Global Project on the Implementation of PRTRs as a tool for POPs reporting, dissemination and awareness raising for Belarus, Cambodia, Ecuador, Kazakhstan, Moldova and Peru

UPDATED CAMBODIA NATIONAL EXECUTIVE PROPOSAL on POLLUTANT RELEASE AND TRANSFER REGISTER (PRTR)

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FOREWORD

A Pollutant Release and Transfer Register (PRTR) brings information about which chemicals are being released or otherwise managed as waste, where, how much and by whom. Since 2016 Cambodia is implementing the UNITAR/UNEP project to establish a functioning Pollutant Release and Transfer Register (PRTR) in the country. By 2018, Cambodia is expected to start the pilot testing of the PRTR system, together with the development of a number of regulation and guidance materials to assist competent authorizes and industries/facilities to carryout PRTRs. During the first cycle of PRTR reporting Small-Medium Enterprise (SME), particularly agro-industry facilities, may not be able to implement PRTR, but they are expected to implement and report PRTR data in the upcoming years.

Most PRTRs were designed to meet the needs of specific facilities, with less attention being given to the comparability of the data across different PRTRs. Consequently, many PRTRs have differing requirements in terms of which chemicals and sectors are covered, and what thresholds trigger reporting. In 2018, the Department of Hazardous Substances Management (DHSM) will review facilities and identify the most suitable one for carrying out PRTR system during the demonstration period.

Greater harmonization of PRTR data within country – as well as many facilities which are using national guidance to establish their own systems – would provide increased opportunities for a national analysis of pollutant releases as well as facilitate comparisons between provinces. Facilities are encouraged to implement the national PRTR harmonization strategies and tools to realize the benefits from harmonized PRTRs as they set up or update their own PRTRs.

This document is published under the responsibility of the DHSM of the General Directorate of Environmental Protection of the Ministry of Environment.

ABBREVIATIONS

CDM	clean development mechanism
CFCs	Chlorofluorocarbons
DEIE	Department of Environmental Information and Extension
DHSM	Department of Hazardous Substance Management
ED	the Environmental Database
ENR code	Environment and Natural Resources Code
GDEP	General Directorate of Environmental Protection (
GHG	Green House Gases
HCFC	Hydrochlorofluorocarbons
LDCs	to least developed countries
M&E	monitoring and evaluation
MARPOL	International Convention for the Prevention of Pollution from Ships,
MOE	Ministry of Environment
NPCT	National PRTR Coordination Team
POPs	Persistent Organic Pollutants
PRTR	Pollutant Release and Transfer Register
SAICM	Strategic Approach to International Chemicals Strategic Approach to International Chemicals Management
SME	small and medium enterprises
UNECE	The United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
UNITAR	The United Nations Institute for Training and Research
WSSD	World Submit on Sustainable Development

EXECUTIVE SUMMARY

In recent years, growing recognition of the need to evaluate environmental management and sustainable development on a global scale has emerged. When pollutant release and transfer register (PRTR) programmes gather data that are consistent with other PRTRs in definition and scope (harmonized data), information from multiple PRTRs can be harmonized and applied to meet this need.

This National PRTR proposal document illustrates key elements of a PRTR system for further implementation throughout Cambodia for the first time as a demonstration approach and knowledge gain from this demonstration will build pathway for scaling the PRTR in other sectors or pollution sources. It also delivers factors that should be considered for users of multiple PRTR datasets and users who examine different PRTR data. It discusses elements of a PRTR relevant to PRTR objectives, legal framework, reporting requirement and procedure for point sources, treatment of non-point sources, PRTR data management system, administration of the national PRTR system, national implementation plan, and Reviewing procedures.

This PRTR proposal is developed in response to the existing national legal framework and international conventions, where Cambodia is parties to. In addition, this proposal will also be harmonized with the draft Environment and Natural Resources (ENR) code that has addressed purpose of establishment of a National Pollutant Release and Transfer Register (PRTR) for the Kingdom of Cambodia, which is a publicly accessible database or inventory of chemicals or pollutants released to air, water and soil and transferred off-site for treatment. The National PRTR issue was addressed under the draft ENR Code, which is comprised of 4 main chapters and 9 articles under Book 6 (Waste and Pollution Management), Title 10 (National Pollutant Release and Transfer Register).

