



Lao People's Democratic Republic

Peace Independence Democracy Unity Prosperity

Ministry of Health

Department of Planning and International Corporation

Health Governance and Nutrition Development Project

Additional Financing

ENVIRONMENTAL MANAGEMENT PLAN

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1. Introduction and Objective

1. The activities under the Health Governance and Nutrition Development Project - Additional Financing (HGNDP-AF) will not finance any input-based civil works. No major impact is foreseen on physical cultural resources, natural habitats or forests, except possible minor site-specific environmental impact that may arise from Component 2 (service delivery), where the Disbursement Linked Indicators (DLIs) approach could involve minor renovations or refurbishment of health facilities. Similar to the original project, the additional financing (AF) is expected to generate medical waste but impact is considered minor. The AF will continue to finance operational cost for implementation of Social Behavior Change and Communication (SBCC) for nutrition and Community-Led Total Sanitation (CLTS) activities to achieve Open Defecation Free (ODF) villages. No civil works would be financed for these activities.

2. The objectives of this environmental management plan (EMP) to ensure compliance with national laws and World Bank OP 4.01 environmental safeguard policy and to recommend feasible and cost-effective mitigation measures for HGNDP-AF. It provides procedures to managing the potential negative impacts on local environment and rural communities of all minor renovations and refurbishment of health facilities to be carried out. The EMP also suggests simple measures to prevent impacts on the environment and people hygiene from latrine installation/operation, which will be solely done by villagers. These mitigation measures are intended to guide the project responsible staff with a view to incorporating appropriate management actions during project implementation.

3. Primary responsibility for effective application of mitigation measures contained in the EMP rests with the HGNDP Project Coordination Offices at all levels. National Project Coordination Office (NPCO) in collaboration with Department of Health Curative (DHC) and Department of Hygiene and Health Promotion (DHHP) will be closely monitoring and ensuring the actions highlighted herein are undertaken with a view to finalizing the EMP, and that finalized mitigation measures are strictly adhered to during project implementation.

2. Country Social and Economic Context

4. Lao people's Democratic Republic (Lao PDR) was categorized as lower middle income country with its Gross National Income per capita of US\$1,600 in 2014. It has an average real GDP growth rate estimated at close to 7.5 percent per year for the past 15 years, though it is still one of the poorest countries in Southeast Asia. The poverty rate halved in two decades from 46 percent in 1992/1993 to 23 percent in 2012/2013. Despite such decline, the poverty rate in rural areas, where nearly three-fourths of the country's 6.45 million people live, is still high (28.6 percent); this is almost three times the rate in urban areas (10 percent). Substantial disparities remain across ethno-linguistic groups, with the Lao-Tai group having much lower poverty rates (15 percent) than the other three groups (an average of close to 40 percent).

5. Over the past decades Lao PDR has made consistent and substantial progress in regard to key population health outcomes, maternal and child health in particular. Life expectancy at birth increased from 49 years in 1980 to 66 years in 2014, while infant mortality decreased from 135 per 1,000 live births in 1980 to 51 in 2015 and under-five mortality dropped from 200 per 1,000 live births to 67 in the same period. The maternal mortality ratio and the total fertility rate have significantly declined from 546 in 2000 to 213 per 100,000 live births in 2014 and 4.3 from 2000 to 3.0 in 2014 respectively (LSIS 2012).

6. However, substantial challenges remain, particularly nutrition outcome. Undernutrition level in Lao PDR is among the highest in the world. In 2011 more than a quarter of children under 5 (26.5 percent) in Lao PDR were underweight and more than 40 percent were stunted. Corresponding to the poor child nutrition outcomes are not only low access to quality of health care and low levels of coverage immunization but also low macro- and micronutrient intake due to low dietary diversity, and poor hygiene and sanitary environment, especially open defecation in rural community.

