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**Cambodia Nutrition Project  
(CPN: P162675)**

**Environmental Management Plan  
(EMP)**

**PREPARED BY**

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**Ministry of Health**

*Royal Government of Cambodia*

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## 1. INTRODUCTION AND BACKGROUND

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### 1.1 INTRODUCTION

Emerging from widespread poverty in the 1990s, Cambodia health outcomes have improved rapidly and surpassed several countries which were much better off at this time. Despite progress on many fronts, maternal and child undernutrition remain a significant public health challenge, constraining the foundations of Cambodia's human capital formation. Although child stunting (low height-for-age) declined from 59% in 1996 to 32% in 2014, prevalence remains 'high' according to WHO public health thresholds. Child wasting (9.6 percent) is also considered 'high', particularly given low levels of absolute poverty and food insecurity. Maternal undernutrition contributes to poor pregnancy outcomes for women and their children: fourteen percent of women age 15-49 are underweight. Among women of reproductive age, nearly half (44 percent) suffer from anemia. Poor maternal health and nutrition during pregnancy (including maternal anemia and underweight) contribute to the high burden of children born with low birth weight (11 percent) as well as the *in utero* origins of stunting (UNICEF 2016).

Inequities in reproductive, maternal, newborn, child, and adolescent health and nutrition (RMNCAH-N) outcomes persist and need priority attention. National averages mask distinct disparities in RMNCAH-N outcomes for Cambodia's rural, remote, indigenous, and socioeconomically challenged families. The wealth gap in child mortality has remained unchanged since 2005 at roughly three times higher for poor and rural children compared to wealthy and urban. Between 2000 and 2014, both absolute and relative inequality gaps in NMR by household wealth and place of residence increased. Stunting prevalence in the poorest wealth quintile (42 percent) is more than double that of the richest (18 percent) with the wealthiest experiencing the most rapid improvements. DPT3 coverage is 91 percent among the wealthiest children but only 61 percent in the poorest. Simultaneously, new challenges are emerging to address the RMNCAH-N needs of vulnerable urban and migrant populations.

The determinants and drivers of malnutrition are multiple, interacting, and multisectoral. Therefore, reducing the burden of child stunting and wasting in Cambodia will require interventions to: i) prevent the *in utero* origins of growth faltering (through improvements in maternal health and nutritional status); ii) improve the immediate drivers of malnutrition (nutrient intake and disease); and iii) simultaneously address underlying drivers (food insecurity, poor care for women and children, low access to health services, and poor access to water, sanitation, and hygiene).

### 2 PROJECT COMPONENT DESCRIPTIONS

The project aims to serve as an anchor for an enhanced and coordinated response to accelerate the country's human capital formation, focusing on facility- and community-based approaches to maternal and child health and nutrition in the early

years.

### **Component 1: Strengthening the Delivery of Identified Priority Health Services**

Component 1 leverages the HEF and SDG systems—existing results-based health sector platforms—to improve the supply-side delivery of identified priority interventions. The component will support a shift from plans to implementation and aim to improve the accessibility, affordability, and quality of these identified priority services. The component has two sub-components, one aimed at increasing the availability and quality of services, and the second aimed at stimulating service utilization, primarily for the poor.

***Component 1.1 Performance-based Service Delivery Grants (SDGs) to Improve Availability and Quality of Identified Priority Services.*** Sub-component 1.1 will build on Cambodia’s National Quality Enhancement Monitoring (NQEM) processes to accelerate improvements in health service quality across the continuum of care for women and children. A performance-based SDG top-up payment will be provided to health facilities based upon the score from a Maternal and Child Health and Nutrition (MCHN) Scorecard. The MCHN Scorecard will focus on the eleven identified priority services, including reduction of gaps in routine immunization and improvements in integrated outreach.

***Component 1.2: Expanding Health Equity Funds (HEFs).*** This sub-component aims to enhance the equity of priority RMNCAH-N outcomes through an expansion of the scope of coverage for the current HEF system. These expansions of service and population coverage will increase utilization of identified priority RMNCAH-N services among targeted vulnerable populations.

### **Component 2: Stimulating demand and accountability at the community level**

Component 2 will finance community-based interventions in seven priority provinces to stimulate demand, increase utilization of facility-based priority services, and encourage the adoption of improved RMNCAH-N behaviors.

***Sub-component 2.1: Commune/Sangkat (C/S) Service Delivery Grants (C/S-SDGs) for Women and Children.*** Sub-component 2.1 will provide financing for communes to deliver CPWC activities via the performance-based C/S-SDG grant. The grant adapts the successful MOH SDG system and applies the principle to sub-national authorities. The C/S-SDG will provide discretionary support to communes over and above the C/S fund to ensure the delivery of activities in according to the Commune Program for Woman and Child (CPWC) guideline.

***Sub-component 2.2: Building Capacities, Monitoring, and Verifying C/S-SDG.*** This sub-component will support a program of activities necessary to activate and operationalize the C/S-SDG system, including: i) development and roll-out of the C/S-SDG operations manual and implementation guidelines; ii) conduct of six-monthly commune *ex-ante* scoring by district; and iii) capacity building and coaching for sub-national authorities to

implement the C/S-SDG program. The C/S-SDG scoring, and verification processes will leverage the CPWC actors and mechanisms to integrate the transparency, community monitoring, and joint annual planning (between the community, commune, and health sector) as outlined in the ISAF.

***Sub-component 2.3 Project Management, Monitoring, and Evaluation for NCDD.*** This sub-component will support provision of technical and operational assistance for the routine administration, procurement, financial management (FM), environmental and social safeguards management, and M&E of Component 2 activities (including financial audits of the project). The sub-component will also support the procurement of a third party entity to conduct *ex-post* independent verification of C/S-SDG scores.

