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A PUBLIC-PRIVATE PARTNERSHIP FRAMEWORK FOR A COMMON HEALTH CARE WASTE TREATMENT FACILITY FOR ADDIS ABABA CITY

AIDSTAR-One
AIDS SUPPORT AND TECHNICAL ASSISTANCE RESOURCES

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ACRONYMS

| | |
|--------|---|
| AAEPA | Addis Ababa Environmental Protection Authority |
| CHCWTF | common health care waste treatment facility |
| EIA | environmental impact assessment |
| EMMP | environmental mitigation and monitoring plan |
| FMHACA | Food, Medicine and Health Care Administration and Control Authority |
| FMOH | Federal Ministry of Health |
| HCW | health care waste |
| HCWM | health care waste management |
| HF | health care facility |
| HSDP | Health Sector Development Program |
| NGO | nongovernmental organization |
| PPP | public–private partnership |
| RHB | Regional Health Bureau |

INTRODUCTION

To control and reduce nosocomial infections inside hospitals, health centers, clinics, and health posts and to ensure that the environment outside is well protected, health care waste (HCW) must be safely managed. Health care waste management (HCWM) should be part of the overall management system of a health care facility (HF) and reflect the quality of the services it provides.

Waste produced in the course of health care activities carries a high potential for infection and injury, and its poor management poses health risks, direct and indirect, not only to health institutions' patients, medical staff, caretakers, waste handlers, and support staff but also to the community and the environment at large. The magnitude and extent of the potential harm highlights the need for efficient health care waste management systems and for sensitization to their importance among health care managers, providers, and their support staffs, in both private and public institutions.

Both the rate at which HCW is generated and its volume continue to increase significantly, along with the number of types and categories of waste that require proper handling and disposal. A significant proportion of HCW is hazardous and must be packaged, transferred, and disposed of properly to protect both those handling it and the environment.

Proper HCWM is required not only to minimize the overall risks to health workers, the community, and the environment, but also for compliance with federal and local regulations. For improving environmental performance in waste management, it is generally recognized that waste management plans provide the best mechanism. A waste management plan can help those generating the waste to conserve resources and to minimize waste by improving practices for purchasing and reuse and by separating, segregating, collecting, transporting, treating, and disposing of all waste streams in a cost-effective, environmentally sound manner.

However, service providers often neglect HCWM and fail to give it the attention it deserves, particularly in the developing world. Often no data and records are maintained or available. It is difficult to estimate the damages that poor HCWM practices have inflicted on human health and the environment.

In Ethiopia, HCWM and its importance to human and environmental health and safety are widely ignored, despite a legal framework in the form of national health care waste management guidelines (Federal Ministry of Health 2008). A recent needs assessment among Addis Ababa HFs revealed a poor understanding both of why HCW should be managed any differently than other categories of wastes, such as residential waste or municipal waste, and why HCW should be segregated at its point of generation. In addition, many medical institutions fail to undertake the steps necessary to improve HCWM practices, lacking the funds required to set up a proper management system and because of constraints related to HCWM.

Specifically, availability of standard HCW treatment facilities and technologies at both city and national levels is very poor. In Ethiopia, there is no facility that treats hazardous waste generated in different sectors.

Accordingly, this study recommends establishment of a common health care waste treatment facility (CHCWTF). The proposed project is believed to provide solution for this critical problem.

PROJECT DEVELOPMENT OBJECTIVE

The project development objective for CHCWTF is to create and provide access to a well-designed health care waste treatment facility to provide quality treatment and disposal of hazardous wastes. This CHCWTF will contribute to better HCWM practices among HFs and other institutions.

PROJECT BENEFICIARIES

The proposed project will treat hazardous wastes generated by different HFs. Thus, the project's primary beneficiaries are the city's various private and public HFs; their patients, health workers, caregivers, and waste handlers will directly benefit from the CHCWTF. In addition, the public will benefit—both because of reduction in the impact of hazardous HCW *mis*management and because of the reduction in environmental pollution that will result from application of modern hazardous waste treatment technologies.

