



Empowered lives.
Resilient nations.

PART A

Healthcare Waste Management Toolkit for Global Fund Practitioners and Policy Makers

*Rational for
Environmental
Safeguard Policies
and Strategies*



Healthcare Waste Management Toolkit for Global Fund Practitioners and Policy Makers

Part A

Rational for Environmental Safeguard Policies and Strategies

All rights reserved ©2015 UNDP

February 2015

Other parts of the Toolkit:



Authors:

Jan-Gerd Kühling, Environment & Hygiene Consultant
ETLog Health GmbH, kuehling@etlog-health.de

Dr. Christoph Hamelmann, UNDP Regional Team Leader and Senior Advisor, HIV, Health and Development (Europe and the CIS, Arab States); Coordinator, Secretariat of the UN informal Interagency Task Team on Sustainable Procurement in the Health Sector (iIATT-SPHS); christoph.hamelmann@undp.org

This toolkit builds on lessons learned from a series of rapid assessments of healthcare waste management components of Global Fund grants on country level. Published are so far:



Disclaimer: The views expressed in the document are those of the authors and do not necessarily reflect the official opinion of the UNDP. Neither the UNDP nor any person acting on their behalf may be held responsible for the use which may be made of the information contained therein.

Design & Layout: Phoenix Design Aid A/S, Denmark

Table of Contents

1	Executive Summary	6
2	About Environmental Safeguarding	8
	2.1 What is environmental safeguarding.....	8
	2.2 Why environmental safeguarding.....	8
	2.3 Environmental safeguarding and risk assessment.....	10
	2.4 Waste and waste management for GF projects.....	10
	2.5 Human rights-based approach to healthcare waste management.....	11
	2.6 Recommended further reading.....	12
3	Environmental Risks from Global Fund HIV, TB and Malaria Projects	13
	3.1 Environmental risks of health programmes.....	13
	3.1.1 Risks from the manufacturing of medical products.....	13
	3.1.2 Risks from the transport of materials.....	13
	3.1.3 Risks from the usage and disposal of supplied materials.....	14
	3.2 Risks from healthcare waste.....	14
	3.2.1 Physical risks.....	14
	3.2.2 Chemical risks.....	14
	3.2.3 Biological risks.....	15
	3.3 Specific risks from Global Fund grants.....	16
	3.3.1 Examples of healthcare waste risks from HIV/AIDS Projects.....	16
	3.3.2 Examples of healthcare waste risks from TB projects.....	17
	3.3.3 Examples of healthcare waste risks from malaria projects.....	17
	3.4 Groups of persons at risk.....	18
	3.5 Recommended further reading.....	18
4	Strategies to Control Environmental Risks of Global Fund Programmes.....	19
	4.1 Integration into national waste management systems.....	19
	4.2 Health systems strengthening aspects.....	20
	4.3 Applied healthcare waste management strategies.....	20
	4.3.1 Waste prevention and reduction.....	20
	4.3.2 Logistic and disposal strategies.....	21
	4.3.3 Waste stream concept development.....	21
	4.4 Healthcare waste management funding by GF grant projects.....	21
	4.5 Recommended further reading.....	22
5	Annex	24

List of Figures

Figure 1: The three parts of the toolkit for environmental safeguarding of GF grants.....	6
Figure 2: Typical steps for a risk assessment	10
Figure 3: The waste management hierarchy	11
Figure 4: Steps for the development of waste stream concepts	21
Figure 5: Environmental safeguarding policy and strategy approach linked to a HCW management concept integrated into the GF New Funding Model Cycle	22

List of Tables

Table 1: Waste categories expected from selected product categories of GF projects....	16
--	----

Abbreviations

ACT	Artemisinin-based combination therapies	MSDS	Material Safety Data Sheets
ARV	Antiretroviral (medicines)	NFM	New funding model (of the GF)
CCM	Country Coordinating Mechanisms	NSP	National Strategic Plan
GAC	Grant Approvals Committee	POPs	Persistent organic pollutants
GF	Global Fund to Fight AIDS, Tuberculosis and Malaria	PPE	Personal Protection Equipment
GHG	Greenhouse gases	PR	Principal Recipient
HCW	Healthcare waste	PWID	People who inject drugs
HIV	Human immunodeficiency virus	QA/QI	Quality assurance/quality improvement
HSS	Health Systems Strengthening	RDT	Rapid diagnostic test
iIATT-SPHS	Informal Interagency Task Team for Sustainable Procurement in the Health Sector	SES	Social and Environmental Standards
IEC	Information, education, communication	SSI	Small Scale Incinerators
LCA	Life-cycle assessment	TB	Tuberculosis
LLIN	Long-lasting insecticide-treated nets	TRP	Technical Review Panel
MoH	Ministry of Health	UN	United Nation
		UNDP	United Nations Development Programme
		VPP	Voluntary Pooled Procurement
		WEEE	Waste Electrical and Electronic Equipment

Acknowledgements

We would like to acknowledge the valuable input of the following persons without whom this document would not have been possible:

- ▶ UNDP Istanbul Regional Hub: John Macauley.
- ▶ UNDP country offices in Bosnia and Herzegovina: Yuri Afanasiev, Arijana Drinic, Jasmina Islambegovic, Nesad Seremet and Armin Sirco.
- ▶ UNDP country office in Tajikistan: Zebo Jalilova, Tedla Mezemir and Norimasa Shimomura.
- ▶ UNDP country office in Uzbekistan: Abduvakkos Abdurahmanov, Jaco Cilliers, Zakir Kadirov and Flora Salikhova.
- ▶ UNDP Addis Ababa Regional Hub: Saleban Omar and Tilly Sellers
- ▶ UNDP country office in Zimbabwe: Elliman Jagne and Adam Valois

This document is based on assessments which were carried out in Bosnia and Herzegovina, Tajikistan, Uzbekistan and Zimbabwe. The assessment included several site visits and interviews with stakeholders among sub-recipients, governmental authorities, CCM, environmental experts and from other UN organizations. We would like to extend our gratitude to all the individuals and institutions that contributed to the planning and execution of these assessments.

In addition we would like to thank Susan Wilburn (Sustainability Director, Global Green and Healthy Hospitals) and Anne Woolridge (Chair of the Healthcare Waste Working Group, International Solid Waste Association) who provided valuable comments and suggestions to this document as peer reviewers.

1 Executive Summary

Patients, healthcare workers and the public are exposed to environmental and health risks during the implementation of health programmes. These risks range from the direct exposure of staff to biological or chemical agents to public health risks from the burning of waste or the disposal of toxic materials. Following the maxim of medical ethics *primum non nocere* (*first do no harm*), these risks need to be addressed systematically on the policy, strategy and operational level.