The National PRTR Coordinating Team (NPCT) under the Department of Hazardous Substance Management of the General Directorate of Environmental Protection, Ministry of Environment, was established in March 2016[1] to carry out activities related to PRTR system, i.e. from data collection, verification, and data analysis to data, management and dissemination to the public and stakeholders. The PRTR proposal is designed to implement within two year period of time as a demonstration activities commencing from January 2018 to December 2019. Knowledge and experiences gain from this demonstration activity will be scaling up to other sources and facilities, as well as enhancing the safe and sound management of pollutants release into the environment.

[1] The establishment of NPCT is just to play role in PRTR Project Phase 2 implementation. Thus the official NPCT must be established to implement PRTR as demonstration activity that is expected to be carried out in 2018.

1 INTRODUCTION

1.1 Cambodia Rational on Pollutant Release and Transfer Register

During the fifth term of the Royal Government of Cambodia, (2013-2018), the government decided to formulate the Environment and Natural Resources (ENR) Code, which comprises all existed environmental related regulations and international agreements that Cambodia is party to, to be developed into a single regulatory framework. This ENR Code is currently under development and the final draft code is planned to be submitted to the Council of the Ministers in early 2018 for reviewing before submitting to the legal bodies for enacting. .

The draft ENR code has addressed purpose of establishment of a National Pollutant Release and Transfer Register (PRTR) for the Kingdom of Cambodia, which is a publicly accessible database or inventory of chemicals or pollutants released to air, water and soil and transferred off-site for treatment. The National PRTR issue was addressed under the draft ENR Code, which is comprised of 4 main chapters and 9 articles under Book 6 (Waste and Pollution Management), Title 10 (National Pollutant Release and Transfer Register).

On the other hand, the proposed implementation of Pollutant Release and Transfer Register (PRTR) in Cambodia will also follows the international conventions and agreements where Cambodia is the parties to. Such international instruments require the reporting of information about emissions and management of specific substances that classified as global pollutants. The implementation of Cambodia PRTR is aiming to address various levels and orders of action related to comply with international conventions and agreements signed by the country as well as those committed to its participation in international organizations and external funding opportunities and domestic needs it all means. In particular, the PRTR is relevant to the following international agreements and conventions:

- The Stockholm Convention on Persistent Organic Pollutants (POPs)
- Strategic Approach to International Chemicals Strategic Approach to International Chemicals Management (SAICM)
- The United Nations Framework Convention on Climate Change (UNFCCC)
- Minamata Convention on Mercury

The World Submit on Sustainable Development (WSSD) held in 2002, has set goal that by 2020 “chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment”. This will be achieved in several ways, including through implementation of the Global Action Plan includes, among several actions, that the implementation of PRTRs as a tool for inventory and monitoring of hazardous chemical substances and other pollutants.

1.2 PRTR's role in the unified Environmental Database (ED) and Public Participation

The PRTR can be considered as a component of the Environmental Database (ED) in which compliance with the ENR Code and will be integrated information on pollutant emissions to air, water and soil. Through a multimedia approach and capacity building for managing related databases, that can be learnt about releases and transfers of over dozens pollutants in relation to priority sectors of the economy. The implementation of PRTR is consistent with the following specific objectives ED:

1. Provide public access to environmental information (data, geographical and documentary) validated, standardized, integrated, timely, consistent, reliable, all of society through the internet.
2. Standardize and automate the production of environment data for decision-making through further development of indicators that are based on principles of availability, reliability and integrity.