3. Project Description

7. The original IDA Grant (D073-LA) and Credit (5676-LA) became effective on October 12, 2015 with total financing of SDR18.8 million (US\$26.4 million equivalent). The Project development objective (PDO) is to help increase coverage of reproductive, maternal and child health, and nutrition services in target areas in Lao PDR. Project components consist of (i) health sector governance reform, (ii) service delivery (DLIs), (iii) nutrition SBCC, (iv) project management, (v) contingency. The Project uses a combination of results-based financing through DLIs and conventional financing to service delivery component and input-based financing for other components. 70 percent of total project value being invested through DLIs approach of which a large part is disbursed directly to the health facilities at provincial, district, and health level for service delivery, and the remaining 30 percent is shared across strengthening information systems, nutrition behavior change and project management costs. The Project is expected to benefit approximately one million pregnant women, family planning users, and children age 0 to 23 months across 14 provinces. In addition, children in high priority nutrition districts are benefiting from changed behaviors and practices of their caregivers, resulting from intensive SBCC.

8. Nineteen months after project effectiveness, HGNDP has contributed to significant achievements in the Lao PDR health sector. Under Component 1, the project has supported extensive use and expansion of the DHIS2 as a tool to monitor the DLIs; as a result, its use has substantially expanded and MOH has embarked on a single approach to HMIS through the use of DHIS2. To accelerate this process, the first draft of the Health Information Strategic Plan (2017-2025) has been completed along with a first draft of an eHealth Strategy. Under Component 2, the use of DLIs as a mechanism to improve health outcomes and address critical health system constraints has been widely accepted by the GoL - both at central and subnational levels. The piloting of DLIs through this project has introduced the concept of results-based planning and budgeting at both the central and provincial levels and has enhanced the capacity of the provinces for better planning in line with the GoL policy of devolvement. This is therefore an approach which the GoL has expressed its strong commitment to further expand. Under Component 3, the project has been supporting the development and implementation of an SBCC strategy both at central and village levels, along with directly contributing to health and nutrition service delivery through an integrated approach. At central levels, the focus has been on delivery of strategic SBCC messages through mass media; this will be scaled up under the AF. Lastly, component 4 has contributed to intensified supervision and monitoring at the provincial levels as well as introducing independent verification of the data collected through the DHIS2, thereby increasing the confidence of senior management in reported data.

9. The PDO of the HGNDP-AF remain same as original project. The proposed additional financing will build on the achievements so far of the HGNDP and will continue to support improvement of coverage of reproductive, maternal and child health and nutrition services in 14 target provinces through: (i) expansion and further strengthening of the health management information system (HMIS) and transition to a single approach using the District Health Information System version 2 (DHIS2); (ii) strengthening the health system administration,

management, financial management and monitoring and evaluation (M&E) at the provincial level; and delivery of reproductive, maternal and child health (MCH) and nutrition services at the provincial, district, health center and village level; (iii) further strengthen the implementation of the national integrated strategy for SBCC to improve nutrition as well as at national and village level in selected high priority districts; and (iv) strengthening of project management, third party verification, evaluation of impact of SBCC implementation for nutrition. Further, the AF will support strengthening the National Health Insurance Bureau (NHIB) in their new role of financing the free MCH services, provide Technical Assistance (TA) for addressing financial management weakness at the district level and TA to initiate dialogue between Ministry of Finance (MOF), Ministry of Planning and Investment (MPI) and Ministry of Health (MOH) on expansion and institutionalizing results-based planning and budgeting.

4. Health Care Waste Management

10. Similar to the original project, the AF is also expected to generate medical waste but environmental impact is considered minimal. To mitigate any environmental impact, the project follows Prime Minister's Degree No. 178/PM on Ministry of Health's Regulation and Implementation; Law on Drugs and Medical Products (Amended) No. 07/NA; Law on Environmental Protection (Amended) No. 29/NA; Regulation on Drug and Medical Waste Management and Disposal No. 1862/MH; Regulation on Pharmaceutical and Medical Product Establishment (Amended) No.2684/16.DFD; Drug Regulation No. 1798/09 DFD.

4.1 Solid Waste Management

11. In general, delivery of reproductive health and MCH services will inevitably create waste that is potentially hazardous. Health care wastes (HCW) are typically more hazardous than other types of wastes and should be considered in planning health care facilities (HCF) operations. Exposure to hazardous HCW can result in disease or injury to medical doctors and nurses, auxiliary and maintenance staff, patients and visitors, and workers at waste disposal facilities. To address these concerns, it is essential to put in place safe and reliable methods for handling and disposal of medical waste. The project follows Regulation on Drug and Medical Waste Management and Disposal No. 1862/MH.