The United Nations Development Programme (UNDP) is a strategic partner of the Global Fund to Fight

AIDS, Tuberculosis and Malaria (GF) and often acts as interim Principal Recipient (PR) of last resort for countries in which the GF cannot identify a national PR for its grants. This partnership between UNDP and GF has enabled the prevention and treatment of HIV, tuberculosis and malaria benefiting millions of people in dozens of countries. However, GF programmes also require the procurement and use of large volumes of goods and services which have a potential negative environmental and public health impact. In order to minimize this impact, environmental safeguarding should become an integral component of GF grants.

Environmental safeguards for healthcare waste (HCW) management as described in this document are proactive precautionary measures preventing direct and indirect hazards of HCW including those caused by greenhouse gases (GHG) emissions during waste processing steps.

Figure 1: The three parts of the toolkit for environmental safeguarding of GF grants



The GF strategy 2012-2016 *Investing For Impact*¹ promotes the protection of human rights throughout the whole grant cycle as one of its five objectives. The 2011 report of the Special UN Rapporteur on the adverse effects of unsound management and disposal of medical waste² highlighted the impact of improper HCW management on the enjoyment of human rights. GF projects should therefore not only advocate for

1 Global Fund Strategy 2012-2016: *Investing for Impact*. Accessed 03/02/2015

2 United Nations (2011): Report of the Special Rapporteur on the adverse effects of the movement and dumping of toxic and dangerous products and wastes on the enjoyment of human rights, Calin Georgescu. A/HRC/18/31. Accessed 03/02/2015

and ensure the basic rights to access to essential health services but also the environmental safeguarding of these services following international and national standards throughout the whole project cycle.

This document is the first part of a toolkit for environmental safeguarding of GF grants. The toolkit is intended to help to reduce risks from the generation and disposal of HCW, especially the disposal of unwanted or unused pharmaceuticals, potentially infectious waste and other hazardous waste. Part A of the toolkit will help decision makers to understand why environmental safeguarding should be a standard in the planning and execution of any GF programme. Part B is intended to provide support in decision making on which waste stream concept and strategy shall be applied, taking into account the country context. Part C will provide support for the planning and implementation of safeguard strategies for GF grant practitioners including the budgeting for waste management as a standard component for each grant. The findings of four country assessments of UNDP administered GF grants in Bosnia and Herzegovina, Tajikistan, Uzbekistan and Zimbabwe informed the development of the toolkit³.

3 Kuehling, J. Rapid Assessment: Healthcare waste component of Global Fund Projects in Bosnia and Herzegovina. UNDP 2015; Pieper, U. Rapid Assessment: Healthcare waste component of Global Fund HIV, TB and malaria projects in Tajikistan. UNDP 2014; Kuehling, J. Rapid Assessment: Healthcare waste component of Global Fund HIV/AIDS projects in Uzbekistan. UNDP 2014. Kuehling, J. Rapid Assessment: Healthcare waste component of Global Fund HIV, TB and malaria projects in Zimbabwe. UNDP 2014.

It is hoped that the toolkit will help the Country Coordinating Mechanisms (CCMs) to play a leadership role on environmental issues related to GF grants. It is further hoped that this toolkit will encourage the GF executive and board to introduce a corporate environmental safeguarding policy and strategy, and will provide the tools to translate such policies into practice for all GF grants. Beyond that the HCW management toolkit can serve all stakeholders in planning and implementation of global health initiatives.

Social and environmental sustainability are fundamental to the achievement of development outcomes. Since the 1st January 2015, the formal procedures of corporate Social and Environmental Standards (SES)⁴ have to be applied to all UNDP programmes and projects. Environmental and social screening and assessment processes for projects have become a standard practice in development programmes and are usually required by national regulatory frameworks as well as by multilateral and bilateral donors. The HCW management toolkit for GF grants aims to support such screening processes and the implementation of HCW management standards in all grant operations.

4 United Nations Development Programme: Social and Environmental Standards Accessed 03/02/2015

2 About Environmental Safeguarding

Key questions to be answered:

- ▶ Can Global Fund projects create environmental risks?
- ▶ What is the UNDP position with regard to environmental safeguarding?
- ▶ Is environmental safeguarding optional or should it be a responsibility for grant makers and implementers?
- ▶ Which principles should be followed to reduce the environmental impact?
- ▶ What is the relation between human rights and healthcare waste?
- ▶ And why is procurement the key for waste reduction?

2.1 What is environmental safeguarding

Environmental safeguarding means the use of precautionary measures to ward off impending dangers or damage to the environment and human health which might be created during a project or programme. Environmental safeguarding starts at the earliest planning stage of a project and is continued until it ends. It can include different measures such as

- ▶ introduction of corporate environmental policies and strategies;
- ▶ building adequate human and institutional capacity to deal with environmental issues;
- ▶ carrying out environmental impact assessments during the planning phase;
- ▶ development of waste stream concepts for all health projects;
- ▶ including necessary financial resources for environmental equipment and services;
- ▶ monitoring and evaluation of environmental safeguarding measures for project operations;
- ▶ environmental accountability through dissemination of environmental information, public consultation and information disclosure mechanisms.

2.2 Why environmental safeguarding

Primum non nocere (*first do no harm*) is the guiding principle for any health programme considering both individual and the public well-being. While in the past health interventions concentrated mainly on curative health services, today equal attention is given to preventive services. Environmental safeguarding is itself a preventive service. Healthcare services without environmental safeguard are sub-standard care.

The execution of health programmes create risks for the environment and human health caused by HCW and its management. Often these risks continue to exist at the end of a project, some of them for many years.

Internationally financed projects such as the GF health programmes have a special responsibility to follow international agreements and principles including the adherence to environmental standards. Safeguarding policies should also consider the internationally accepted *polluter pays* principle in the context of global health initiatives.