PROJECT DESCRIPTION

The proposed CHCWTF will be used to treat hazardous waste. The proposed site is the newly established Chebe Woregenu landfill, currently under construction 37 km from Addis Ababa. Siting the CHCWTF here will reduce costs associated with land acquisition and infrastructure development. The treatment plant could have the capacity to process five tons of hazardous waste per day. The proposed CHCWTF will use a mix of incinerator and autoclave technologies to process hazardous waste:

A high-temperature incinerator: With appropriate pollution controls (i.e., scrubbers) and a processing capacity of 1000 kilograms per hour, this would suffice to manage the city's hazardous HCW.

An autoclave and shredder: Using controlled temperature and pressure, this will sterilize HCW; a shredder will shred treated waste into to unrecognizable pieces that can be dumped safely in landfill.

PROJECT IMPLEMENTATION PLAN

It is recommended that the proposed project be implemented by a public–private partnership (PPP).

In general, PPPs involve a long-term contract between a private party and a government agency to provide a public asset or service where the private party bears significant risk, financial investment, and management responsibility.

RATIONALE FOR ESTABLISHING A PUBLIC–PRIVATE PARTNERSHIP

In many developed countries, the last few decades have seen significant changes in modes of government intervention. Broadly, changes have involved a reduced role for government or, more accurately, a change in its functions and greater private-sector involvement. These changes have meant increased reliance on PPPs for infrastructure development, with private companies increasingly involved in financing and providing infrastructure. In most countries, PPP arrangements

have aimed to overcome two broad public-sector constraints: first, a lack of public capital; and second, a lack of public-sector capacity—that is, the resources and specialized expertise needed to develop, manage, and operate infrastructure assets (Jooste and Scott 2009).

PPPs can mobilize additional sources of funding and financing for infrastructure. PPPs can help improve project selection, subjecting assumptions to the market test of attracting private finance. Countries with relatively long PPP histories have found that PPPs, with their traditional procurement, can manage construction better than public-sector institutions, with projects more often coming in on time and on budget. PPPs can also help ensure adequate maintenance, keeping assets in serviceable condition (World Bank Institute and Public-Private Infrastructure Advisory Facility 2012).

Bringing private-sector participation to development of public infrastructure is to bring in greater efficiencies and improved service delivery. When well structured, PPPs have a built-in incentive to improve efficiency; the “operating” and regulatory/monitoring roles of the project are kept separate, and the focus is shifted from asset creation to service delivery. PPPs also have the capacity to supplement the capacity of governments to provide quality service to their citizenry, at a time that governments are struggling, within their limited fiscal space, to meet rising costs engendered by economic growth, demographics pressures, changing environmental trends, and advances in international agreements and requirements.

The global recognition of these challenges has meant a move toward increased reliance on PPPs that involve private companies in the financing and provision of infrastructure. When done well, PPPs can:

- Help address the fiscal space.
- Improve efficiency within existing resources and assets.
- Increase access and improve equity.
- Contribute to meeting development goals (Hamilton et al. 2012).

PREREQUISITES FOR PUBLIC–PRIVATE PARTNERSHIPS

Experience has shown that for PPP to be effective both a permissive policy and legal framework are needed as well as suitable investment climate. Moreover, the government should have a detailed, well-prepared infrastructure investment plan that clearly indicates the extent to which PPPs could be utilized. Both government and private parties may also need to revise their institutional setup to facilitate public procurement procedures, negotiations, contract management, operational efficiency, and customer satisfaction.

POLICY, LEGISLATION, AND REGULATION

The government of Ethiopia took the initiative to include the protection of public health in the country’s 1995 National Constitution. Both the Constitution and the National Health Policy provide a strong legislative and policy underpinning for promotion of household- and community-level hygiene and sanitation. The Food, Medicine and Health Care Administration and Control Proclamation, Proclamation No. 661/2009, provided further support for improved hygiene and sanitation.