4.2 Liquid Waste Management

12. Wastewater from HCF and communities represents a sub-category of HCW that should be addressed in planning minor renovation of HCF and SBCC for sanitation at community level as part of HGNDP-AF. Although liquid waste from HCF is typically of a similar quality to community wastewater, it may also contain potentially hazardous components of concern from a human health perspective. Typically, effluents discharged by HCF are greatly diluted and, as such, no significant health risk should be expected if discharged to municipal sewer system which provide for proper treatment. Where connection to municipal system is not feasible, then appropriate precautions must be taken to avoid health risk associated with discharge of untreated or inadequately treated effluents to the receiving environment. It is recommended that, where possible, HCF should be connected to municipal system and that pre-treatment of potentially hazardous waste streams be provided. Where there are no sewage systems, appropriate on-site wastewater treatment systems are required. The project does not support any construction of new HCF. To mitigate any environmental impact of those renovations, the project follows the Law on Environmental Protection (Amended) No. 29/NA.

5. Health Care Facility Renovations

5.1 Renovation of Health Care Facilities

13. The HGNDP-AF will not finance any civil works under input-based components neither minor renovation/refurbishment nor installation of toilets in rural community. No major impact is foreseen on physical cultural resources, natural habitats or forests, except possible minor site-specific environmental impact that may arise from Component 2 (service delivery), where the DLI approach could involve minor renovations or refurbishment of existing HCF.

14. Small renovations of HCF would include fixing leaking roof/water taps, broken windows/doors, repainting wall or fence. These renovations have no potential damage to local ecosystems and disturbing to neighboring communities. However, to ensure that potential construction-related issues are properly addressed, comprehensive environmental and human health safeguards will be adopted to avoid or minimize adverse. Safeguards will encompass:

- Protecting ecosystems to prevent damage to sensitive species and habitats;
- A voiding pollution of watercourses and tainting of drinking water aquifers;
- Addressing safety hazards posed by construction-related vehicular traffic;
- Minimizing nuisance to neighbors from visual impacts and increased dust and noise emissions;
- Identify potential human health and environmental concerns (the presence of hazardous materials such as asbestos);
- Strict adherence to occupational health and safety guidelines applicable to small civil work (e.g., safe removal and handling of asbestos); and
- Ensuring the proper disposal of construction wastes, with particular attention given to safe disposal of asbestos and other potentially hazardous materials.

5.2 Drinking Water Quality in Health Care Facilities

15. Attention will be given to ensuring the safe supply drinking water to HCF where the DLIs approach applied. Although drinking water quality in central and southern provinces is generally acceptable, some concerns remain regarding inorganic pollutants, and microbiological quality of available water sources. Specifically, groundwater arsenic concentrations have been found to exceed applicable guidelines in some provinces, especially in Northern provinces where SBCC for nutrition is rolling out.

16. In the absence of enforceable national standards, it is appropriate to apply international drinking water quality guidelines as recommended by WHO. Proposed interim monitoring parameters shown in Table 1 are consistent with existing national guidelines for rural drinking water.

Table 1: Interim MOH HGNDP-AF water quality guideline

Parameter	Units	WHO Guideline Value20
pH	-	6.5-9.5; preferably<8
Turbidity	NTU*	5
Taste and odour	-	Acceptable
Conductivity	-	
Iron	-	No guideline proposed

Manganese	mg/ml	0.5
Arsenic	mg/ml	0.01
Fluoride	mg/ml	1.5
Nitrate	mg/ml	50
Thermotolerant coliforms	-	Not detectable
Total hardness	Mg/ml	Preferably <200
Residual chlorine		No guideline proposed

*Nephelometric Unit (NTU)

17. In addition, bacteriologically unsafe drinking water poses a recognized general threat to human health if adequate precautions are not taken. Recognizing the importance of assuring the supply of safe drinking water to HCF, mitigation measures to be adopted include: (i) use of proven water sources; (ii) routine testing of water supply; (iii) water treatment to remove harmful constituents; and (iv) proper design and installation of water distribution systems in HCF to ensure consistent delivery of good quality water.