Countries receiving support from global health financing institutions are often parties to various international conventions. During the implementation

Best practice:

The UN Environment Management Group is developing a framework for advancing environmental and social sustainability in the United Nations System⁵. This framework should be considered during planning and implementation of projects

of projects, compliance with these conventions should be ensured. For health projects the following conventions are of particular relevance:

- ▶ The **Stockholm Convention** on Persistent Organic Pollutants⁶ aims to eliminate or restrict the production and use of POPs. These pollutants such as carcinogenic dioxins or furans can be unintentionally produced during the incineration of waste products created by the project.
- ▶ The **Vienna Convention** for the Protection of the Ozone Layer⁷ and its accompanying **Montreal Protocol**⁸ on Substances that Deplete the Ozone Layer is an international treaty designed to protect the ozone layer. For example, refrigerators and other equipment procured for health projects might contain the ozone depleting hydrochlorofluorocarbons (HCFCs).
- ▶ The **Basel Convention** on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal⁹ intends to reduce the movements of hazardous waste and to minimize the amount and toxicity of wastes generated. Within a GF project, pharmaceuticals and diagnostic items might become toxic waste and their environmentally sound management must be ensured.

- ▶ The **Minamata Convention** on Mercury¹⁰ is the latest international treaty with relevance for healthcare waste management and was designed to protect human health and the environment from mercury and mercury compounds. It aims that mercury-added products such as thermometers or sphygmomanometers are not anymore procured or imported latest until 2020.

Another relevant convention is the United Nations Framework Convention on Climate change¹¹ (UNFCCC or FCCC). The 2010 Conference of Parties (COP 16) in Cancún agreed on significant decisions to address the long-term challenge of climate change collectively and comprehensively over time and to take concrete action now to speed up the global response. In light of this, the UN launched *Greening the Blue*¹² in 2010 with the aim to measure and reduce the environmental impacts of the UN operations.¹³

UNDP considers today environmental safeguard processes as essential and experience showed that the ratio of benefits to costs in introducing safeguard processes are substantial. In 2015, UNDP issued the Social and Environmental Standards (SES) demonstrating UNDP's commitment to mainstream social and environmental sustainability. The SES are embedded in the UNDP's Quality Assurance

Did you know?

The 63rd World Health Assembly stressed the importance of safe waste management and adopted the resolution: Improvement of health through safe and environmentally sound waste management¹⁴. The risks from healthcare waste were specially mentioned.

5 UN Environment Management Group: Advancing the Environmental and Social Sustainability Framework in the United Nations System. Interim Guide Accessed 03/02/2015

6 Stockholm Convention on Persistent Organic Pollutant: Website. Accessed 03/02/2015

7 Vienna Convention for the Protection of the Ozone Layer: Website. Accessed 03/02/2015

8 Montreal Protocol on Substances that Deplete the Ozone Layer: Website. Accessed 03/02/2015

9 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal: Website. Accessed 03/02/2015

10 Minamata Convention on Mercury: Website. Accessed 03/02/2015

11 United Nations Framework Convention on Climate Change. Accessed 03/02/2015

12 United Nations: UN Greening the Blue. Accessed 03/02/2015

13 UNDP (2013): Carbon footprint of UNDP administered Global Fund HIV/AIDS and Tuberculosis grants in Montenegro and Tajikistan. Accessed 03/02/2015

14 WHO 2010: Improvement of health through safe and environmentally sound waste management. Accessed 03/02/2015

Did you know?

UNDP recently carried out research on measuring and reduction of GHG emissions of its GF projects. It found that the social costs of carbon are at least 6% of the grant investment, and highlighted opportunities for emission reduction.¹⁵

Framework as one of 7 key quality criteria. SES will help UNDP programmes and projects to adhere to the following objectives and requirements:

- (i) strengthen the social and environmental outcomes of programmes and projects;
- (ii) avoid adverse impacts to people and the environment;
- (iii) minimize, mitigate, and manage adverse impacts where avoidance is not possible;
- (iv) strengthen UNDP and partner capacities for managing social and environmental risks;
- (v) ensure full and effective stakeholder engagement.

In 2012, UNDP launched a project-level environmental and social screening procedure which was revised in 2014 to align with the SES. It requires the environmental and social screening of all projects and their assignment to one of three categories: 'Low' (no action needed), 'Moderate' (environmental and social elements needed) or 'High' (further environmental and

Figure 2: Typical steps for a risk assessment



social review needed). When applied, all UNDP GF projects would fall either under category 'Moderate' or 'High'.

2.3 Environmental safeguarding and risk assessment

As for other projects, also in GF financed health projects not all environmental risks can be avoided as certain diagnostic and treatment procedures require the use of potentially hazardous materials, but they can be reduced.

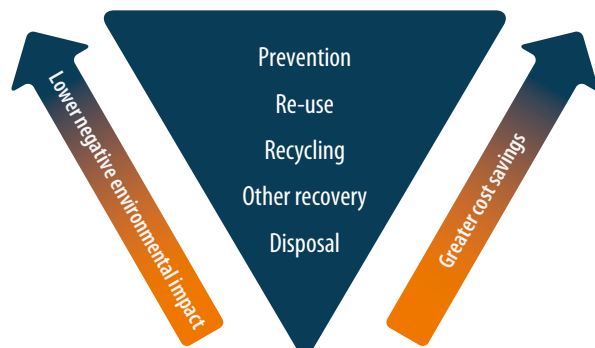
Environmental risk assessment for health programmes should aim to identify potential negative impacts already at the planning phase. The assessment itself involves the identification of the hazard, the consequences and their likelihood, followed by the selection of risk control measures. They will depend on the type of waste generated and the properties of the waste which will render it hazardous. These properties are influenced by the substances of the components of purchased products and the processes the products will go through during their life cycle. After the identification of expected waste streams, the collection, treatment and disposal strategy can be determined and the required resources calculated.

2.4 Waste and waste management for GF projects

Nearly every country and organization has its own definition of waste. In the European Union for example, waste is understood as any substance or object which the holder discards or intends or is required to discard; *waste management* means the collection, transport, recovery and disposal of waste, including the supervision of such operations and the after-care of disposal sites¹⁶. Currently a clear definition for waste and waste management strategies is lacking in GF projects. However if the *polluter pays* principle is applied, the

15 UNDP (2013): Carbon footprint of UNDP administered Global Fund HIV/AIDS and Tuberculosis grants in Montenegro and Tajikistan. Accessed 03/02/2015

16 European Commission (2008): Directive 2008/98/EC on waste (Waste Framework Directive). Accessed 03/02/2015

Figure 3: The waste management hierarchy

GF and the PRs have responsibilities for the safe management of the waste created through GF projects.

Waste management does not start after the waste is generated, but starts during the planning of activities. The waste hierarchy is a classification system for waste management and options are ranked by their environmental impact (figure 3). The most preferred option is prevention of waste, particularly of hazardous waste. The introduction of environmental criteria for procurements of medical goods and services has great potential for the prevention and minimization of hazardous HCW. Global health financing institutions like the GF and their agents like GF PRs should therefore use their market power and join many other healthcare organizations, bilateral and multilateral development partners in the implementation of *green* procurement in the health sector.