### **Component 3: Ensuring an Effective, Sustainable Response**

This component will finance: i) central level actions needed to enhance the effectiveness and sustainability of project investments; ii) development and delivery of modernized social and behavior change communication (SBCC) campaigns; iii) comprehensive monitoring, evaluation and adaptive learning; and iv) project management.

***Sub-component 3.1 Strengthening the functional and technical capacities at national and sub-national levels.*** This sub-component will support MOH national centers and departments to: (i) create an enabling environment and (ii) improve supply-side readiness, responsiveness, effectiveness, and delivery of identified priority interventions financed in Components 1 and 2. In addition, a DLI has been added for CARD in order to strengthen the leadership and ownership of the multi-sectoral nutrition agenda at the national and provincial levels, in alignment with the forthcoming revised National Strategy for Food Security and Nutrition.

***Sub-component 3.2: Development of a Comprehensive SBCC Campaign.*** The sub-component will support the National Maternal and Child Health Center to design and roll out modern, effective SBCC campaigns and associated content. Sub-component 3.2 will be financed on an input basis and will support additional technical assistance and formative research required to prepare content, the development of materials (mass/social media, print, radio, etc.) and support for delivery (the development and roll-out of operational guidelines via training and/or coaching modalities). The priority will be to support relevant programs in the NMCHC to develop a campaign focused on Maternal, Infant, and Young Child Nutrition, for which there has been ongoing strategic and technical support.<sup>1</sup> The component can further support the creation of SBCC

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<sup>1</sup> With technical support from UNICEF, Helen Keller International, Alive & Thrive, and the World Bank, the NNP has conducted robust formative research into maternal, infant and young child nutrition behaviors; developed a comprehensive national strategy; and initiated the development of a multi-channel and contextually relevant SBCC campaign. The World Bank WASH and HNP teams have collaborated with MRD and NNP to conduct an implementer assessment to support operationalization of the campaign.

materials for HEF promotion and other health promotion activities in collaboration with relevant departments. This component will also be able to finance the procurement and use of technology to improve the quality and reach of SBCC. Mass/social media activities can be implemented with national coverage, while the interpersonal activities will have a phased roll out beginning with the seven priority provinces.

***Sub-component 3.3: Monitoring, Evaluation, and Adaptive Learning.*** The sub-component will support the strengthening of monitoring and evaluation (M&E) systems for RMNCAH-N in Cambodia, including data collection, reporting, and analysis at sub-national and national levels.

***Sub-component 3.4: Project Management (MOH).*** This sub-component will support the provision of technical and operational assistance for the day-to-day coordination, administration, procurement, financial management (FM), environmental and social safeguards management, and M&E and reporting of the project, including the carrying out of financial audits of the whole project. The sub-component will also support capacity strengthening of responsible departments with the MOH to ensure continued ability of relevant departments to support project management and implementation needs and support operational costs of the Project Coordination Unit (PCU) to deliver on the project's cross-sectoral coordination requirements.

### **1.3 OBJECTIVES AND SCOPE OF ENVIRONMENTAL MANAGEMENT PLAN (EMP)**

Project activities will be financed throughout the Kingdom of Cambodia. It is anticipated that most of the project support activities will be delivered at the community and health facility levels to improve nutritional status of women and children under the age of two years. Community-level activities under Component 2 will be financed in the 7 provinces of Monduliri, Ratanakiri, Steung Treng, Kratie, Preah Vihear, Kampong Chhnang, and Koh Kong.

The Project will align to existing Performance-based Service Delivery Grant (SDG) system to finance activities in component 1, whereby eligible expenditures of the SDG allow for (i) purchasing drugs; (ii) financing activities related to pesticides for vector-borne disease control such as dengue; and (iii) minor works such as construction of toilets, installing hand washing facilities or repair of health center buildings in existing health facilities. The project will neither finance new construction nor expansion of existing health facilities. The project support under component 1 and component 2 is also expected to increase utilization of immunization services and would generate small quantity of health care wastes such as spent vaccines and syringes, which needs to be handled and disposed properly.

In line with the World Bank operational policy on environmental assessment, the project has been proposed as Category B since impacts to the environment from these activities are expected to be minor, site-specific and can be readily managed by applying good environmental management practices. These impacts include minor impacts from

small works or repair of health facilities (dust, noise, construction safety, waste disposal, etc.), impacts from generation of small quantity of health-care wastes and impacts from potential use of grant for activities related to pesticide for vector-borne disease control such as dengue. This EMP is developed by the MOH to assess potential environmental impacts from the project activities and recommend mitigation measures and monitoring plan to mitigate such impacts during the project design and implementation in line with the relevant World Bank Safeguard Policies and Cambodia applicable environmental and health regulations. The EMP also outlines training, and capacity-building arrangements needed to implement the EMP provisions.

## **2. ENVIRONMENTAL POLICIES AND LEGISLATIVE FRAMEWORK APPLICABLE TO THE PROJECT**

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### **RELEVANT LEGISLATION ADDRESSING ENVIRONMENTAL HEALTH ISSUES**

- Sub-decree on solid waste management, 1999;
- Declaration (Prakas) on Health-Care Waste Management, 2009;
- National Infection Control Policy, 2009;
- National Strategic Plan for Infection Control in Health Facilities, 2011-2015;
- National Guideline on Health Care Waste Management, 2012;
- Infection Prevention and Control Guidelines for Health Care Facilities, 2010;
- Law on Environmental protection and natural resources management, 1996

### **WORLD BANK GROUP SAFEGUARD POLICIES AND REGULATIONS APPLICABLE TO THE PROJECT**

- Environmental Assessment (EA) (Operational Policy (OP)/Bank Procedure (BP)4.01);
- Pest Management (OP 4.09);
- Indigenous Peoples (OP/BP 4.10); and
- Public Consultations and Information Disclosure.