6. Mitigations Measures and Responsibility

6.1 Institutional Arrangement for Environmental and Social Safeguard

18. On February 9th, 2017, the MOH has issued an appointment of staff to oversee environmental and social safeguard plan and activities for the project. This announcement has been submitted to all concerned at the national and provincial levels. Key information are as follows:

- a) At the policy and oversight level: Dr. Prasongsidh Boupha and Dr. Funkham Rattanavong, Director General and Deputy Director General of Department of Planning and International Corporation, were appointed. They will continue to also oversee other aspects of the project.
- b) At the technical level: Dr. Southanou Nathanontry (Deputy Director of the Project), Dr. Chansaly Phommavong (Deputy Director of the Project) Dr. Amporn Keoudom (Project Consultant), Dr. Choulapone Sayasene (Project Consultant) and provincial consultants from the four participating provinces of component 3 – Nutrition SBCC were appointed.
- c) Roles and responsibilities at the technical level involve
 - Coordinate with MOH key technical departments involves in environmental and social health in order to provide technical support on HCW management, water quality and construction waste handling. The key technical departments include Department of Health Care (DHC), Department of Hygiene and Health Promotion (DHHP), Department of Food and Drug (DFD), National Center for Environmental Health and Water Sanitation (Namsaatt), Medical Products and Supplies Center (MPHC)

- Planning and conducting activities in collaboration with Provincial and District Project Coordination Office (PPCO and DPCO) to fulfill social and environmental safeguard requirements;
- Work together with the provincial health office (PHO) and provincial coordinators to provide capacity building to Health officer at HCF and monitoring the compliance of mitigations measures set out in this EMP in all 14 project provinces. The appointed focal points will also ensure that environmental related consultations are implemented in the 14 project provinces;
- Produce safeguard consultation report with the project oversight committee to address issues or concerns received from the consultations, and provide report to the World Bank;
- Develop Feedback and Response Mechanism (FRM) that is appropriate to the local context;
- Ensure that the IEC and training materials produced by the Project address the gender and ethnicity issues;
- Include the social and environmental safeguard related activities in the action plan and report the progress in project semi-annual report.

6.2. *Mitigations Measures*

19. Environmental and human health safeguards presented in this EMP are intended to ensure that any potential HCW, small renovation and water quality related issues are understood and that appropriate mitigation measures are adopted to avoid or minimize adverse impacts. To this end, mitigation measures of potential environmental impacts and responsibility to be applied by the HGNDP-AF can be seen in Table 2 below.

Table 2: Mitigation measures potential environmental impacts and responsibility

Actions	Issues	Mitigation Measure	Responsibility
<p>Solid Waste Management</p>	<ul style="list-style-type: none"> - Recognizing that delivery of health services may result in generation of potentially harmful solid and liquid water. - Persons potentially at risk from exposure to hazardous HCW include medical staff, janitorial staff, patients and visitors, workers at waste treatment facilities, and scavengers at landfills. - The existing HCW management regulation promotes incineration methods for treatment of HCW. However, it is not mandatory. MOH clarify that incineration will remain an option where appropriate i.e., depending on the availability of suitable facilities and when it represents the most cost - effective technology. 	<p>20. Appropriate HCW management systems must be put in place to address human health and environmental concern. This will follow Regulation on Drug and Medical Waste Management and Disposal No. 1862/MH. Based on this regulation:</p> <ul style="list-style-type: none"> • HCW shall be segregated at source and type, awaiting collection and disposal according to type under Regulation on Drug and Medical Waste Management and Disposal No. 1862/MH. • Different waste and air tight containers shall be kept spatially separated according to medical chemical and type within HCF working areas to prevent cross contamination, chemical reaction, leakages and/or airborne transmission. • All medical waste before disposal needs to be reported to responsible disposable unit and disposed of according to each chemical, type and amount according to WHO standards. • To minimize potential transmission routes for infections from HCW, puncture-proof containers shall be used for sharps to reduce cuts or needle stick injuries. Sharps will be disposed in cement pit on site where available, if not according to sharps disposable management plan. • Sharps containers shall not be reused. • Highly infectious wastes (e.g., laboratory samples containing body fluids, tissues or fecal stools from isolation patients) will be autoclaved prior to disposal. • Containers and wastebaskets will be securely covered to reduce the risk of air born transmission of pathogens released from body fluids. • HCF personnel will be instructed on less-than-full bag filling, proper bag closing and sealing. • Bulk storage areas for medical wastes shall be located separately from the general waste storage area. • Where medical waste cannot be removed for appropriate disposal, a medical waste storage area shall be appropriately constructed based on WHO standard to be sufficiently large, protected from the elements, accessible, and secure (i.e., fenced, locked, warning signs displayed) on 	<ul style="list-style-type: none"> - NPCO in collaboration with DHC, DFD and DHHP, PPCO, DPCO, and Health officers at HCF - PPCO, DPCO, and Health officers at HCF