Did you know?

In May 2012 the UN Informal Interagency Task Team for Sustainable Procurement in the Health Sector (IIATT-SPHS) was established. Its members (UNICEF, WHO, UNDP, UNOPS, UNHCR, UNEP, UNFPA and since 2014, the Global Fund and UNITAID followed by Gavi in 2015) procure products for global health initiatives at about US\$ 6 billion annually and want to use their influence and market shaping power for the greening of the health sector.

It is recommended that the waste management hierarchy is followed and GF programmes should try to prevent waste generation, or reuse or recycle the waste, rather than just disposing all the waste. Life-cycle assessments (LCAs) can be used to assess the environmental impact associated with all the stages of a product's life from *cradle-to-grave*. This process can help to identify energy and material inputs as well as environmental releases from the production of a product used in a project until the final disposal. It can also help to make informed decisions for procurements and the downstream components of waste management.

2.5 Human rights-based approach to healthcare waste management

A commitment to human rights is part of the GF's core values and reflected in the Global Fund Strategy 2012–2016: *Investing for Impact*. The fourth strategic objective aims to promote and protect human rights, calls for their integration in all aspects of the GF's work and commits not to invest in programmes that infringe human rights¹⁷.

In 2011, the Special Rapporteur of the UN focused on the adverse effects that the improper management and disposal of HCW may have on the enjoyment of human rights. The report showed several examples how HCW impacts on human rights and highlighted that in most developing countries, chemical and pharmaceutical wastes are disposed of with the rest of municipal waste or in significant amounts through hospital wastewater¹⁸.

The report concluded that the international community has to date paid little attention to this issue, despite the fact that a significant number of people – including healthcare workers, patients, workers in support services linked to healthcare facilities, workers in waste disposal facilities, recyclers, scavengers and the general

¹⁷ The Global fund Strategy 2012-2016: Investing for Impact. Accessed 03/02/2015

¹⁸ United Nations (2011): Report of the Special Rapporteur on the adverse effects of the movement and dumping of toxic and dangerous products and wastes on the enjoyment of human rights, Calin Georgescu. A/HRC/18/31, p. 9 and p.12 Accessed 03/02/2015

public – are at risk of injury and/or contamination through accidental exposure to HCW.

An environmental safeguard policy for the GF should therefore address the rights of individuals and the public to the provision of health services which follow international environmental standards, and should provide guidance for the application of the safeguard policy in all grant making processes.

2.6 Recommended further reading¹⁹

- ▶ World Health Organization (2004): Policy Paper – Safe health-care waste management
- ▶ UN: Advancing the Environmental and Social Sustainability Framework in the United Nations System INTERIM GUIDE
- ▶ UNDP (2015): UNDP’s Social and Environmental Standards (SES)
- ▶ UNDP (2014): Social and Environmental Screening Procedure
- ▶ Asian Development Bank (2009): Safeguard Policy Statement
- ▶ Inter-American Development Bank(2006): Environment and Safeguards Compliance Policy
- ▶ OECD: Fact Sheet: Extended Producer Responsibility
- ▶ Website: The Vienna Convention for the Protection of the Ozone Layer
- ▶ Website: The Stockholm convention on Persistent Organic Pollutants
- ▶ Website: The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal
- ▶ Website: The Minamata Convention for Mercury
- ▶ Website UN: Greening the Blue
- ▶ World Bank: Environmental and Social Safeguard Policies
- ▶ UNDP: Social and Environmental Sustainability of UNDP Programming and Operations
- ▶ 63rd WHA – Item 11.18: Improvement of health through safe and environmentally sound waste management
- ▶ President’s Emergency Plan for AIDS Relief (PEPFAR) – Technical Considerations Provided by PEPFAR Technical Working Groups
- ▶ Relevant links to environmental policies of selected donor organizations:
 - ▷ Denmark: Sample environmental policy of DANIDA
 - ▷ Germany: Sample environmental policy of BMZ
 - ▷ Japan: Sample environmental policy of JICA
 - ▷ Norway: Sample environmental policy of NORAD
 - ▷ Sweden: Sample environmental policy of SIDA
 - ▷ UK: Sample environmental policy of DFID
 - ▷ US: Sample environmental policy of USAID

¹⁹ All Web-sites were accessed on 03/02/2015

3 Environmental Risks from Global Fund HIV, TB and Malaria Projects

Key questions to be answered:

- ▶ What are chemical, biological, physical risks from waste?
- ▶ Who is at risk from healthcare waste?
- ▶ What are the risks from the GF projects?
- ▶ And who is in risk from GF projects?

3.1 Environmental risks of health programmes

The environmental risk of health programmes can be defined as an actual or potential threat of adverse effects on living organisms and the environment by effluents, emissions, wastes, resource depletion, arising from the implementation of the health programme.

3.1.1 Risks from the manufacturing of medical products

The manufacturing of medical products, especially those causing hazardous waste like pharmaceuticals and diagnostic reagents, gives rise to a variety of environmental risks. The global pharmaceutical, medical equipment and commodity market continues to grow year by year, and with it concerns about the environmental standards of the production, especially related to air, water and soil pollution, and GHG emissions. By ensuring that the selected producer complies with relevant environmental standards and by applying green procurement strategies, the risks from production can be reduced.

3.1.2 Risks from the transport of materials

Transportation of goods by road, rail, air or sea involves the risk of traffic accidents. If the goods are dangerous, there is also the risk of incidents, such as spillage, leading to hazards such as fire, explosion, chemical

Did you know?

The UN IATT-SPHS has initiated a Joint UN Programme on green procurement in the health sector. The strategic approaches include engagement processes with manufacturers aiming to improve the environmental footprint of medical products and their manufacturing processes. Agreements about the feasibility of the introduction of environmental procurement criteria within defined timeframes will provide transparency and incentives in a competitive market.

burn or environmental damage. At the UN level, all work related to the transport of dangerous goods is coordinated by the Economic and Social Council (ECOSOC) Committee of Experts on the Transport of Dangerous Goods (TDG) and on the Globally Harmonized System of Classification and Labelling (GHS), which produces the Recommendations on the Transport of Dangerous Goods²⁰ and the Globally Harmonized System of Classification and Labelling

20 UNECE: Recommendations on the Transport of Dangerous Goods – Model Regulations. Accessed 03/02/2015

of Chemicals²¹. Global health initiatives should follow these recommendations through policies and standard operating procedures for purchasers, implementers and contract partners.