Similarly, the PRTR support the automation of processes in the monitoring and evaluation (M&E) and integration with the geographical and the automation of corporate documentary memory. In particular will:

- Provide clear, complete and comprehensiveness information/data for users, companies and individuals, and
- Provide mandate to national authority(ies) in charge of issuing permits, authorizations, licenses and certifications of chemicals use, in order to carry out a complete evaluation of the applicants that release environmental pollutants into media.

In this regard, note that it has been recognized as an area of opportunity that the format of the report constitutes an instrument PRTR consolidated environmental management and documentation, including information on air emissions, hazardous waste and wastewater discharges. The multimedia approach of PRTR allows progress in this direction, promoting the medium-term consolidation of information systems for resources efficiency and sound waste management.

The society participation in decision-making, implementation and evaluation of environmental policies is a necessary condition to give them legitimacy and create conditions conducive to its implementation. It may be recalled that in the Rio Declaration on Environment and Development, Principle 10 states that "*the best way to address environmental issues with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have access to environmental information that is held by public authorities, including information on materials and activities that represent a danger to their communities and the opportunity to participate in processes decision-making. States shall facilitate and encourage public awareness and participation by making information widely available. Effectives access to judicial and administrative proceedings, among these, redress and relevant resources*. "

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2 OBJECTIVES OF THE NATIONAL PRTR SYSTEM

2.1 Overall Goals and Objectives of PRTR

2.1.1 Overall goals

The overall goal of the National PRTR is “a publicly available, interactive database to inform the government, the private sector, any legal entity or natural person and the public about releases of environmental pollutants to the environment; to assist government entities, researchers, and other legal entities or natural persons in the conduct of research and data gathering; to support the development of appropriate regulations, guidelines, and standards; and for other similar purposes”.

2.1.2 Overall Objectives

In order to achieve objectives and targets that contribute to environmental protection, the following objectives were proposed for PRTR under planning workshops and implementation:

- Increase the capacity of the Ministry to fulfill its obligations relating to reporting under Multilateral Environmental Agreements (MEAs), the exchange of information and public awareness through the implementation of a PRTR,
- To formalize the design process PRTR in Cambodia with the participation of the government sectors involved, as well as interested and affected parties,
- Provide information and technical expertise relevant to make informed decisions about the PRTR that take into account National needs and circumstances, and
- To strengthen civil society capacity to participate substantially in the design process PRTR and improve the availability of environmental information provided by the government to the public.

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3 LEGAL IMPLEMENTATION OF THE NATIONAL PRTR SYSTEM

3.1 New or existing regulations and legislation under which the PRTR system will operate

3.1.1 Driven frameworks for PRTR Implementation

Cambodia has acknowledged and adopted the Agenda 21 and other related environmental conventions such as the Basel Convention, the Stockholm Convention, the Vienna Convention and Montréal Protocol, MARPOL, UNFCCC, which are intending to protect human health and the environment from the adverse effect of chemicals use. In addition to this, Royal Government of Cambodia is also taking into account the principle of sound management of chemicals as addressed during the World Submit on Sustainable Development (WSSD) held in 2002 in South Africa which stated that "**chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment**".

Based on concepts highlighted in the Agenda 21 and WSSD, Cambodia has adopted many frameworks nationally and internationally related to chemicals management. Hence, the implementation of such frameworks has met some levels of satisfaction, for which more efforts need to be done in the near future. One effort among others that was addressed in the national framework of the "National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants" (NIP), adopted in June 2006; is the strategy to address sound management of POPs, in which information exchange on persistent organic pollutants (POPs) is one of the identified priorities.

This strategy had highlighted number of actions to be carried out for exchange information between parties as well as within governmental institutions, academia, press, and the public at large. Such actions are the following:

- Establish a process for information storage and access of data on POPs related issues in Cambodia. This information is available for all government institutions and stakeholder to exchange information with the convention of all member parties;
- Establish a National Chemical and POPs Information Centre under the Ministry of Environment (contact agency for the Stockholm Convention) to accommodate all database system for responding to the Stockholm Convention reporting procedure;
- Improve the government officers' knowledge on the data collection technique, dissemination, the use, collection approach and analysis of information,
- Encourage and facilitate the contribution of NGOs and the stakeholders in POPs information exchange systems;
- Develop a forum and lines of communication to extend the data collection and use; and
- Promote public awareness on POPs reduction and elimination issues to stakeholders and interest groups, and provide up to date POPs information through mass media.