		<p>site.</p> <ul style="list-style-type: none"> • Adequate training will be provided to HCF personnel at all levels to heighten awareness of risks and knowledge of safeguards procedures. • Cement pits constructed according to WHO standards at each HCF are used to incinerate appropriate medical waste according to chemical markup and type as defined under Regulation on Drug and Medical Waste Management and Disposal No. 1862/MH <p><u>Infectious and pathological waste</u></p> <ul style="list-style-type: none"> - Where suitable incineration facilities are available, incineration is considered an appropriate treatment and disposal option. - Where incineration is not appropriate, other treatment methods such as autoclaving, chemical disinfection, encapsulation, and inertization should be applied. - Highly infectious waste (i.e., laboratory and pathological) should be autoclaved or chemically disinfected first before further treatment. - Following treatment, residues may be disposed at a suitable landfill facility identified in each province. - Unless there is an adequate wastewater treatment system, blood should be disinfected before discharge to a sewer. <p><u>Sharps</u></p> <ul style="list-style-type: none"> - Mutilation, disinfection and encapsulation is the preferred method of sharps disposal. - Alternatively, sharps will be separated and kept in hazardous box and disposed of together in a cement pit where they cannot be reached and/or reused - A detailed Sharps Management Plan will be developed with MoH and disclosed by 31st October 2017. <p><u>Chemicals</u></p> <ul style="list-style-type: none"> - Care should be taken in storing hazardous waste, with different wastes to be kept in separate containers prior to disposal. - Whenever feasible, hazardous chemicals should be returned to the original supplier. - Small quantities of non-hazardous wastes (e.g., amino acids, sugars, 	<ul style="list-style-type: none"> - PPCO, DPCO, and Health officers at HCF - NPCO in collaboration with Medical Products and Supplies Center (MPCS), PPCO and DPCO, and Health officers at HCF - NPCO in collaboration with Medical Products and Supplies Center (MPCS), PPCO and
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		<p>certain salts) may be disposed with general waste or discharged into sewers.</p> <ul style="list-style-type: none"> - Small quantities of hazardous waste may be incinerated, encapsulated or land filled. - Hazardous wastes should not be discharged to sewers. - Large waste quantities should not be land filled so as to avoid surface and groundwater contamination. - Large quantities of chemical disinfectants should never be encapsulated and they can only be incinerated if adequate emissions cleaning equipment is installed. <p><u>Heavy metals</u></p> <ul style="list-style-type: none"> - Small waste quantities not containing mercury and cadmium may be discarded with general waste. - Recycling or disposal of wastes by a hazardous waste management specialist is the preferred disposal option for larger waste quantities. - If recycling or specialized disposal are not feasible, then wastes can be encapsulated and disposed of to a suitable landfill. - Wastes should not be incinerated, nor land filled without encapsulation, to avoid air and water pollution. <p><u>Genotoxic waste</u></p> <ul style="list-style-type: none"> - Genotoxic: waste should never be land filled or discharged into sewer systems. - Return of wastes to suppliers for treatment is the preferred disposal option. - Incineration should only be considered if adequate high temperature facilities with air emissions monitoring are available. - Chemical degradation of wastes represents an alternative disposal option if adequate facilities are available. <p><u>Pharmaceuticals</u></p> <ul style="list-style-type: none"> - Every effort should be made to avoid allowing drugs to expire. Records should be maintained of expiry dates and close-dated drugs made available to other HCF to expedite complete use. - Small waste amounts may be land filled if combined with large 	<p>DPCO, and Health officers at HCF</p> <ul style="list-style-type: none"> - NPCO in collaboration with Medical Products and Supplies Center (MPCS), PPCO and DPCO, and Health officers at HCF - NPCO in collaboration with Medical Products and Supplies Center (MPCS), PPCO and DPCO, and Health officers at HCF - NPCO in collaboration with Medical Products and Supplies Center (MPCS), PPCO and DPCO, and Health officers at HCF