Transporting goods will also create GHG emissions. Studies carried out in 2013 and 2014 on the carbon footprint of UNDP administered GF HIV/AIDS, tuberculosis and malaria grants in Tajikistan and Zimbabwe showed that international and in-country freight can contribute to up to 20% of the total GHG emissions²². To reduce risks unnecessary transports should be avoided and goods should be transported in a way which guarantees the minimization of GHG emissions²³.

3.1.3 Risks from the usage and disposal of supplied materials

Products supplied in health projects might be a potential source of harm or create adverse health effects for patients, staff, the public and the environment. Environmental risks are created in case of incidents and accidents during usage and from the disposal of discharged products. Unsafe disposal of waste can create environmental damage. Burying of waste not only takes up valuable land space, it also causes air, water and soil pollution, discharging carbon dioxide (CO₂), methane (CH₄) and hydrofluorocarbons (HFCs)

Best practice:

The UNDP managed GF HIV/AIDS programme in Uzbekistan introduced a system to re-collect used syringes from people who inject drugs. This reduces the risk that these hazardous items will end up in public places such as playgrounds.

21 UNECE: Globally Harmonized System of Classification and Labelling of Chemicals (GHS). Accessed 03/02/2015

22 UNDP (2013): Carbon footprint of UNDP administered Global Fund HIV/AIDS and Tuberculosis grants in Montenegro and Tajikistan. Accessed 03/02/2015

23 UNDP (2014): Managing our climate change risk: An approach for environmental safe guarding UNDP-Global Fund HIV/AIDS, Tuberculosis and Malaria programmes. Accessed 03/02/2015

into the atmosphere and chemicals and pesticides into the earth and groundwater. This, in turn, is harmful to human health, as well as to plants and animals. Burning of waste can result in emissions of dioxins and acid gases such as nitrogen oxides (NO_x), sulphur dioxides (SO₂), and hydrogen chlorides (HCL), which can be harmful to human health.

3.2 Risks from healthcare waste

The term HCW includes all the waste generated within healthcare related activities and procedures. The majority of waste is comparable to domestic waste and can be classified as *non-hazardous* or *general HCW*. A smaller part may pose a variety of environmental and health risks and is regarded as *hazardous HCW*. Hazardous HCW created by GF financed projects might include:

- ▶ *Infectious waste*: All waste which is suspected to contain pathogens and that poses a risk of transmission such as laboratory cultures from TB diagnosis
- ▶ *Sharps waste*: Used or unused sharps (e.g. hypodermic, intravenous or other needles; auto-disable syringes; syringes with attached needles)
- ▶ *Pharmaceutical waste*: Medications that are expired or no longer needed such as expired artemisinin-based combination therapies;
- ▶ *Chemical waste*: Waste containing chemical substances (e.g. deltamethrin or permethrin from impregnated bed nets, mercury-containing commodities, silver from x-ray development, laboratory reagents such as formaldehyde and xylene).
- ▶ *Electronic waste (WEEE)*: Waste from broken refrigerators, laboratory analysis equipments etc.

3.2.1 Physical risks

Physical risks occur mostly from sharp items like broken glass, syringes, disposable scalpels and blades, etc. Cuts, stitches and other damage of the skin can become entry points for pathogenic agents.

3.2.2 Chemical risks

Chemical risks from HCW are often underestimated. Waste from health programmes often creates chemical risk as the materials are



Expired pharmaceuticals at hospitals from different sources



- ▶ ignitable; waste can catch fire under certain conditions. Examples are solvents, paints and certain degreasers;
- ▶ corrosive; they corrode metals and may have a very high or low pH. Examples are disinfectants, acids or alkaline cleaning fluids and battery acids;
- ▶ reactive; they are unstable, and may produce toxic fumes, gases and vapours when mixed with water or under other conditions such as heat or pressure. Examples are certain cyanides or sulphide bearing waste;
- ▶ toxic; they are harmful or even fatal when ingested, inhaled or absorbed. Examples are pesticides containing waste such as DDT or heavy metals such as cadmium, lead or mercury.

Chemical risks are also caused by pharmaceutical waste including pharmaceutical metabolites.

Best practice:

In Tajikistan, expired pharmaceuticals are one to two times per year collected and transported via a reverse logistic system from the oblasts to Dushanbe. In Dushanbe they are packed and transported to a landfill for safe disposal or they are co-incinerated in a brick factory.

Did you know?

WHO has estimated that, in 2000, injections with contaminated syringes caused:

- ▶ 21 million hepatitis B virus (HBV) infections (32% of all new infections);
- ▶ 2 million hepatitis C virus (HCV) infections (40% of all new infections);
- ▶ 260 000 HIV infections (5% of all new infections)²⁴.

3.2.3 Biological risks

Microbiological risks from HCW can be generated from materials contaminated with pathogenic agents. Typical examples are cultures and stocks of infectious agents, waste from infected patients, waste contaminated with blood and body fluids, discarded diagnostic samples, infected animals from laboratories, contaminated materials like swabs, bandages or contaminated equipment. This group is the largest group of hazardous HCW and can represent up to 15% of the total waste stream of a healthcare facility.

24 WHO (2011): Health-care waste management - Fact sheet N°281. Accessed 09/08/2014

3.3 Specific risks from Global Fund grants

The GF health programmes create different types of HCW which can be divided into the following waste categories:

Table 1: Waste categories expected from selected product categories of GF projects

Selected Product Categories	Waste Categories					
	Chemical waste	Pharmaceutical waste	Infectious waste (after use)	Sharps	Recyclables / packaging	Others
Pharmaceuticals (ARVs, ACTs, TB medicines, etc.)		X			X	
Test kits (for HIV, TB, malaria and others)	X		X	X	X	
Chemicals (reagents, disinfectants, insecticides, impregnated bed nets, etc.)	X				X	
Disposable medical commodities (condoms, gloves, swaps, syringe, sharp boxes etc.)			X	X	X	
Reusable medical commodities (glass pipettes, etc.)					X	
Lab equipment (analyzer, autoclaves, refrigerators, etc.)					X	Electronics (WEEE)
Office equipment (Fluorescent lamps, toner, computers, etc.)	X				X	Electronics (WEEE)
Vehicle fleet (used oils, spare parts, etc.)	X				X	Used tyres

3.3.1 Examples of healthcare waste risks from HIV/AIDS Projects

GF HIV/AIDS grants aim to close implementation gaps of national HIV responses. This includes the provision of HIV prevention, treatment, care and support services. Typical waste streams include non-hazardous waste (e.g. card-board, packing materials, office waste) and a variety of hazardous waste streams including infectious waste from HIV and STI testing, sharps waste (including syringes from PWID) and pharmaceuticals (such as ARVs or medicines for the treatment of opportunistic infections).