Although this strategy highlights only POPs, many other chemicals including the one that has POPs-like properties shall be also taken into account for the purpose of environmentally sound management. In this regards and for the benefit of a PRTR system, the priority problems stated in the NIP strategy can be considered as a fundamental framework for developing "PRTR" for Cambodia.

3.1.2 Directive for PRTR Implementation

Future directions for PRTR implementation is being considered and will be mainstreamed into Cambodia ENR code, which is currently being drafting leaded by MOE. The draft of the ENR code will cover all aspects related to environmental issues. In particular, all environmental pollution related issues will be addressed by the integration of all international environmental agreements that Cambodia has ratified, accessed to, or signed.

The legal provisions that pointed out the implementation of PRTR are addressed under the drafted Cambodia Environmental and Natural Resources (ENR) Code: National PRTR System will be considered as an integrating part as a tool for inventory of air emissions, wastewater discharges into receiving waters or infiltrate into the ground and hazardous wastes and can feed information consistent with the authorizations, licenses or permits issued to industrial facilities by MOE.

The National PRTR issue was addressed under the 8th draft ENR Code, which is expected to make the final draft in early 2018 for submitting to the Council of Minister for approval before sending to legislative bodies for adaption, is comprised of 3 main chapters and 8 articles under Book 6 (Waste and Pollution Management), Title 9 (National Pollutant Release and Transfer Register). The final draft ENR code is planned to be finalized in early 2018, and if it is goes as planned, the final draft ENR Code will then be submitted to the Council of the Ministers for reviewing before submitting to the legal bodies for enacting. The key provision related to PRTR[2] that addressed under the draft 8th of the ENR Code are:

[….

Title 9: National Pollutant Release and Transfer Register

ARTICLE 838: The framework of the establishment of PRTR

The ministry/agencies in charge of the environment shall cooperate with relevant ministries/agencies shall establish a National Pollutant Release and Transfer Register for the Kingdom of Cambodia. A National Pollutant Release and Transfer Register is a publicly accessible database or inventory of chemicals or pollutants released to air, water and soil and transferred off-site for treatment.

[2] Draft 7th of the ENR Code was elaborated based on comments received from the 3rd national consultation workshop.

CHAPTER 1 ESTABLISHMENT OF A NATIONAL POLLUTANT RELEASE AND TRANSFER REGISTER

ARTICLE 839: LIST OF INDUSTRIES

The ministry/agencies in charge of the environment shall develop by legal instrument the List of Industries covered by the National Pollutant Release and Transfer Register based on the International Standard Industrial Classification of All Economic Activities and the Organization for Economic Co-operation and Development Global Pollutant Release and Transfer Registers Proposal for a Harmonized List of Reporting Sectors.

The ministry/agencies in charge of the environment shall modify the list as necessary.

ARTICLE 840: LIST OF ENVIRONMENTAL POLLUTANTS

The ministry/agencies in charge of the environment shall develop by legal instrument the List of Environmental Pollutants Covered by the National Pollutant Release and Transfer Register based on the Organization for Economic Co-operation and Development Global Pollutant Release and Transfer Register Proposal for a Harmonized List of Pollutants.

The ministry/agencies in charge of the environment shall modify the list as necessary.

CHAPTER 2 COVERED OWNERS AND OPERATORS OF FACILITIES

ARTICLE 841: ENVIRONMENTAL POLLUTANT RELEASE FORM

The owner or operator of a premises covered by the List of Industries (in article 839) shall complete an Environmental Pollutant Release Form for each of the environmental pollutants mentioned in the List of Environmental Pollutants covered by the legal instrument (article 840).

The details of the Environmental Pollutant Release Form and the time-frame shall be determined by the legal instrument.