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		<p>quantities of general waste.</p> <ul style="list-style-type: none"> - Small waste quantities may also be encapsulated together with sharps or buried on hospital premises when appropriate. - Moderate quantities of low toxicity pharmaceuticals may be diluted and disposed to sinks only if discharged to municipal sewers. <p><u>Sewers</u></p> <ul style="list-style-type: none"> - Small waste quantities may be incinerated together with infectious or general waste if less than 1 % of the total waste. - Empty ampoules should not be incinerated but instead should be crushed and disposed of with sharps. - High temperature incineration is recommended for larger waste quantities if adequate emissions cleaning equipment is installed. - Encapsulation is an alternative method for disposing of larger quantities of liquid, semi-liquid or solid wastes. - Land filling of large waste quantities is not recommended unless the waste is encapsulated and disposed of to a sanitary landfill. - Waste should not be disposed with general waste, or diluted and discharged into sewers. <p><u>Pressurized containers</u></p> <ul style="list-style-type: none"> - Return of undamaged gas containers to manufacturers for reuse and recycling is the preferred disposal option. - If recycling and reuse is not feasible then containers can be crushed and disposed of to landfills. - Aerosol containers can be combined with general waste and land filled. - Pressurized containers should never be incinerated due to the severe risk of explosion. <p><u>Radioactive waste</u></p> <ul style="list-style-type: none"> - Storage and disposal of wastes should be in strict accordance with specific regulatory requirements applying to radioactive sources in hospitals. Special facilities are required for waste storage to ensure security and protection of human health and the environment. - Whenever possible, spent wastes and used equipment should be returned to suppliers. 	<ul style="list-style-type: none"> - NPCO in collaboration with Medical Products and Supplies Center (MPCS), PPCO and DPCO, and Health officers at HCF - NPCO in collaboration with Medical Products and Supplies Center (MPCS), PPCO and DPCO, and Health officers at HCF
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		<ul style="list-style-type: none"> - Recycling and reuse of radioactive waste and used equipment may be an option where safe and feasible. <p><u>Waste Treatment Disposal</u></p> <ul style="list-style-type: none"> (a) Incineration (b) Wet Thernal treatment (Steam disinfection) (c) Chemical Disinfection (d) Sanitary Landfills (e) On-Site Landfills (safe burial of HCW on HCF premises) (f) Encapsulation and Inertization 	
Liquid Waste Management	<ul style="list-style-type: none"> - HCF wastewater discharge contains potentially hazardous constituents, including: Microbiological pathogens introduced into wastewater streams by patients being treated for enteric diseases are of most concern. - Discharge of untreated or improperly treated wastewater from HCF poses a potential threat to the general community. 	<ul style="list-style-type: none"> - Where possible, HCF connected to municipal WWTP - Compact on-site sewage treatment systems - In remote locations: affordable means - Convenient washing and sanitation facilities for patients and families - Sewage from HCF will never be discharged to wetlands or agricultural lands - Sewage will not be discharged into near water bodies - Standardized design and construction specifications will be developed for waste water collection and treatment. 	NPCO in collaboration with Medical Products and Supplies Center (MPCS), PPCO and DPCO, and Health officers at HCF
Renovation of HCF	<p>Small renovation of existing structures at HCF have the potential to cause adverse impacts, including:</p> <ul style="list-style-type: none"> - Damage to Sensitive ecosystems. - Pollution of water courses - Nuisance to neighbors - Occupational health and - Safety of construction workers - Construction waste handling and disposal <p>Asbestos Containing Materials</p>	<ul style="list-style-type: none"> - Brief contractors on environmental and human health requirement. - Avoid use of materials hazardous to health and safety - Ensure that handling and disposal of construction waste is in accordance with regulations and/or best practices. - Environmental performance targets will be established for building lifespan, energy efficiency, conservation of resources, use of environmentally friendly building materials and all aspects of waste management. - Safe removal of asbestos should be given a high priority in completing HCF civil works: Because specific regulation has not yet been developed in Lao PDR, International occupational health and safety guidelines will be applied during removal of ACM from HCF 	NPCO in collaboration with DHC and DHHP, MPSC, PPCO, DPCO, and Health officers at HCF