The waste assessment of the UNDP administered GF HIV/AIDS projects in Bosnia and Herzegovina, Uzbekistan, Tajikistan and Zimbabwe²⁵ showed that a wide spectrum of different waste streams is generated. The waste was ranging from non-hazardous office- and warehouse waste to hazardous pharmaceutical and chemical waste and bio-hazardous waste. One objective of HIV grants is often the support of a needle exchange programme. In that case the hazardous waste includes also collected sharp waste from PWID.

²⁵ See footnote 3



A finger prick – produces sharps waste and potentially infectious waste. GF grants perform millions of blood tests every year



Biosafety level 3 laboratory in Dushanbe, Tajikistan (GF TB and HIV grants)

3.3.2 Examples of healthcare waste risks from TB projects

The prevention and treatment of TB requires the usage of first- and second-line anti-TB medicines. Furthermore disposable medical equipment such as syringes, syringes for tuberculin and also x-ray films are used during the treatment and prevention of TB which will result in the generation of sharp waste, infectious waste and chemical waste.

Waste from the establishment and operation of a TB laboratory network results in all types of healthcare waste, including general waste, infectious waste and sharps, pharmaceutical waste as well chemical waste. Diagnosis for TB involves the testing of sputum through microscopic methods, culture and gene analysis. If a biosafety level 3 laboratory is planned to be operated, the onsite treatment of highly infectious

waste must be guaranteed by specialized autoclave systems.

3.3.3 Examples of healthcare waste risks from malaria projects

Indoor residual spraying activities are important in malaria projects to reduce the risk of malaria transmission by mosquito bites. As example in the Khatlon Province of Tajikistan, 24,000 households have been sprayed using 75 g of insecticide per household. In total 1.8 tons of insecticides against mosquitos have been applied and 5 tons in total in Tajikistan through GF project activities, a country at the brink of malaria elimination.

Usage of insecticides in Sub-Saharan Africa results in even higher waste management risks as more toxic pesticides are used. For example in Zimbabwe during 2009 to 2011, about 215 tons of DDT and 13 tons of pyrethroids were used per year for indoor spraying in GF projects.

Millions of bed nets have been distributed during the past years by GF grant projects. The mosquito nets are treated with lasting insecticides to avoid frequent re-impregnation (long-lasting insecticide-treated nets - LLINs). After 4-5 years these LLINs however need to be exchanged with new LLINs and the old one need to be safely disposed of.



Life-saving long-lasting insecticide-treated nets - produces 0,5 kg of waste after use. The GF goal is to distribute 90 million LLINs annually²⁶.

26 Global Fund Strategic Framework 2012-2016 'Investing for Impact'

For the treatment of malaria, artemisinin-based combination therapies (ACTs) are used. While artemisinin is not considered as a hazardous substance, the combination products usually are.

3.4 Groups of persons at risk

Persons at risk from healthcare waste can be divided in three main groups:

- ▶ Waste generators: All people that generate hazardous and non-hazardous healthcare waste including clinical staff, patients and visitors
- ▶ Waste workers: All people who handle hazardous and non-hazardous waste including the informal waste sector such as scavengers
- ▶ General public.

The general public can be at risk through the direct exposure to hazardous substances or indirectly through the polluted environment: water, soil, and air. Further, several toxic substances have the potential to accumulate in the food chain. In addition, the emission of GHG puts the global population at risk of global warming.

The ways of exposure include:

- ▶ Chronic, long-term direct or indirect exposure
- ▶ Acute direct or indirect exposure

3.5 Recommended further reading²⁷

- ▶ Kuehling, J. Rapid Assessment: Healthcare waste component of Global Fund Projects in Bosnia and Herzegovina. UNDP 2015
- ▶ Pieper, U. Rapid assessment: Healthcare waste component of Global Fund HIV, TB and malaria projects in Tajikistan. UNDP 2014.
- ▶ Kuehling, J. Rapid assessment: Healthcare waste component of Global Fund HIV/AIDS projects in Uzbekistan. UNDP 2014.
- ▶ Kuehling, J. Rapid assessment: Healthcare waste component of Global Fund HIV, TB and malaria projects in Zimbabwe. UNDP 2014
- ▶ UNDP (2013): Carbon footprint of UNDP administered Global Fund HIV/AIDS and Tuberculosis grants in Montenegro and Tajikistan.
- ▶ UNDP (2014): Managing our climate change risk: An approach for environmental safe guarding UNDP-Global Fund HIV/ AIDS, Tuberculosis and Malaria programmes.
- ▶ UNECE: UN Recommendations on the Transport of Dangerous Goods - Model Regulations Nature, Purpose and Significance of the Recommendations:
- ▶ WHO (2007): Core principles for achieving safe and sustainable management of health-care waste
- ▶ EPA: Further reading on waste management in the US
- ▶ European Union: Further reading on waste management
- ▶ Stockholm County Council (2014): Environmentally Classified Pharmaceuticals

²⁷ All Web-sites were accessed on 03/02/2015

4 Strategies to Control Environmental Risks of Global Fund Programmes

Key questions to be answered:

- ▶ How to consider the existing legal framework of a country?
- ▶ Are health systems strengthening aspects of relevance?
- ▶ What is a waste stream strategy and how to develop it?
- ▶ Which strategies can be used for GF grant projects?
- ▶ How can HCW management for GF grants be financed?
- ▶ What will be the next steps after finalizing the strategy?

4.1 Integration into national waste management systems

It is important to integrate all environmental safeguard activities into the legal, regulatory and structural waste management systems of recipient countries. The starting point should be an assessment of policies, laws or guidelines. At least the following documents should be reviewed (if existent):

- ▶ General environmental body of law
- ▶ Law and regulations on public health and public hygiene
- ▶ Specific laws on (hazardous) waste management, air pollution and sanitation
- ▶ Laws and provisions on occupational health and safety, and on transportation safety
- ▶ Any other legal documents relevant to public health, hygiene and environment

In addition, it should be established which of the relevant international conventions the country is signatory of. All international environmental standards should be respected by global health financing agencies such as the GF and their agents like the GF PRs.

In most countries, development plans for the environment sector exist which also address waste management systems. The health programmes of global health initiatives should build on and strengthen national strategies and avoid parallel structures. An assessment should provide the necessary information about the existing waste management infrastructure in the country. The integration of the private sector for waste service delivery should be considered.

