare waste management **(142,760 US$)**	Ministry of Health (MoH)	62000	GEF	71200	International Consultants	12 500	12 500	12 500	12 500	50 000	1
				71300	Local Consultants	9 000	9 000	0	0	18 000	2
				71400	Contractual services - Individuals	13 440	13 440	13 440	13 440	53 760	3
				71600	Travel	3 500	3 500	0	0	7 000	4
				74500	Miscellaneous	2 000	2 000	2 000	2 000	8 000	5
				75700	Training, Workshops and Conferences	1 500	1 500	1 500	1 500	6 000	6
					Sub-total GEF	**41 940**	**41 940**	**29 440**	**29 440**	**142 760**	
					Total Outcome 1	**41 940**	**41 940**	**29 440**	**29 440**	**142 760**	
COMPONENT 2: Implementation of Best Available Techniques (BAT) and Best	Ministry of			71200	International Consultants	30 000	30 000	20 000	20 000	100 000	7 & 17
				71300	Local Consultants	36 100	36 100	36 100	36 100	144 400	8
				71400	Contractual services - Individuals	13 440	13 440	13 440	13 440	53 760	9
				71600	Travel	15 000	15 000	15 000	15 000	60 000	10
				72100	Contractual services	32 500	32 500	32 500	32 500	130 000	11

Technologies (BAT) and Best Environmental Practices (BEP) for HCWM systems (**977,740 US$**)	Ministry of Health (MoH)	62000	GEF	72200	Equipment	72 200	50 100	48 000	43 000	213 300	12
				72300	Materials and Goods	40 000	40 000	40 000	40 000	160 000	13
				74200	Audio, Video & Print production costs	6 000	6 000	6 000	6 000	24 000	14
				74500	Miscellaneous		4 280	4 000	4 000	12 280	15
				75700	Training, Workshops and Conferences	20 000	20 000	20 000	20 000	80 000	16
					Sub-total GEF	**265 240**	**247 420**	**235 040**	**230 040**	**977 740**	
					Total Outcome 2	**265 240**	**247 420**	**235 040**	**230 040**	**977 740**	
COMPONENT 3: Implement Mercury Waste Management and Reduction Activities for the City of Bishkek (120,000 US$)	Ministry of Health (MoH) State Agency for Environment Protection and Forestry (SAEPF)	62000	GEF	71300	Local Consultants	0	4 500	4 500	0	9 000	17
				71600	Travel	0	0	3 500	3 500	7 000	18
				72300	Materials and Goods	0	89 000	0	0	89 000	19
				74200	Audio, Video & Print production costs	0	0	5 000	0	5 000	20
				75700	Training, Workshops and Conferences	5 000	5 000	0	0	10 000	21
					Sub-total GEF	**5 000**	**98 500**	**13 000**	**3 500**	**120 000**	
					Total Outcome 3	**5 000**	**98 500**	**13 000**	**3 500**	**120 000**	
COMPONENT 4: Monitoring, learning, adaptive feedback	Ministry of	62000	GEF	71200	International Consultants	0	15 000	0	25 000	40 000	22
				71300	Local Consultants	0	1 000	0	1 000	2 000	23
				71600	Travel	0	5 000	0	5 000	10 000	24

& evaluation. (55,000 US$)	Health (MoH)	62000	GEF	72100	Contractual services - Companies	3 000	0	0	0	3 000	25
					Sub-total GEF	**3 000**	**21 000**	**0**	**31 000**	**55 000**	
					Total Outcome 5	**3 000**	**21 000**	**0**	**31 000**	**55 000**	
Project Management (129,500 US$)	Ministry of Health (MoH)	62000	GEF	71400	Contractual services - Individuals	11 520	11 520	11 520	11 520	46 080	26
				72100	Contractual services - Companies	8 660	8 660	6 800	6 800	30 920	27
				74100	Audit Fees	0	0	5 000	0	5 000	28
				74500	Miscellaneous	3 000	3 000	3 000	3 000	12 000	29
				74500	Direct Project Cost	8 680	11 000	7 750	8 070	35 500	30
					Sub-total	**31 860**	**34 180**	**34 070**	**29 390**	**129 500**	
					Total Management	**31 860**	**34 180**	**34 070**	**29 390**	**129 500**	
				PROJECT TOTAL		**347 040**	**443 040**	**311 550**	**323 370**	**1 425 000**	