## **3. POTENTIALS ENVIRONMENTAL IMPACTS**

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The following sections describe assessment of impacts anticipated from CNP project.

### **3.1 POTENTIAL IMPACTS FROM MINOR RENOVATION ACTIVITIES**

Under component 1, CPN fund could be indirectly used for minor renovation activities such as installation of hand washing facilities, construction of toilets or repairs of health

center buildings) that will be occurred in the existing health facilities. The project will neither support new building construction nor expansion of health facilities. These may have some limited adverse environmental impacts such as dust, noise, small amount of solid waste, safety issue. These impacts are assessed to be of small scale, limited to the HF site, temporary and manageable if good design and construction practices are followed. In this project case, an Environmental Code of Practices (ECOPs) presented in *Annex 1* will be followed to avoid any possible impacts during such renovation works. The health facility staff or those who will carry out these works will be responsible to implement these ECOPs or ensure ECOPs are implemented by contractor. The ECOPs are also incorporated into the Operations Manual (OM).

### **3.2 HEALTH CARE WASTE MANAGEMENT**

Health care waste includes all wastes generated in the delivery of health care services. WHO (1999a) estimates that 75-90% of waste produced by the health care facilities originates from non-risk or general sources (e.g., janitorial, kitchens, administration) and is comparable to domestic waste. The remaining 10-25% of HCW is classified as hazardous and poses a variety of potential health risks. Categories of health care waste, as defined in WHO (1999a), which are considered of most concern in Cambodian health care facilities are summarized in Table 2. For CNP, an increase utilization of immunization services may generate small quantity (approximately 1.5 – 2 Kg. per a HC per month) of healthcare waste such as spent vaccines and syringes at delivered locations e.g. health facilities or communities.

Exposure to hazardous health-care waste can result in disease or injury. All individuals exposed to hazardous health-care waste are potentially at risk, including those within health-care establishments and those outside these sources. The main groups at risk are: health staff (doctors, nurses, technicians, auxiliary and maintenance staff, janitors); patients, their relatives and visitors; workers at waste disposal sites including scavengers; and nearby communities.

Pathogens in infectious waste may enter the human body by a number of routes: through a puncture, abrasion, or cut in the skin; through the mucous membranes; by inhalation; or by ingestion. Sharps may not only cause cuts and punctures but also infect wounds if they are contaminated with pathogens. Sharp injuries are most popular accidents in health facilities. Sharp injury is the main transmission way of several dangerous infectious diseases. Unless healthcare wastes are managed strictly, they easily cause pollution of environment and health impacts. Given the relatively small amount of healthcare wastes expected to be produced from immunization activities, the environmental and health impacts of the project are considered minor, localized and manageable.



**Table 2** Health care waste characteristics and hazards profile

<b>Classification</b>	<b>Characteristics/Associated Hazards</b>
Infectious	Comprises waste that is suspected to contain pathogens including laboratory cultures, surgery and autopsy wastes from patients with infectious diseases, bodily wastes from patients in infectious disease wards, and miscellaneous waste such as disposable gloves, tubing and towels generated during treatment of infectious patients). Pathogens from infectious waste may enter the human body through puncture of skin cuts, mucous membranes, inhalation or ingestion.
Pathological	Consists of tissue, organs, body parts, blood and body fluids. Pathological wastes are considered a sub-category of infectious wastes and pose the same hazards.
Sharps	Describes items that could cause cuts or puncture wounds, including hypodermic needles, scalpel, and broken glass. Because sharps can not only cause cuts and punctures but also infect these wounds if they are contaminated with pathogens, this sub-category of infectious wastes is considered very hazardous.
Chemical	Consists of discarded solid, liquid and gaseous chemicals with toxic, corrosive, flammable, reactive, and genotoxic properties. Chemicals most commonly used in HCF include formaldehyde, photographic chemicals, heavy metals such as mercury from broken clinical equipment, solvents, organic and inorganic chemicals, and expired, used or spilt pharmaceuticals. Hazards from chemical and pharmaceutical waste include intoxication as a result of acute or chronic exposure from dermal contact, inhalation or ingestion and contact burns from corrosive or reactive chemicals.
Radioactive	Includes solid, liquid and gaseous materials contaminated with radio nuclides; produced as a result of procedures such as <i>in-vitro</i> analysis of body tissue and fluid, <i>in-vivo</i> organ imaging and various investigative and therapeutic practices. Because radioactive waste is genotoxic, health workers in handling active sources and contaminated surfaces must take extreme care.

To address healthcare waste issues, several regulations and guidelines have been prepared by the MOH including national guideline on healthcare wastes management for use by health care facilities. The guideline is intended to supplement WHO's

comprehensive health care waste management guidelines (WHO, 2000; 1999a) and focus on practical aspects of safe hospital waste management, including waste minimization, collection, segregation, storage, transportation, and disposal. Additional guidelines on injection safety have also been developed by the MOH to provide specific guidance to health care facilities on the distribution, use, collection and safe destruction of disposable syringes and safety boxes. Training on the Guidelines has been provided to health facility staff all over Cambodia by Department of Hospital Services at provincial level. Potential risks to environmental and human health associated with hospital wastes, particularly hazardous chemical and infectious wastes were well-defined.