Did you know?

In several countries specific development plans for the healthcare waste sector were developed during the last years. These plans are often a good source of information on the national policy and available systems. If such plans do not exist consideration should be given to supporting the process of their development as health systems strengthening components of GF grants project.

4.2 Health systems strengthening aspects

According to the WHO²⁸, HSS can be defined as

- (i) the process of identifying and implementing the changes in policy and practice in a country's health system such that the country can respond better to its health and health system challenges and
- (ii) any array of initiatives and strategies that improves one or more of the functions of the health system and that leads to better health through improvements in access, coverage, quality, or efficiency of health services.

In the context of GF support, HSS refers to activities and initiatives that improve the underlying health systems of countries and/or manage interactions between them in ways that achieve more equitable and sustainable health services and health outcomes related to the three diseases the GF is focusing on. An efficient system for HCW management will be critical in order to deliver global health initiatives in accordance to international and national commitments and standards, and in accordance with commitments to respect basic human rights.

All GF health programmes should include a component for HCW management including HCW management system strengthening interventions as required in the country context. This can include:

- ▶ Lead by example: Good governance and defined responsibilities for HCW management
- ▶ Strengthening national HCW management policies and strategies
- ▶ Efficient and safe HCW management services and their proper structural and functional maintenance
- ▶ Capacity building in occupational health and safety, injection safety, infection control, chemical safety and HCW management
- ▶ Monitoring and evaluation, QA/QI of HCW management systems and operations
- ▶ Sustainable financing of HCW management systems

28 WHO: Health Systems Strengthening Glossary. Accessed 03/02/2015

Best practice:

In Uzbekistan, the HIV/AIDS project included Health Systems Strengthening aspects. To improve healthcare waste management, the development of new regulations, the development and disseminating of SOPs for healthcare waste segregation, handling and transportation and the training of staff was included.

- ▶ Implementation of and operation of green procurement and advanced supply chain management systems
- ▶ Environmental accountability through dissemination of environmental information, public consultation and information disclosure mechanisms.

4.3 Applied healthcare waste management strategies

4.3.1 Waste prevention and reduction

Waste prevention and reduction can occur at three levels: at the point of purchase or delivery, during the period of product use and at the point of disposal. The most efficient point is the procurement process. For example the avoidance of the purchase of mercury containing medical devices will result in the avoidance of mercury containing waste in accordance with the Minamata Convention. Less procurement of products requiring waste incineration will reduce the production of POPs and thereby support the implementation of the Stockholm Convention. Other typical strategies to avoid the generation of waste are safer transport mechanisms, improved storage management and efficient distribution strategies of products. Overall, the environmental risk of HCW can be reduced by selecting products with a lower eco-toxicity.

Green public procurement has been identified as a main driver for change towards reducing environmental footprints and promoting green economies. The purchasing power of global

health financing institutions like the GF and of development partners should be systematically used to influence markets through engagement processes with manufacturers and suppliers and the phased-in introduction of environmental procurement criteria. The UN Informal Interagency Task Team on Sustainable Procurement in the Health Sector (iIATT-SPHS) was founded to promote green procurement in the health sector²⁹. Its recommendations should be taken into consideration.

4.3.2 Logistic and disposal strategies

The waste management, especially the HCW sector, underwent enormous changes during the last decade. *Out of sight, out of mind* was the dominant way of thinking in the past and waste was usually buried close to the place of its generation. After the environmental impact became evident, engineered disposal solutions such as landfills and incinerators were introduced. Today there is a strong trend away from this *end-of-pipe* solutions towards integrated solutions building on

Best practice:

During the execution of GF programmes unwanted, unusable or expired products will need to be returned. A proper system documenting all process steps will help recipients to return hazardous items in a safe and organized way.

waste stream concepts. Disposal is considered as part of the life-cycle of a product like the production and the usage, and modern life-cycle strategies target the reuse or the recycling of products after use. However some waste streams, especially hazardous waste streams such as infectious waste, used chemicals or expired pharmaceuticals, cannot be reused or recycled for technical or economic reasons and need a safe disposal.

4.3.3 Waste stream concept development

Each GF project should include a module on HCW management to fulfil commitments and responsibilities

²⁹ Hamelmann, C. Global consultation on environmentally friendly procurement in the health sector. Geneva 2014 Accessed 03/02/2015

Figure 4: Steps for the development of waste stream concepts



for the environmental safeguarding of health services and the waste generated during the project. Interventions should build on waste stream concepts developed during project planning at concept note stage of the GF NFM and reviewed during project implementation following any significant change of procurement plans or reprogramming of a grant.

The development of waste stream concepts follows seven steps as shown in figure 5. It is further addressed in Part B of this Healthcare Waste Management Toolkit³⁰.

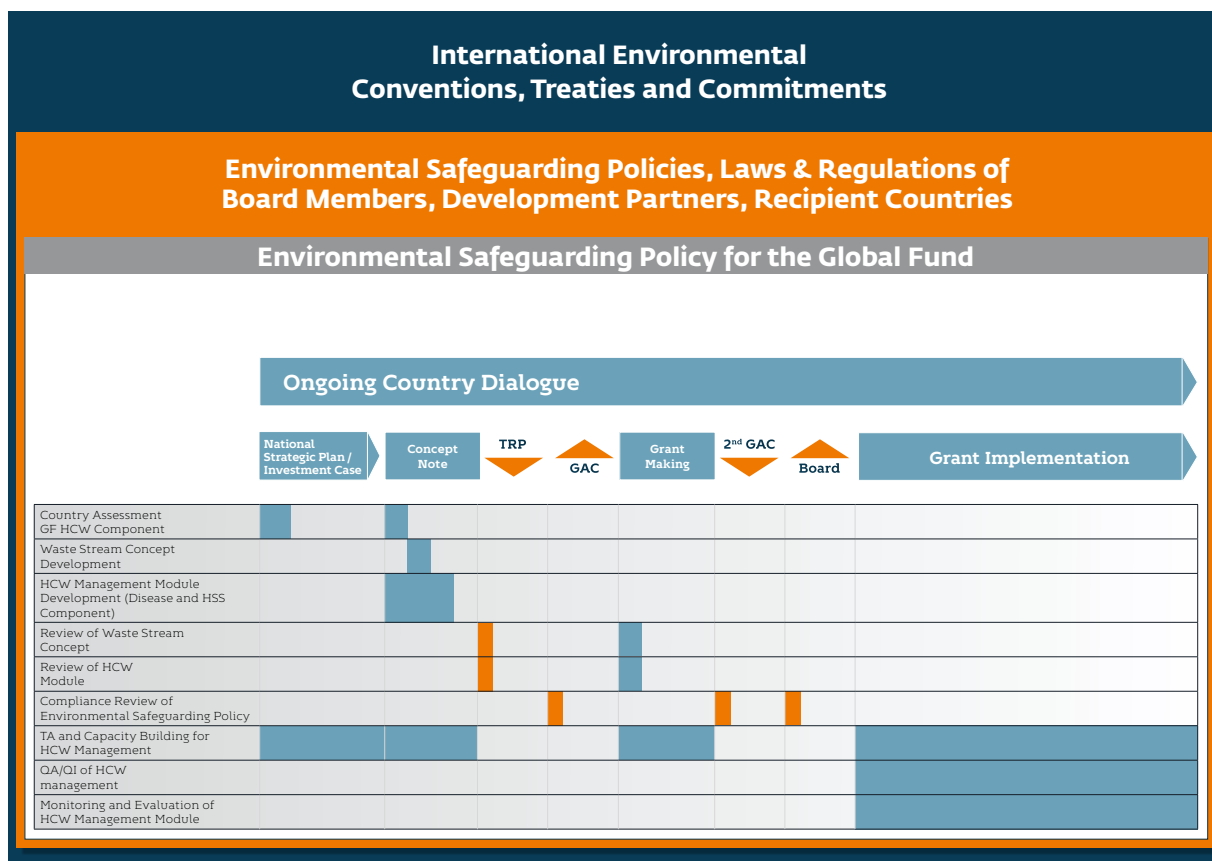
4.4 Healthcare waste management funding by GF grant projects