Note	Description	Type
1	One international consultant (5 working weeks) who will support the finalization of the national strategy on Healthcare Waste Management (Activity 1.1.1), and the preparation of a Strategy for Anatomical Waste (Activity 1.1.2), and oversee, review and support the national legal consultant in preparing a numbers of standards and regulations as specified in the prodoc (Activity 1.2.1 - Activity 1.2.7)	International Consultant*
2	One national consultant (4 working months who will support the finalization of the national strategy on Healthcare Waste Management (Activity 1.1.1), and the preparation of a Strategy for Anatomical Waste (Activity 1.1.2) One national consultant (8 working months) to prepare a number of standards and regulations as specified in the prodoc (Activity 1.2.1 - Activity 1.2.7)	Lead Nat. Consultant (no. 1)
3	(35%) National Project Coordinator & (35%) National Project Assistant	National Consultant
4	Travel for International consultant (2 missions), made up of airfare, 6 days DSA and TE	International Consultant*
5	Other miscellaneous expenses	
6	Organization of Workshops/Round Tables for the review and endorsement of the 2 national strategies, as well as validation of the drafted standards and regulations.	
7	One international consultant (x working weeks) who will provide the necessary guidance to the national project team, on conducting baseline assessments (I-RATs) in each of the HCFs supported by the project (Activity 2.1.1); Support the national consultant in calculating for each HCF HCWM equipment, capacity and funding needs that are required for the first phase of the project (Activity 2.1.2); Support the updating of the Bishkek HCF “Treatment Zoning” plan (Activity 2.1.3); Support the national project team in developing training for HCF staff trained in best practices for HCWM (Activity 2.3.2);	International Consultant*

8	(split responibilities between two) Two national consultants to conduct baseline assessments (I-RATs) in each of the HCFs supported by the project (Activity 2.1.1); For each project HCF determine HCWM equipment, capacity and funding needs that are required for the first phase of the project (Activity 2.1.2); Update the Bishkek HCF "Treatment Zoning" plan (Activity 2.1.3); Develop and conduct training of HCF staff on best practices for HCWM (Activity 2.3.2) as specified in the prodoc; Draft technicial specifications for HCWM supplies and treatment technologies (Activity 2.3.4); Support the preparation of technicial specifications for HCWM supplies and treatment technologies (Activity 2.3.4); Prepare/revise Standard Operating Procedures (SOPs) for the procured technologies; Support HCFs in trouble shooting and ensure daily (in person) follow-up with project HCFs; Develop draft cost-sharing agreements for infectious waste treatment between service HCF and recipient HCF (Activity 2.3.7); Support the MoH, City Health Department and Tazalyk in determining optimum transportation routes (using GIS/Remote sensing) to reduce transportation costs (Activity 2.3.8). One national consultant (xx months) to revise/design training modules on HCWM and subsequently embedd these in the curricula of the Medical Academy as well as the Medical Facility of the Kyrgyz-Russian-Slavik University and potentially a number of nursing schools.	Nat. Lead HCWM Consultant (no. 1) Nat. Support HCWM consultant (no. 2) Nat. legal HCWM consultant (no. 3) Nat. tertiary eduction expert (no. 6)
9	(35%) National Project Coordinator & (35%) National Project Assistant	National Consultant
10	Travel for International consultant (2 missions), made up of airfare, 6 days DSA and TE; DSA for national consultants when they have to stay the night in the rural areas; travel expenses for participation of rural FAPs in joint training sessions.	
11	Hire a contractor to support 8 hospitals and 3 policlinics located in Bishkek in refurbishing waste storage locations and prepare locations for technology installation (110,000 US$)	Contractual services
12	This budget line only covers equipment more expensive than 5,000 US$, therefore only contains funding for autoclaves, which are on average a little over 6,000 US$, which would allow the project to procure approximately 30 autoclaves. The cost recovery amount for UNDP Copenhagen to undertake procurement of HCWM supplies and technologies (~ 4 %) will be charged to this budget line. Because there will be excessive traveling required in and outside of Bishkek to support on a daily basis the large number of project HCFs (> 100), it is more cost-efficient to purchase a vehicle that can be used by the national consultants and the project to undertake field visits, as these will take place on almost a daily basis. After the project comes to an end, the City Health Department could take over the vehicle and use it for the transportation of laboratory samples or anatomical waste.	Procurement through UNDP Copenhagen (4%)
13	This budget line only covers equipment that costs less than 5,000 US$ (also referred to as supplies). This budget line contains funding to provide 100 FAPs in rural areas (e.g. Chui or Issyk-Kul Oblast) with pressure cookers to treat small amounts of waste (40,000 US$), as well as funding for trailers/carts, needle destroyers, containers, personal protection gear, autoclave filters, etc. The cost recovery amount for UNDP Copenhagen to undertake procurement of HCWM supplies and technologies (~ 4 %)	