Article 90.1 of the constitution states, “To the extent the country’s resources permit, policies shall aim to provide all Ethiopians access to public health and education, clean water, housing, food and social security.” Article 92.1 promises that the government “shall endeavor to ensure that all Ethiopians live in a clean and healthy environment.”

The policy stated in Article 2, Subarticle 2.1, emphasizes the importance of “the control of communicable diseases, epidemics, and diseases related to malnutrition and poor living conditions.” Subarticle 2.2 stresses “the promotion of occupational health and safety” and Subarticle 2.3 the “development of environmental health.” The health policy’s “general strategies,” outlined in Article 3, include the promotion of “intersectoral collaboration” to accelerate “provision of safe and adequate water for urban and rural populations” and to develop measures for “safe disposal of human, household, agricultural, and industrial wastes and encouragement of recycling” and “to improve the quality of housing and work premises for health.”

In addition, a technical guideline on environmental management of biomedical and HCW has been developed in an attempt to address all relevant issues and to foster improved environmental performance in managing such waste. Similarly, the FMOH has national guidelines for HCWM that address the most pertinent areas of HCWM, including segregation, collection, storage, transportation, treatment, and disposal of waste by different levels of health institutions, from health posts to referral hospitals.

RELEVANT INSTITUTIONS OF THE CITY ADMINISTRATION

Addis Ababa Health Bureau: The Addis Ababa Health Bureau was established in 1995 pursuant to Proclamation No. 311/1995, Addis Ababa City Proclamation of Municipality Service No. 2/1995. The bureau is authorized to organize, coordinate, and regulate public health activities in the city.

The Addis Ababa City Government Executive and Municipal Service Organs Re-establishment Proclamation, Proclamation No. 35/2012, empowers the Addis Ababa Health Bureau to: establish health service standards and ensure their implementation in accordance with the National Health Policy and standards; raise health awareness among city residents and educate them about health; and, in collaboration with the appropriate organs, prevent and control communicable diseases, conduct surveillance, supervise, and collect information about them upon investigation.

Addis Ababa City Government Food, Medicine and Health Care Administration and Control Authority: The Addis Ababa city government’s Food, Medicine and Health Care Administration and Control Authority (FMHACA) was established by Proclamation No. 30/2012, to protect health of consumers by ensuring: food safety and quality; proper use of medicines; competence and ethics among health professionals; standards for health institutions; and the hygiene and environmental health protection necessary to maintain the public health. The authority is responsible for issuing directives on hygiene and environmental health issues and for following up on their execution. In situations where there are gaps, the FMHACA has the authority to take measures.

Because of its responsibility for supervising standards among health institutions, FMHACA has a significant role in realizing the proposed project. One of its contributions might be to ensure the implementation of waste segregation activity per the national HCWM guidelines for facilities and take to corrective measures for facilities that fail to comply with the guidelines.

Addis Ababa City Environmental Protection Authority: Proclamation No. 15/2009 (also called the Addis Ababa City Government Executive and Municipal Services Organs Re-establishment

Proclamation) set up the Addis Ababa Environmental Protection Authority (AAEPA) to reestablish the city's executive bodies and municipal services administration. The authority is accountable to the mayor. AACEPA functions include: preparing the city's environmental protection standards in accordance with federal laws; following up on and controlling disposition of industrial residue, by-products, and wastes in accordance with the law; issuing environmental compliance certificates for production and service-rendering institutions; preparing and submitting strategies for environmental protection and, upon approval, implementing these strategies.

In the proposed project, the authority might have to provide clearance for the technology selected for the treatment facility and would be responsible for monitoring the proposed CHCWTF's waste treatment and disposal activities after the plant becomes operational.

Addis Ababa Cleansing Administration Agency: Established by Proclamation No. 15/2009 as the as Solid Waste Management Agency and renamed the Cleansing Administration Agency in the second Addis Ababa City Government Executive and Municipal Service Organs Re-establishment Proclamation, Proclamation No. 35/2012, the agency is responsible for the control and coordination of integrated solid waste management and the provision of fast, effective, customer-focused waste handling and collection processes, so that solid waste does not affect public health and does not cause environmental pollution.