A system has been established to safely collect sharp wastes from health facilities for incineration in the designated high temperature incinerators (Sicsim). However, weak management at health facility level hinders implementation of the guidelines for health care waste management, including proper waste segregation and storage, and maintenance of incinerators. Although in theory, facilities should be using part of the revenue they generate from HEFs and SDGs to cover the cost of waste management. Most of the Sicsim incinerators are reportedly out of functions mostly.

As discussed earlier, healthcare wastes generated from CNP support activities may include small amount of spent vaccines and syringes at health center or communities (during community outreach). Experiences from implementation of the HSSP2 and the on-going H-EQIP indicate that in most health facilities used syringes and sharp wastes are properly stored in safety box. The full safety boxes are either transported to nearby Referral Hospital for disposal in incinerator or disposed on-site. Use of cement bury pits for sharps, pathological waste and expired medicines on health care center premises are quite common particularly in remote locations. These on-site disposal methods are simple to operate, require low operation cost and represents an acceptable option if the following requirements are met.

Recognizing that sanitary or engineered landfills are unlikely to be available in remote locations, another option is safe burial of health care waste on health care facility premises. On-site disposal represents an acceptable disposal option only if certain requirements are met as follows:

- Restricted access to disposal site by authorized personnel only
- Lining of burial site with a material of low permeability such as clay to prevent groundwater pollution
- Limit use to hazardous materials which cannot safely be incinerated to maximize the lifetime of a landfill.

An Environmental Review conducted for HSSP2 project suggested that attention should be given to ensuring their proper application by health care facilities. Notwithstanding the availability of health care waste management guidelines, it is apparent that there is considerable scope for adopting more rigorous health care waste management

practices in health centers and referral hospitals. During implementation of the on-going H-EQIP, the National Quality Enhancement Process (NQEP) has been established and is being implemented and contributed to improving health care waste management at health facilities level. The NQEP will be rolled out to reach the national coverage when the CNP implementation will be initiated.

### 3.3 DENGUE VECTOR CONTROL

#### 4.5.1 Pesticide Use

Larvicides intended for use in dengue vector control programs of the MOH are summarized in Table 3. All products have successfully passed WHO's Pesticide Evaluation Scheme (WHOPES). The WHOPES was set up in 1960 to promote and coordinate the testing and evaluation of pesticides for public health. WHOPES reviews and recommendations are based on methodologies developed through extensive consultation with the international community and should be considered authoritative.

**Table 3** Larvicides to be used in vector control programs.

Insecticide/Larvicide Intended for Use and Specifications	Quantity Required (estimate/year)	Purpose	Comments on Environmental Safety
Temephos (Abate®1% sand granules) applied in a dosage of 1g/10 liter	160 metric tons x 5 years	Larvicide of choice for <i>Aedes aegypti</i> control in portable water containers	Successfully passed by WHOPES

#### 4.5.2 Human Health Risks

The larvicide Temephos (commonly known by the trade name Abate® in Cambodia) used in dengue vector control is classed as an organophosphate. This pesticide has a very low toxicity to humans. Potential exposure routes are ingestion, inhalation of dust and to some extent dermal contact (i.e., skin contact is considered insignificant because absorption is inherently slow). The Temephos formulation to be used by the MOH (i.e., 1% sand granules) is thought to present minimal risk to humans – no adverse effects have been observed during occupational handling or in the general population using treated water over extended periods. Similarly, no poisoning in humans as a result of accidental exposure has been documented (WHO, 2001; 1999b; 1975).

The HSSP and HSSP2 financed larvicides (Abate and BTI) that were certified by WHO's Pesticide Evaluation Scheme (WHOPES) for dengue control. The products were transported in safe containers provided by the vendors and used containers were disposed of according to the best practice; they were not used for storage or other

purposes. Insecticide suppliers provided spoons to ensure proper quantity of insecticide put in water jars.

The protection and safety requirements while handling these pesticides has been outlined in the table which is a part of the Pesticide Management and Monitoring Plan.

#### **4.5.3 Environmental Risks**

Temephos has been shown to be highly toxic to some bird species but moderately toxic to others. It is considered highly toxic to bees and moderately to highly toxic to fish. It has been shown to be very highly toxic to aquatic invertebrates (WHO, 1999b; 1984; 1975).

Environmental risks to non-target species, particularly aquatic organisms, can result from the unintentional release of this pesticide through improper handling or disposal. Although Temephos are highly toxic to aquatic organisms, under normal circumstances negligible quantities are likely to be released into ponds, streams and rivers. In assessing potential toxicity to non-target organisms it is important therefore to recognize that risk is a product of toxicity and exposure (i.e., there is little or no risk even at high concentrations if no exposure actually occurs). Exposure, if any, is likely to be short-term because: (i) these pesticides break down rapidly to products that are non-toxic to aquatic organisms; (ii) rapid dilution will occur in flowing waters; and (iii) products typically are rapidly adsorbed to suspended solids and bottom sediments. Appropriate management and safety needs for the use and application of the pesticide is give in the Pesticide Management and Monitoring Plan.

## **4. MITIGATION MEASURES**

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The intent of this section is to recommend mitigation measures to prevent or reduce adverse impacts from the project support activities. For purposes of CNP for which environmental impacts are expected to be minor, particular attention is given to outlining best management practices which should be put in place to ensure that environmental impacts are minimized and that human health and environmental concerns are fully addressed on an ongoing basis during project implementation. Best management practices and mitigation measures are detailed by activity in the following sections.