As an essential part of every GF grant, the healthcare waste management component of concept notes and proposals as outlined in this document will need a dedicated results-oriented budget.

Of special importance in waste management is not only to consider capital investment costs but to budget also for capacity building, recurrent costs and systems strengthening.

³⁰ Kuehling, J., Hamelmann, C. Healthcare Waste Management Toolkit for Global Fund Practitioners and Policy Makers, Part B: Waste stream concept development. UNDP 2015.

Figure 5: Environmental safeguarding policy and strategy approach linked to a HCW management concept integrated into the GF New Funding Model Cycle



The Global Fund's NFM is designed to enable strategic investment for maximum impact. Within the new funding model, countries are strongly encouraged to base funding requests on quality national strategic plans. Environmental aspects including healthcare waste management and GHG emissions caused by health sector operations should be part of such strategic plans.

Figure 5 summarizes graphically how a link between a GF environmental policy and strategy with national legal and regulatory frameworks and international conventions on the one hand, and with a HCW management concept and operations integrated in the GF NFM on the other hand could look like. A checklist for the integration of environmental safeguards into GF grant making under the NFM is shown in the Annex.

4.5 Recommended further reading³¹

GF: Procurement for Impact (P4i)

- ▶ UNDP: Healthcare Waste Management Toolkit for Global Fund Practitioners and Policy Makers, Part B and C
- ▶ WHO (2014): Safe management of wastes from health-care activities (Second edition)
- ▶ WHO / UNEP (2008): Fundamentals of health-care waste Management
- ▶ WHO (2011): Health-care waste management Fact sheet N°281
- ▶ NHS (2009): Sustainable Development Unit Waste Guidance

³¹ All Web-sites were accessed on 03/02/2015

- ▶ Basel Convention (2012): Technical guidelines on the environmentally sound co-processing of hazardous wastes in cement kilns
- ▶ Holcim-NW-GIZ (2006): Guidelines on Co-processing Waste Materials in Cement Production
- ▶ UNFPA (2013): Safe disposal and management of unused, unwanted contraceptives
- ▶ Basel Convention (2003): Technical guidelines on the environmentally sound management of biomedical and healthcare wastes
- ▶ UNEP (2012): Compendium of Technologies for Treatment/Destruction of Healthcare Waste

5 Annex

Checklist for the integration of environmental safeguards into the NFM of GF grants

Question	Yes	No
1. Strengthening of national strategic plans (NSP)		
1.1 Was an environmental assessment of the potential impact of the NSP carried out?		
1.2 Are environmental safeguarding measures included in the NSP?		
2. Alignment of the Global Fund's process to existing country dialogue		
2.1 Was the potential environmental impact of the grant discussed during the country dialogue?		
2.2 Were legal environmental requirements discussed by the CCM and reflected in the dialogues report		
2.3 Were all concerned governmental and non-governmental organizations working on environmental protection represented in the dialogue?		
2.4 Were the long-term environmental cost impact discussed and an investment case to include cost efficient measures discussed?		
3. Design and submission of a concept note		
3.1 Was an environmental full cost analysis included in the concept note and did it consider long-term environmental costs?		
3.2 Does the concept note provide recommendations on how to reduce mitigate the environmental impact from the grant?		
3.3 Has special attention been paid on occupational health and safety aspects?		
3.4 Were potential risks for the informal waste sector and for other vulnerable sectors from the discharge of used products analysed?		
3.5 Are the linkages between environmental health issues and HIV/Aids, Malaria and TB as causes and consequences of each other addressed?		
3.6 Are climate change aspects considered in the design of the concept note?		
4. Independent review of concept notes by the Technical Review Panel (TRP) for recommendation by the Grant Approvals Committee (GAC)		
4.1 Did the TRP review the concept note in view of the environmental requirements from the different international convention and agreements?		
4.1 Did the TRP review the potential short-term and long-term environmental impact from the implementation of the grants including climate change aspects?		

Question	Yes	No
5. Determination of upper budget ceilings by the GAC		
5.1 Does the Fund Portfolio Managers have a good understanding on the potential environmental impacts created by the grants?		
5.2 The Fund Portfolio Managers integrated the "Duty of Care" and the "Polluter pays" principles?		
6. Grant making		
6.1 Is a budget to enable the safe collection and disposal of to be discharged goods included?		
6.2 Will technical support be provided to enable the environmental monitoring of the implementation of the grant?		
6.3 Do possibilities exists to compensate environmental impacts from the grant?		
7. Approval of grants by the GAC		
7.1 Environmental safeguarding aspects are included in the grant agreement		
8. Approval of grants by the Global Fund's Board.		
8 Were all environmental aspects addressed, was an environmental classification of the potential impact carried out and do channels exist to communicate the environmental aspects of a grant?		



Saving Lives Sustainably



*Empowered lives.
Resilient nations.*