	<ul style="list-style-type: none"> - Mounting evidence of adverse human health effects (i.e., inhalation of fibers can cause scarring of lung tissue and lung cancer). - Poses potentially serious human health risks to construction workers involved in building demolition and renovation, the general public, and workers and scavengers at landfills. 	<p>undergoing Renovation. The Australian NOHSC Code of Practice for Safe Removal of Asbestos I¹ is to be adopted for this purpose.</p> <p>Renovation of existing HCF</p> <ul style="list-style-type: none"> - No ACM will be used - If ACM at a given HCF is to be removed or repaired, the PMU will stipulate required removal and repair procedures in the contractor's contract. - Contractors will remove or repair ACM strictly in accordance with their contract. Removal personnel will have proper training prior to removal or repair of ACM. - All asbestos waste and products containing asbestos is to be buried at an appropriate landfill and not to be tampered or broken down to ensure no fibers are airborne. 	
<p>Drinking Water Quality Management</p>	<ul style="list-style-type: none"> - Bacterially unsafe drinking water presents a common and widespread health treat; poses a risk to patients in HCF who are more susceptible to infectious diseases caused by pathogenic bacteria, viruses and parasites. - Providing assurances that the drinking water is safe is of prime importance. To this end, drinking water supply to HCF funded under the AF must be of acceptable quality. - National drinking water standards have not yet been established in Lao PDR to date only suggested targets have been set for rural water supply. In the absence of enforceable national standards, it is appropriate to apply international drinking water quality guidelines as 	<p>Specific mitigation measures intended to ensure that drinking water supply to HCF meet or exceed the WHO guidelines are as follows:</p> <ul style="list-style-type: none"> - In selecting a water source for each HCF the NPCO will ensure that the quality of the water is satisfactory untreated or treatable for drinking and that the quantity available is sufficient to meeting continuing water demands. Analysis of water supply requirements for each HCF should also take into account requirements for higher quality water for some specialized purposes. - Preference should be given to connecting HCF to proven water sources such as municipal piped water systems. Assurances should be sought from water suppliers concerning compliance with drinking water quality guidelines. - Best practices, for example guidelines developed by WHO, should be adhered to in the design of appropriate water supply systems to be installed at HCF. Water distribution systems in HCF will be constructed of corrosion-resistant pipe materials, have sufficient capacity to satisfy peak needs, and be pressurized to prevent cross-contamination; regular inspections will be completed to ensure proper system functioning and integrity. - Regular monthly testing of drinking water supply will be conducted at each HCF to document ongoing compliance. Testing frequency should 	<p>NPCO in collaboration with DHHP, Centre for Water Supply and Sanitation (MOH) and its Branches in Provinces, PPCO, DPCO, and Health officer at HCF</p>