### **4.1 MITIGATION MEASURES FOR HEALTH FACILITIES RENOVATION ACTIVITIES**

Prior to the execution of minor civil works or health facilities renovation activities, the participating health facilities will ensure to prepare and review the design for minor works, building renovation where applicable. The designs for these works shall be approved by health facility management and or local competent agencies in line with the relevant legislation. During construction the health facility staff shall be responsible for ensuring implementation of the Environmental Code of Practices (ECOPs) (see *Annex*

1). The ECOPs will also be incorporated into the project Operations Manual (OM) and where applicable included in contractor contract. Overall implementation of these ECOPs and EMP will be supervised and monitored by the PMD and NCDDS.

## **4.2 HEALTH CARE WASTE MANAGEMENT PLAN**

Health facilities will follow a healthcare waste management process including: sorting, handling, storage and final disposal of solid HCW outlined in good international practices and relevant guidelines and regulations including National Guideline on Health Care Waste Management, Infection Prevention and Control Guidelines for Health Care Facilities, etc. The following section briefly describes guidance for health care wastes segregation, handling, storage and final disposal indicated in the MOH guidelines and good international practices.

### **Waste Segregation**

Segregation of health care waste is intended to ensure that wastes are properly identified and separated and that different waste streams are handled and disposed of correctly. It typically involves sorting different wastes into color-coded plastic bags or containers at source. Recommended handling and disposal practices for different categories of health care waste will vary according to the resources available to health care facilities. Examples of WHO (1999a) recommended health care waste handling practices appropriate for health care facilities that apply minimal waste management programs are:

- General health care waste (in black bags or containers) should join the domestic refuse stream for disposal.
- Sharps should be collected together into puncture-proof yellow safety boxes and held for high-temperature incineration. Encapsulation and disposal to a secure landfill is a suitable alternative for sharps.
- Highly infectious waste should be sterilized by autoclaving as soon as possible. For other infectious waste, disinfection is sufficient to reduce microbial content. Treated infectious waste should then be deposited in yellow bags and containers marked with the international infectious substance symbol. Incineration is the preferred method for disposal of infectious waste although land filling is also appropriate. Blood should be disinfected before discharge to the sewer system or wastewater treatment plant, if available, or may be incinerated.
- Large quantities of chemical wastes should be packed in chemical-resistant containers and sent to specialized treatment facilities. Small quantities of chemical waste can be held in leak proof containers and enter the infectious waste stream for incineration or land filling. It is noted that incineration at low temperatures may be insufficient to destroy thermally-resistant pharmaceuticals. Small quantities of chemical waste or drug waste can be

collected together with the infectious waste per exception in the Infection prevention and control guideline provide.

- Waste containing high heavy metal concentrations should be collected separately in brown containers and sent to specialized treatment facilities.
- Low-level radioactive waste should be collected to yellow bags or containers for incineration. High-level radioactive waste must be sent to specialized disposal facilities.

It is important to train all healthcare workers, including physicians, to keep contaminated and non-contaminated waste separate. Only a small percentage of the waste generated by a healthcare facility is medical waste that must be specially handled to reduce the risk of infections or injury. Segregation of the waste at the point where it is generated can conserve resources by greatly reducing the amount of waste that needs special handling. Poor separation of waste at the point where it is generated leads to large amounts of waste that must be handled specially – which can overwhelm the disposal system, lead to improper disposal of medical waste, and put everyone at risk.

### **Waste Handling**

Staff should handle medical waste as little as possible before storage and disposal. The more waste is handled, the greater the chance for accidents. Special care must be taken when handling used needles and other sharps, which pose the greatest risk of accidental injury and infection.

#### *Emptying waste containers*

Waste containers that are too full also present greater opportunities for accidents. Waste should be removed before the containers become completely full. Dispose of sharps containers when they are 3/4 full. (When sharps-disposal containers become too full, people may push sharps into the container, causing injury.)

Staff should wear utility gloves, heavy duty apron and boots when collecting waste.

Do not collect medical waste from patient-care areas by emptying it into open carts or wheelbarrows, as this may lead to spills and contamination of the surroundings, may encourage scavenging of waste, and may increase the risk of injury to staff, patients, and visitors.

Handle medical waste as little as possible.

### **Interim storage of waste**

If possible, final disposal of waste should take place immediately, but it is often more practical to store waste briefly in the facility before final disposal. Interim storage should be short-term.

If it is necessary to store medical waste on-site before final disposal:

- Place waste in a closed area that is minimally accessible to staff, patients, visitors and animals. As few people as possible should come into contact with stored medical waste.
- All containers should have lids to prevent accidental contamination, spillage, and access by insects, rodents, and other animals.
- Contaminated medical waste poses serious health threats to the community. Never store medical waste in open containers & never throw waste into an open pile.

### **Treatment and Disposal of healthcare waste**

Health facilities can apply one or several treatment options as below:

- Transportation to the nearest RH or approved disposal site;
- Handling of waste immediately by friendly environment methods such as needle shredder machine, concrete tank, labeled bin;

Although the national guidelines on health care waste management and infection control reflect best practices and deems adequate and training on the guidelines has been provided, attention should be given to ensuring their proper application by health care facilities. Weak management at health facility level hinders implementation of the guidelines for health care waste management, including proper waste segregation storage and disposal, and maintenance of incinerators. Healthcare wastes generated from increased utilization of immunization services supported under CNP will be handle together with other healthcare wastes generated in HFs.

To address this weakness, it is recommended that capacity building be provided to improve waste management practices at health facilities. Capacity building should comprise both training and technical support. Training in best health care handling and disposal practices is expected to create more awareness of HCWM issues and foster responsibility among health care facilities staff in an effort to prevent occupational exposure to hazardous HCW. Training should be provided to all health care facility staff – both health care personnel and auxiliary and support staff. Recognizing that sustaining adequate waste management practices at health care facilities ultimately depends on auxiliary staff, it is highly recommended that waste management responsibilities be clearly defined and linked with performance-based monitoring and evaluation.