The agency devises techniques that involve the private sector and other bodies in solid waste management activities; evaluates project proposals submitted by private investors or organizations that intend to engage in the sector; issues competence certificates and work permits; and follows up on all of the foregoing. In general, the agency is also responsible for conducting studies and implementing different service-delivery alternatives that facilitate the rendering of fast, effective service to customers; for contracting out the services and for administering and supervising them; and for ensuring that work is done in accordance with the contract and that payment is then made.

In implementing the proposed CHCWTF project, the agency role would be significant. For example, it may be involved in conducting further assessments of the options for managing the city's HCW. It would also be responsible for assessing the capacity of private-sector service providers and granting them work permits.

Waste Re-Use and Disposal Project Office: Established by Proclamation No. 15/2009, this office has the responsibility for owning solid waste transfer stations and recycling and disposal site projects. The office coordinates and controls sanitary landfill site selection and the study and development of chosen sites. The office also identifies types of projects and sets the standards for each; prepares project terms of reference; solicits and screens bids; handles contractual arrangements for successful bidders; and ensures that projects are executed in timely fashion and in accordance with the prepared standards, plans, and contractual agreements.

The WRDPO would facilitate clearances for the proposed project site and technologies with all appropriate offices. In addition, because the proclamation designates this office as the owner of city transfer sites and landfills, proposed CHCWTF ownership might also be in its jurisdiction. Implementation and procurement for the project would also be handled by this office. In addition, it might also take responsibility for conducting a study to evaluate tariff schemes for CHCWTF services.

PPP POLICY AND FRAMEWORK

Countries with successful PPP programs have built them on sound frameworks that address policy, procedures, institutions, and rules defining PPP implementation. A review of documents and key informant interviews with relevant stakeholders has revealed that Ethiopia lacks such a framework and policy governing identification and implementation of projects suitable for PPP arrangements. Nonetheless, the Addis Ababa Chamber of Commerce and Sectoral Association has found that several public- and private-sector institutions are implementing forms of PPP in Ethiopia (Asubonteng 2011).

Within the health sector, the national health policy strongly emphasizes provision of quality services through intersectoral collaboration, NGO and private sector involvement, and enhancement of national self-reliance in health development by mobilizing and efficiently utilizing both internal and external resources. In line with these goals, the *Health Sector Development Programme IV* (HSDP IV) has emphasized the importance of enhancing PPPs via collaborative endeavors on selected health sector priority programs and health system issues—health infrastructure expansion, local pharmaceutical production, health service provision, training for health professionals, and resource mobilization (Federal Democratic Republic of Ethiopia Ministry of Health 2010).

The national HCWM guidelines permit private-sector involvement in HCWM operations provided that participants are qualified by regional health bureaus (RHBs) for competency and by regional environment bureaus for operation. The guidelines require approval by regional health and environment bureaus of all contracts with private contractors for HCW collection, transportation, treatment, and disposal of HCW.

ILLUSTRATIVE FRAMEWORK FOR IMPLEMENTATION OF A PUBLIC-PRIVATE PARTNERSHIP FOR A COMMON HEALTH CARE WASTE TREATMENT FACILITY

PPP arrangements can function many ways in HCWM. To determine the PPP project scope, the activities that need to be covered and the nature of the service delivery to be provided must be decided; this should be done by analyzing the availability of resources and the technical capacity of contractors, especially those in the public sector. Implementation of safe HCWM practices aims to contain infections and reduce public health risks both within and outside the HFs. Disposing of HCW using off-site common treatment facilities will involve such activities as HCW segregation, collection, and transportation; temporary HCW storage as well as HCW treatment and disposal; and monitoring and supervision of all HCW activities. Any framework for PPP arrangements in HCWM must address these components.