¹ Code of Practice for the Safe Removal of Asbestos. 1988. National Occupational Health & Safety Commission (NOHSC)

	<p>recommended by WHO. Proposed interim monitoring parameters shown in Table 1 are consistent with existing national guidelines for rural drinking water supply.</p> <ul style="list-style-type: none"> - Arsenic can cause skill disorders, respiratory, cardiovascular, immune, reproductive, gastrointestinal and nervous system ailments - WHO/UNICEF: interim standard for arsenic 0.01mg/l 	<p>reflect the reliability of water supply more frequent testing will be necessary if there is the likelihood of an exceedance of any parameter. In finalizing water quality monitoring requirements, the PMU should consider logistical considerations relating to testing frequency and provide guidelines to HCF relating to the collection and testing of water samples, and reporting of results.</p> <ul style="list-style-type: none"> ▪ If the testing results at any HCF show non-compliance then the cause of an exceedance will be investigated and appropriate corrective measures taken. Treatment systems will be installed as necessary to remove harmful constituents such as pathogens and impurities. Water treatment processes applied should take into account the quality and nature of water supply sources, with the intensity of treatment depending on the degree of contamination. ▪ At locations lacking access to reliable and safe piped water supply, an evaluation of alternative water sources such as ground or surface water (e.g., natural spring, flowing river, or lake) or bottled drinking water will be completed. Factors to be considered on a case-by-case basis are: (i) whether available water sources meet water quality guidelines, (ii) the technical feasibility of treating a water source to acceptable quality; and (iii) installation costs and operational expenses. Where ground water and surface water does not meet guidelines or where treatment is not feasible or cost effective then bottled drinking water will be utilized and safeguards put in place with HCF to prevent consumption of drinking water from unsafe sources. ▪ It is essential that these parameters be revisited regularly by the NPCO in consultation with responsible authorities to ensure the HGNDP-AF monitoring remain current and relevant. Particular attention should be given to tracking proposed new standards for urban piped water supply, as these would supersede the WHO guidelines. Similarly, once existing national guidelines for rural water supply become standards these should be applied. ▪ To ensure consistent application of proven treatment technologies, it is recommended that standardized, detailed technical guidelines and design specifications be developed by the NPCO to be followed in HCF construction and procurement. <p>Mitigation and remedial measures applicable when high arsenic levels are found in a drinking water source include:</p>	
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		<ul style="list-style-type: none">- Investigate the possibility of digging deeper tube wells (i.e., water from deeper than 25m is generally safe and potable) to access better quality water.- Extending water supply to HCF from proven water sources such as municipal piped water supply or pumping from other safe wells.- Substitution of alternative low-arsenic sources of drinking water such as rainwater or potable surface water where available and appropriate. <p>Water containing elevated arsenic is reserved for non-drinking purposes such laundry and sanitary uses. Water from safe wells surface water sources or bottled water purchased from commercial certified suppliers is used exclusively for consumption by patients and HCF personnel.</p>	
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7. Capacity Building

21. To ensure the satisfactory application of best HCW management practices, therefore necessary resources will be allocated to capacity building at HCF funded under the DLIs approach of the HGNDP-AF. Capacity building will focus on: raising awareness among Health officers HCF of occupational health and environment issues; and providing refreshing training in best HCW handling and disposal practices. It is considered essential that training be targeted at all Health officers at HCF in the 14 Project Provinces (i.e., both health care personnel, and auxiliary and support staff) to avoid lapses in HCW practices during daily operations. To ensure that HCW management guideline are available at all HCF at the national, provincial and district levels.

8. Monitoring and Evaluation

22. Monitoring and Evaluation of HCW management, water quality, small renovation and operations at HCF will be undertaken by the HGNDP Project Coordination Offices at all levels to ensure that regulatory reporting requirements are met and to demonstrate good environmental performance on an ongoing basis. Particular attention will be given to tracking and evaluating solid and liquid waste management and water quality control practices. Primary responsibility for monitoring of daily operations will rest with individual HCF, with the NPCO providing oversight to ensure full compliance with reporting requirements and timely submission of necessary reports to MOH steering committee.

23. The HGNDP has a monitoring and evaluation system which is based on an agreed project results framework. The framework consists of six project development indicators and eight intermediate result indicators. Most of the indicators could be monitored and evaluated through a web-based system (DHIS2). Environment safeguard activities will be monitored under provincial DLI 6 – Supervisory Check List for improving quality of HCF. M&E results will be included in semi-annual reports then shared with the World Bank.

9. Budget and Disclosure

24. Budget for implementation of environmental safeguard activities in this EPM will be allocated from provincial DLI 6. Project provinces will include the allocation in their annual budget plan then submit to NPCO for review and Department of Planning and International Coordination for approval.

25. Original EMP prepared for the Health Services Improvement Project (HSIP) which the MOH adopted, disclosed and implemented since 2006. The first updated was made for HSIP-AF in 2014 which already in the public domain. This revised EMP is specifically for HGNDP. It was agreed that the revised EMP will be made available to all HCF and PHO/PPCO, DHO/DPCO in the 14 Project Provinces in an appropriate form and manner. It will be made available in both Lao and English, and will be disclosed on the Ministry's website as well as in local newspapers.

Reference

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World Bank (2014) Environmental Management Plan for the Health Services Improvement Project – Additional Financing.