Adequate waste handling and disposal infrastructure and management systems should be put in place at health care facilities. A standard health care waste management

package intended to improve health care waste handling at health care facilities would encompass: (i) color-coded waste plastic bags and containers; and (ii) safety boxes for disposal of used needle and syringes. Therefore, an appropriate system and management should be put in place to ensure waste segregation at the point of generation itself.

The NQEP is monitoring health facility performance on health care waste management.

### **4.3 PESTICIDE MANAGEMENT PLAN**

The intent of the Pesticide Management Plan (PMP) is to summarize mitigation measures and best management practices with a view to minimizing or avoiding any potential adverse human health or environmental effects that have been identified for dengue vector control programs to be indirectly funded under the CNP, if any.

Recognizing that all pesticides are toxic to some degree, it is paramount to ensure that proper care and handling practices form an integral part of any program involving their use. In formulating management practices, it is necessary to take into account both the nature of the pesticides being used (i.e., their formulation and the proposed methods of application) and any existing safeguards that have been incorporated into programs to address potential occupational safety and environmental concerns. Guidelines and training materials have already been developed for the dengue programs, and few improvements are considered necessary to ensure the continued safety of these activities.

#### **5.4.1 Dengue**

Larviciding programs inherently pose fewer occupational health and environmental risks due to the pesticide formulations used, their controlled application, and the lower potential for exposure of health care workers involved in program implementation. Notwithstanding these factors, extensive safeguards have been developed by the Cambodia National Malaria Center (CNM) and World Health Organization (WHO) to minimize or avoid potential human health and environmental problems.

Dengue programs undertaken in Cambodia are scheduled to coincide with the peak transmission period occurring during the rainy season. Two applications of Temephos are made each year in targeted provinces; in May-June and repeated in July-August. In preparation for field distribution, approximately 160 metric tons of Temephos is procured annually by the MOH for use in dengue programs. Purchased Temephos is securely stored in a government warehouse until immediately prior to program implementation at which time casual workers are employed to pre-package the granular product into 20g satchels. Pre-packaging is intended to facilitate field activities (i.e., addition of a 20g satchel of Temephos to a standard 200 liter water jar or two satchels to the alternative 400 liter container size provides the required dosage) and increase the efficacy of the chemical when placed in water containers. Although some



safety precautions (e.g. children are not allowed to be involved or present) are taken in the packaging of Temephos, it is recommended that these safeguards be strengthened to address potential occupational health concerns. Specifically, strict precautions will be taken in handling the chemical such as: ensuring adequate building ventilation; wearing protective gloves to avoid dermal contact; wearing protective masks to avoid inhalation of chemical dust; and washing of hands after handling. Information on the proper management, storage and usage of pesticides must be given to the health workers involved in the program to ensure that minimum contamination and toxicity of the environment and in the health care facilities. An appropriate waste disposal system should also be identified for the waste generated from the pesticide program. This waste would largely consist of the pesticide containers and pesticide dispensers.

Comprehensive guidelines have been developed by the CNM for Temephos larviciding programs to address potential human health and environmental concerns during field operations. Safeguards include:

- Tiered supervision by CNM, provincial and district health departments to closely track all aspects of inventory and distribution of stocks.
- Daily supervision of all field activities to ensure proper handling and household coverage.
- Water containers that are used frequently and those holding fish and other aquatic life are not treated.
- Households are educated on proper procedures for care and handling of water containers to which Temephos has been added (e.g., remove Temephos before washing containers).
- First aid procedures are explained for use if Temephos is accidentally ingested.

Safeguards developed by the CNM for dengue programs in Cambodia are considered to represent best available practices. With the exception of the need to strengthen occupational health practices during pre-packaging of Temephos into satchels, available guidelines are comprehensive and inclusive. Provision should be made for: (i) regular delivery of training to PHD and OD staff involved in program implementation to ensure that each person knows precisely what their responsibilities are; and (ii) ongoing monitoring and evaluation to ensure compliance with safeguards.

## **5. INSTITUTIONAL ARRANGEMENTS**

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**Ministry of Health.** In line with the Project's implementation arrangements the PMD, which is the safeguards focal point, will ensure that all health care facilities supported indirectly under the Project follow the ECOPs and also adopt and apply the health care waste Management Guidelines for managing health care wastes. The PMD, which is the

safeguards focal point will supervise implementation of the EMP in line with the monitoring schedule of the Project operational plan.

**Health Care Facilities.** During small works on construction and renovation, the health facility staff will follow ECOPS for direct supervision and monitoring of EMP implementation. Each health facility will follow the basic design of health centers and/or hospitals and ECOPS. It will ensure that civil works contracts contain a clause on good environmental practice and proper housekeeping measures, including adherence by contractors to the use of asbestos-free construction materials. The health facilities will ensure that health care waste generated will be properly managed through the adoption of the health care waste Management Guidelines. Incinerators will be properly maintained to ensure that medical waste are burned and disposed of according to the guidelines. And, surrounding communities/residents will not be disturbed from smell and smoke from incinerating of waste from the HCs/RHs.

**National Committee for Sub National Democratic Development-Secretariat (NCDDS).** Promote villagers to report about (i) health facility wastes such as bandages, gloves, discarded sharps (used syringes, needles or scalpels) in health facility compound or spread out to villager's house nearby health facilities due to poor management of health facility wastes; (ii) Hygiene and sanitation inside of health facility building and in the health facility compound; and (iii) smoke from health facility incinerators which affect people living around and nearby health facilities, etc. The report can be made through verbal comments to health facility staff, health facility comment box, through village health support group or health center management committee, or any consultation forums where there is participation from health facility staff.