As specified in the national HCWM guidelines, HFs themselves will handle waste segregation at the point of generation—that is, at bedside on the wards, in operating theaters, in medical diagnostic laboratories, and any other place where waste is generated. Health facilities must provide color-coded receptacles for each category of waste. The color-coding system aims at ensuring simple, immediate, and nonequivocal identification of waste and its segregation by hazard type, uniformly and nationwide.

Monitoring and supervision is the responsibility of such regulatory bodies as regional health and environment bureaus, the environmental authority and the regional FMHACA. Other activities can be undertaken by other service providers, and it is on these other activities that PPP arrangements can focus.

POSSIBLE SCENARIOS FOR PUBLIC–PRIVATE PARTNERSHIPS FOR ADDIS ABABA HEALTH CARE WASTE MANAGEMENT

For the proposed project, the public sector has the following options for PPPs:

PUBLIC–PRIVATE PARTNERSHIPS FOR THE COLLECTION AND TRANSPORTATION OF HEALTH CARE WASTE

The first entry point for the private sector in the HCWM process can be a service contract agreement with the RHB or city administration to collect and transport HCW from HFs to the treatment plant. The private sector would invest in vehicles and other waste collection equipment and materials (“inputs”) and would hire and manage required staff. The RHB would assign service providers (either a single provider or multiple providers by zone), after evaluating candidates for competency. The contract could be performance-based and could last two or three years.

Basic assumptions:

- Government or city administration undertakes CHCWTF construction.
- All facility inputs and technologies will be funded by the government.
- Facility management as well as monitoring and supervision lie with the public sector.
- The private-sector role is limited to collecting and transporting HCW.
- HFs segregate HCW following standard national guidelines.
- Revenue collected from HFs in form of service charges will be shared by public and private sectors.

A PUBLIC–PRIVATE PARTNERSHIP TO MANAGE THE COMMON HEALTH CARE WASTE TREATMENT FACILITY

As has been done elsewhere in the world, a PPP arrangement could involve CHCWTF management by the private sector of a facility that itself was funded by public investment. Requiring that RHBs or city administration invest in the facility and technology to process collected HCW, this type of arrangement makes sense when the public sector lacks the managerial know-how to operate a treatment facility. Using the developed infrastructure, the private sector would provide skilled manpower to manage HCW treatment and disposal and would bear the responsibility for facility operation and maintenance. After competitive bidding, a performance-based contractual agreement for a period of five to eight years could be arranged.

Basic assumptions:

- The public sector will construct the CHCWTF.
- The private sector will collect and transport HCW.
- The private sector will manage the routine CHCWTF activities.
- The private sector will cover operation and maintenance costs.

- The private sector will recruit, provide, and manage skilled manpower for the CHCWTF.

A PUBLIC-PRIVATE PARTNERSHIP TO PROVIDE HEALTH CARE WASTE MANAGEMENT SERVICES

A third type of PPP arrangement, a hybrid of the above two, would involve an agreement between either the RHB or the city administration and the private sector both to manage the proposed CHCWTF and to collect and transport HCW. The private sector would operate and maintain the facility, invest in equipment needed for HCW collection and transportation, and provide the skilled manpower to run the process. Private service providers could be selected either to manage treatment and disposal activities or to facilitate HCW collection and transportation.

Basic assumptions:

- The public sector undertakes CHCWTF construction, including treatment technologies.
- The private sector invests in vehicles and other collection inputs.
- The private sector manages routine daily facility operation.
- The public sector is responsible for monitoring and supervision.
- Revenue generated in the form of service charges paid by HFs will finance fees due to the private-sector operators in payment for their services.

PUBLIC-PRIVATE PARTNERSHIP FOR INTEGRATED HEALTH CARE WASTE MANAGEMENT

In a fourth scenario, private-sector service providers would be involved in all HCWM activities. The private sector would finance and invest in the facility, technologies, and collection and transportation inputs; would hire, train, and employ required manpower; and would manage the overall HCWM process. The private sector would also take the responsibility for designing, building, operating, and transferring the infrastructure. Elsewhere in the world, in most similar situations, the private and public sectors enter into a concession agreement that extends between 20 and 30 years. This arrangement fully transfers project risks to the private sector and requires competitive private-sector availability.