14	HCWM posters, educational materials, printing of training materials	
15	Other miscellaneous expenses	Local Consultant
16	Organization of training sessions for HCF staff on best HCWM practices (Activity 2.3.2) and the use of HCWM supplies and non-incineration technologies (Activity 2.3.2), and training of staff involved in transportation on the safe transportation and handling of Healthcare- and Mercury Waste (Activity 2.3.10)	
17	Two national consultant (5 working weeks) who will conduct/complete Hg baseline assessments for each project HCF (Activity 3.2.1 as part of the I-RATs, see Activity 2.1.1); support the development and implementation of a Mercury management and phase-out plans for each project HCF (included in the development of HCWM plans as part of Activity 2.3.2);; Conduct a study on staff preferences on cost-effective Hg-free alternatives at the model HCFs (Activity 3.2.5); These should be the same consultants as those above. Costs for these consultants are already included in Component 2. One local expert (legal/Hg management) who will develop a national action plan on the LCM of Hg containing products (Activity 3.1.1); Develop national standards/guidelines on the management, storage and disposal of mercury containing products developed for large public and private entities, as well as HCFs (Activity 3.1.2); Develop a MSP degree prescribing a phased approach/total phase-out for the use of Hg-containing thermometers (Activity 3.1.3); Transpose EU RoHS	Nat. Lead HCWM Consultant (no. 1) Nat. Support HCWM consultant (no. 2) Nat. legal Hg consultant (no. 4) Nat consultant Hg mgnt (no. 5)
18	Travel for international consultant (2 missions), made up of airfare, 6 days DSA and TE. Travel for national consultant has been included under Component 2	International Consultant
19	Procurement of Mercury-free medical devices	Materials and Goods
20	Engage a production company for a training video on "Cleanup and Temporary Storage of Mercury Waste for Health Care Facilities" in Kyrgyz and Russian and use it in training activities (Activity 3.2.4)	
21	Organization for training sessions for 300 medical personnel in the clean-up, storage and safe transport of Hg wastes (Activity 3.2.3); Support the introduction of Mercury-free thermometers at the project's model HCFs and train personnel of model facilities in their use (Activity 3.2.6); train emergency response teams (Ministry of Emergencies) on how to respond to	
22	International Consultants to undertake Project Mid-Term Review and Project Terminal Evaluation.	Contractual services
23	National Consultants to support the Project Mid-Term Review and Project Terminal Evaluation.	International Consultant
24	Travel for International consultant (2 missions), made up of airfare, 6 days DSA and TE	International Consultant
25	Inception Workshop	International Consultant

26	(30%) National Project Coordinator & (30%) National Project Assistant	National Consultant
27	Rent & Public Utilities for the Project Implementation Unit (PIU)	
28	Audit	
29	Other Miscellaneous expenses, security and etc	
30	UNDP cost recovery chrgs-Bills (Refer to Annex V – Letter of Agreement for Direct Project Services in the Annexes section) See also table left below	