**World Bank.** The World Bank, through its Task Team, will monitor compliance by the borrower and the health care facility operators of the environmental measures to address environmental and health care impacts.

## **6. MONITORING, SUPERVISION AND REPORTING**

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The NQEP will monitor health facility performance regarding health care waste management. This process includes a quarterly assessment and monitoring on progress made from time to time versus the quality improvement plan developed based on findings from the assessment. OD and PHD teams will conduct coaching activities to ensure proper management of health care wastes by health facility staff.

The PMD, who is the focal point for the project safeguards, will be responsible for monitoring implementation of EMP provisions and report implementation progress in the project Semi/Annually progress reports. This reporting requirements will be included as part of the project Operation Manual.

## **7. PUBLIC CONSULTATION AND DISCLOSURE**

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Public consultation on preparation of draft EMP and IPPF was conducted by the MOH on October 18, 2018 in Phnom Penh with the objectives to communicate with key stakeholders the preparation of draft EMP and IPPF as well as to receive comments/suggestions for improvement. A summary of draft project description, project safeguards documents including the content of draft EMP and IPPR were provided. The consultation was participated by NGOs working closely with health facilities and communities at the sub-national level, relevant UN agencies engaged in health sector, HC and referral hospital staff and relevant departments of the MOH. Key relevant suggestions on environmental management aspects received during the discussions included the need to strictly adhere to the national guideline on proper management of medical waste such as used syringes and needles, and spent vaccine vials generated from increase the utilization of vaccination services from the health outreach activities conducted in the communities; to have enough supplies such as bin types and proper plastic bags for managing waste segregation; the need to follow the MoH Guideline on Health Care Waste Management, 2012; the need to study about the Frequency Asked Questions (FAQ) which described in detail about HCWM at health facilities as part of the National Quality Enhancement Monitoring Tool (NQEMT) under the Health Equity and Quality Improvement Project (HEQIP) and already distributed to all Operational District and Provincial Health Departments.

The EMP have been revised to reflect comments and suggestions received during consultations. The EMP which contains an Environmental Code of Practices, Health Care Waste Management Plan and Pest Management Plan that remain pertinent for the CNP activities, both in Khmer and English version, will be disclosed on the MOH's website and World Bank's website prior to the CPN appraisal.

**ANNEX 1 – ENVIRONMENTAL CODES OF PRACTICES (ECOP)<sup>2</sup>**

Environmental Issues	Measures
<p><b>Dust, Noise and Vibration</b></p>	<p>Comply with relevant national legislation with respect to ambient air quality, noise and vibration</p> <p>Ensure that the generation of dust is minimized and implement a dust control plan to maintain a safe working environment and minimize disturbances for patients, staff and surrounding community</p> <p>Implement dust suppression measures (e.g. water paths, covering of material stockpiles, etc.) as required. Materials used shall be covered and secured properly during transportation to prevent scattering of soil, sand, materials, or generating dust. Exposed soil and material stockpiles shall be protected against wind erosion; Ensure onsite latrine be properly operated and maintained to collect and dispose waste water from those who do the works; Should not carry out construction activities generating high level of noise during HCF activities, especially when services are being delivered to the clients.</p>
<p><b>Asbestos Containing Materials</b></p>	<p>No Asbestos Containing Materials (ACM) will be used</p> <p>If ACM at a given HF is to be removed or repaired, the HF will stipulate required removal and repair procedures in the contractor's contract.</p> <p>Adherence to best practices regarding asbestos that meet the Good Practice Note provided in the WBG Environmental, Health and Safety Guidelines F to ensure construction worker protection during renovation and demolition activities. Occupational exposure can be avoided by controlling dust emissions, and through use of effective respiratory protective equipment.</p> <p>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.</p> <p>All asbestos waste is to be buried at an appropriate landfill.</p>

<sup>2</sup> The ECOPs is to be followed by those who are doing the renovation works in HFs e.g. contractor or HF staff.

<p><b>Protection of Water Resources</b></p>	<p>Location of toilets/septic tanks installation should be at least 30 m away from groundwater sources such as shallow well/deep well;</p> <p>All existing stream courses and drains within, and adjacent to, the Site will be kept safe and free from any debris and any excavated materials arising from the Works.</p> <p>Chemicals, sanitary wastewater, spoil, waste oil and concrete agitator washings will not be deposited in the watercourses. In the event of any spoil or debris from construction works being deposited on adjacent land or any silt washed down to any area, then all such spoil, debris or material and silt shall be immediately removed and the affected land and areas restored to their natural state by the Contractor to the satisfaction of the Health Facilities person in charge.</p>
<p><b>Waste Management</b></p>	<p>Use litter bins, containers and waste collection facilities at all places during works.</p> <p>Dispose of waste at designated place identified and approved by HF management or local authority. It is prohibited to dispose of any debris or construction material/paint in environmentally sensitive areas (including watercourse)</p> <p>Recyclable materials such as wooden plates for trench works, steel, scaffolding material, site holding, packaging material, etc shall be segregated and collected on-site from other waste sources for reuse or recycle (sale).</p> <p>Procurement of asbestos-containing building materials shall be prohibited.</p>
<p><b>Safety Risks During Works</b></p>	<p>The HF/contractor shall provide safety measures as appropriate during works such as installation of fences, use of restricted access zones, warning signs, lighting system to protect hospital/HCF staff and patients against falling debris and other risks.</p> <p>Follow national and good practice regulations regarding workers' safety.</p> <p>Use of appropriate personal protective equipment.</p>

**Site Clearing: Cleaning  
the site**

The contractor will clean the site carefully and remove all construction waste materials and dispose at designated dumping site. Burning of waste should not be encouraged.