Basic assumptions:

- The private sector undertakes CHCWTF construction at the proposed project site.
- The private sector is responsible for purchasing treatment technologies and managing the daily CHCWTF routine.
- The private sector invests in vehicles and other collection inputs.
- The private sector recruits, trains, and manages manpower.
- The public sector monitors and supervises HCWM operations.
- The private sector collects service charges.
- The private sector bears project-related risks.

RECOMMENDATIONS

Based on assessment of private-sector interest in the CHCWTF, the study team recommends that the third of the four types of PPP arrangements outlined above be implemented for the proposed project—that is, the RHB or city administration should be responsible for plant construction and should own the plant, and the private sector would be involved in managing HCW collection, transportation, and treatment as well as CHCWTF daily operations.

Both the public and private sectors would contribute significant resources to this PPP's design and management; it is anticipated that the private sector will contribute at least as much—both via cash and in-kind resources—as the public sector contributes in funding. The specific contributions of each party will be calculated once the number of facilities to be served by the PPP, the distance to and from the treatment plant, and other determinants are known.

ANTICIPATED RISKS AND MITIGATION MEASURES

The success of projects highly depends on proper identification, allocation, and mitigation of risks. Some of the anticipated risks involved with the CHCWTF project follow.

FINANCIAL RISKS

Constructing and equipping the facility will require substantial resources. Unless the government involves donors, acquiring such capital might delay for project start-up.

LIMITED PRIVATE SECTOR

According to reports from similar PPP projects, private-sector engagement was low when an investment venture involved a longer payback period. Interest from only a limited number of service providers, with an absence of competition, may result in inefficient performance. To forestall this, the government may need to break up HCW collection and transportation activities into zones, to make participation possible for smaller companies in larger numbers.

LOW AWARENESS AND BEHAVIORAL CHANGE

The rapid assessment leading up to the CHCWTF project identified poor HCW segregation practices among health workers as a main challenge to appropriate HCWM. Among assessed HFs, the government-mandated use of color-coded bins for waste segregation was almost nonexistent. Thus, hazardous wastes were often found mixed with general wastes, increasing not only the risks to patients, HF staff, waste handlers, and the community but also the cost of proper HCW treatment.

ENVIRONMENTAL RISK AND MITIGATION

Before the PPP is implemented, an environmental impact assessment (EIA) must be conducted and an environmental mitigation and monitoring plan (EMMP) developed.

OBJECTIVES OF THE ENVIRONMENTAL IMPACT ASSESSMENT

The EIA's objectives will include:

- Identifying impacts on surrounding communities.
- Specifying mitigation measures for these impacts.
- Developing an EMMP for implementing the mitigation measures, planning for appropriate resources utilization, facilitating decision making, and creating community awareness of facility benefits.

ENVIRONMENTAL MITIGATION AND MONITORING PLAN

The EMMP should include a matrix that enumerates mitigation measures to be addressed in each of the four project phases, as well as monitoring indicators for each mitigation measure, monitoring and reporting frequency, parties responsible, and cost estimates.

Before construction: The EMMP should provide for appropriateness of site selection to be determined; coordination with local authorities; community sensitization; and awareness creation.

Construction period: EMMP measures during this phase should provide for avoiding the displacement of local residents; for ensuring that construction methods are environmentally friendly; for appropriate disposal of construction waste; for fencing and the purchase of appropriate equipment; and for the construction of lagoons, forest cover, and/or reed beds, as appropriate, for pollution control.

Operations/collecting, transporting, temporarily storing, and destroying participating health facilities' infectious and pharmaceutical waste: The EMMP should address such issues as the purchase of appropriate transport vehicles; training of site and HF staff; occupational safety measures; use of air pollution control systems; and monitoring and evaluation of operations.

Operations/maintaining an efficient, environmentally-friendly final disposal unit: The EMMP should provide for such issues as maintenance of the equipment and the site; environmental audits; annual air pollution testing; and monitoring and evaluation.

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