## **ANNEX 2 – MINUTES OF MEETING: STAKEHOLDERS CONSULTATION MEETING**

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### **Minutes of Environmental and Social Safeguards Stakeholder Consultation Meeting for Cambodia Nutrition Project**

**18<sup>th</sup> October 2018, WB Office Phnom Penh, at 14:00-17:00 pm**

The Environmental and Social Safeguards Stakeholder Consultation Meeting for the Cambodia Nutrition Project (CPN) was held at the World Bank office, Phnom Penh on 18<sup>th</sup> October 2018. The meeting was led by the Department of Preventive Medicine Department (PMD), Ministry of Health (MoH), with technical support from the World Bank safeguard team. The meeting aimed to get inputs from all relevant stakeholders for the draft environmental management plan (EMP) and social safeguards for Indigenous People Framework (IPPF). A total of 43 participants attended the meeting, 5 from central MoH including Nutrition Preparation Working Group, Preventive Medicine Dept, Hospital Service Department, two MoH consultants, 18 health staff (medical doctors, midwives and nurses) from referral hospitals and health center in 6 operational districts (Mekong, Chaktomuk, Posenchey, Basac, Dongkor and Sen Sok) of the Phnom Penh Municipal Health Department, four development and NGOs (UNICEF, ADRA, CARE and HKI), 3 KfW staff, and 11 WB staff and consultants.

Consultation meeting process included:

- The meeting commenced with the welcome remark by Dr Kol Hero, Director of Preventive Medicine Department, MoH and Environmental and Social Safeguard focal person, with a focus that the Cambodia Nutrition Project is now in the pre-appraisal stage and a public consultation to is required to ensure that all relevant stakeholders are aware of the project activities and contributed their inputs to the draft Environmental Management Plan and the Indigenous People Planning Framework for further improvement.
- Three presentations:
  - o Overview of the Cambodia Nutrition Project, by Dr Chea Mary, Acting Manager of National Nutrition Program of National Maternal and Child Health Center
  - o Environmental Management Plan (EMP) for Cambodia Nutrition Project and IPPF, by Dr Vong Sathiarany, PMD Deputy Director.
- Plenary discussion led by Dr Kol Hero and the WB team

Questions/comments related to environmental and social safeguards received are summarized in the table below.

COMMENTS / QUESTIONS	RESPONSES
<p><b>Health care waste management</b></p> <ol style="list-style-type: none"> <li>Participant from hospital service department raised question about the number and what types of waste bins each health facility ward should be equipped.</li> <li>Participant from Phnom Penh Municipal referral hospital concerned over the inadequate number of waste bins provided by the MoH which has only two types of bins either red and yellow. It was informed that, currently the hospital has not yet been assessed for quality improvement. How can the hospital obtain all required waste bins? And what is the scoring for the hospital, when assessed, if it does not fulfill the HCWM requirement?</li> </ol>	<p>All health facilities should follow the MoH Guideline on Health Care Waste Management, 2012. In addition, the Quality Assurance Office (QAO) of the Department of Hospital Services and the WB team has developed the Frequency Asked Questions (FAQ) which detailed on HCWM at health facilities as part of the National Quality Enhancement Monitoring Tool (NQEMT) under the Health Equity and Quality Improvement Project (HEQIP) and already distributed to all Operational District and Provincial Health Department assessors.</p> <p>It was noted that in the nutrition project, concern was on the incremental amount of medical wastes generated from the increased use of immunization services (eg. spent vaccine vials, discarded syringes and needles etc), thus proper disposal of wastes should strictly adhere to the national guideline.</p> <p>For those health facilities that have not yet been assessed for quality improvement under the HEQIP, they still can use the fixed-lump sum grants (FLSG) or incomes from user fees to purchase these waste bins.</p> <p>If the hospital is assessed with non-compliance with HCWM requirement, it will get zero score.</p>
<p><b>Environmental and social safeguard section</b></p> <ol style="list-style-type: none"> <li>CSO/NGO raised concern over the poor level of knowledge, misunderstanding and misbelief among the indigenous people with regards to their health condition. Incident recently happened</li> </ol>	<p>The PMD is currently working on the IEC material to raise awareness among the IP with regards to access to health care with</p>



COMMENTS / QUESTIONS	RESPONSES
<p>among dozen IP in Preah Vihear province presented with goiter, a health condition with swelling of the neck resulting from enlargement of the thyroid gland. An international NGO, name withheld, offered helped to bring them to Preah Vihear provincial hospital for surgery. However, these IP were later told by its neighbors/friends that if “your throat is cut”, refer to surgery in local dialect, you all will die. As a result, these IP refused to go to hospital for treatment. What should be done to raise awareness among these IP communities?</p>	<p>culturally appropriate health education messages and services.</p> <p>It is noted that, the WB has a policy to protect the IP to benefit from the bank financed project. As for the nutrition project the intervention should adapt to and be sensitive to cultural differences and practices in their communities.</p>
<p>2. CSO/NGO raised the issue regarding poor complimentary feeding practices among IP community despite a lot intervention have been conducted to promote the behavior change. This is because of limited knowledge and the issue of migration where most young children are kept with grandmothers.</p>	<p>The nutrition project design needs to be culturally sensitive. The promotion message should be developed in a suitable language, based on the real need and local context. There should be voluntarily participation and feel comfortable in any awareness event.</p>