ARTICLE 842: APPLICABLE FACILITIES

The requirements of this Title shall apply to owners and operators of facilities that are covered in the List of Industries Covered by the National Pollutant Release and Transfer Register and that manufactured, processed, or otherwise used an environmental pollutant in excess of the threshold quantity described by the legal instrument during the calendar year for which a release form is required under this Title.

ARTICLE 843: APPLICABLE TRANSPORTATION

The requirements of this Title shall apply to the transportation, including the storage incident to such transportation, of any environmental pollutant, off-site from any facility for purposes of storage, treatment or disposal.

CHAPTER 3: ACCESS TO INFORMATION

ARTICLE 844: NATIONAL POLLUTANT RELEASE AND TRANSFER REGISTER

The Ministry of Environment shall establish and maintain a National Pollutant Release and Transfer Register based on data submitted to the Ministry of Environment under this Title.

ARTICLE 845: PURPOSE OF REGISTER

The National Pollutant Release and Transfer Register shall be maintained as a publicly available, interactive database to inform the government, the private sector, any legal entity or natural person and the public about releases of environmental pollutants to the environment; to assist government entities, researchers, and other legal entities or natural persons in the conduct of research and data gathering; to support the development of appropriate regulations, guidelines, and standards; and for other similar purposes.

….]

The above articles are quoted from the draft 8th of ENR Code. Nevertheless, it was observed that there are two key provisions such as the applicable thresholds of listed pollutants and confidential claims by facilities are missed addressed in this draft code. Thus, it is necessary to integrate these two key provisions into the next draft ENR Code revision.

Nevertheless, the PRTR related provisions set under Cambodia ENR Code remains open for further development of legal instruments to set out the List of Industries, Industrial Classification, List of Reporting Sectors, List of Environmental Pollutants, Pollutant threshold quantity, and Environmental Pollutant Release Form and the time-frame.

3.2 Schedule for development of the requisite legislation

It is hard to set time line for mandating PRTR to be national wide implementation because of limitation of legislation due to the draft ENR Code is under development and it is expected to make the final draft at early 2018 for submitting to the Council of Minister of approval before submitting to the legislative bodies for adaption. Nevertheless, for the interim period the Ministry of Environment is currently preparing legislation on self-reporting to encourage facilities to implement PRTR as a demonstration stage and full PRTR implementation will be conducted after the ENR code adapted by legislative body.

3.3 Current environmental data reporting requirements to be replaced, modified, or integrated with the PRTR reporting scheme

To date, there is no environmental data reporting requirement is in place; however, such requirement will be carried out after the new Cambodia ENR Code adopted.

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4 REPORTING REQUIREMENTS AND PROCEDURES FOR POINT SOURCES OF EMISSIONS

4.1 Definition of technical terms

All terms used in the context of the national PRTR proposal is elaborated in Appendix 4: the Glossary.

4.2 List of substances subject to PRTR reporting

The following list sets out the legal instruments of the Kingdom of Cambodia that were identified as potential legal support for the implementation of PRTR. In these legal instruments identify the issues in the registry: type of database, access to information, regulated chemicals, characteristics of substances transferred in hazardous waste characteristics of the parameters and substances discharged into water and soil and characteristics of the substances emitted into the atmosphere.

On the other hand, international conventions that establish substances which, by their nature, can be toxic to human health and other living beings or harmful to the environment were taken into consideration. International conventions that were considered to establish the list of National PRTR substances are described below:

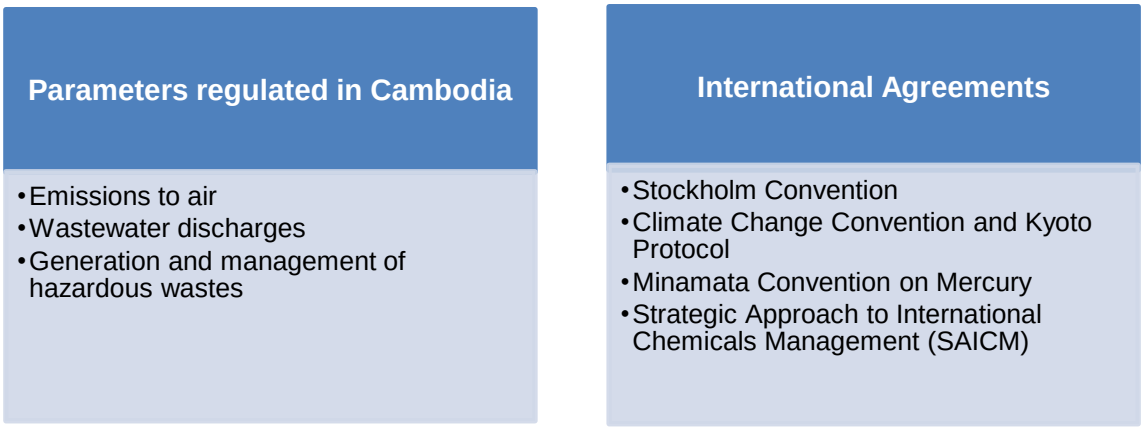
- **The Kyoto Protocol:**
  - The successor of the UNFCCC United Nations Climate Change is an international legal instrument to combat climate change. It contains commitments by industrialized countries to reduce their emissions of greenhouse gases responsible for global warming
- **The Stockholm Convention on Persistent Organic Pollutants:**
  - Global treaty that aims to eliminate or restrict the production and use of POPs, which are chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of humans and wildlife, and have harmful impacts on human health or on the environment.
- **Basel Convention**
  - The international treaty that was aimed to reduce the movements of hazardous waste between nations, and specifically to prevent transfer of hazardous waste from developed to least developed countries (LDCs). It does not, however, address the movement of radioactive waste. The Convention is also intended to minimize the amount and toxicity of wastes generated, to ensure their environmentally sound management as closely as possible to the source of generation, and to assist LDCs in environmentally sound management of the hazardous and other wastes they generate.
- **Rotterdam Convention**

- The multilateral treaty to promote shared responsibilities in relation to importation of hazardous chemicals. The convention promotes open exchange of information and calls on exporters of hazardous chemicals to use proper labeling, include directions on safe handling, and inform purchasers of any known restrictions or bans. Signatory nations can decide whether to allow or ban the importation of chemicals listed in the treaty, and exporting countries are obliged to make sure that producers within their jurisdiction comply.

- **The Minamata Convention on Mercury:**
  - Global treaty to protect human health and the environment from the adverse effects of mercury. It includes a ban on new mercury mines, the phase-out of existing ones, the phase out and phase down of mercury use in a number of products and processes, control measures on emissions to air and on releases to land and water, and the regulation of the informal sector of artisanal and small-scale gold mining.

Thus, the following diagram (Figure 1) illustrates the basis for integration of the list of substances for the Pollutant Release and Transfer Register in Cambodia.

Figure 1: Basis for the integration of the list of substances for PRTR



By including these two considerations: the environmental regulation of Cambodia, as well as international conventions, it was a proposed list of substances and PRTR parameters (see Appendix 2).

4.2.1 The PRTR list of substances

Since Cambodia is just starting a PRTR system design and capacities are limited, not all chemicals listed in the Kiev Protocol shall be reported in the initial stage. The chemicals that shall be reported in the initial stage are those chemicals that have the following criteria: toxicity, persistence, bioaccumulation, carcinogenicity, mutagenicity, reproductive or developmental effects, neurotoxicity, and transboundary transport and exposure. Furthermore, chemicals that are subject for reporting under international conventions and protocols shall also be incorporated in this initial stage of the PRTR system implementation in Cambodia. Therefore, chemicals that should be addressed in this initial stage implementation are:

- Persistent organic pollutants (i.e. 12 existing POPs and 09 new POPs), cover only PCBs, Dioxin and Furans (during the initial stage);
- Ozone layer depleting substances (i.e. Methyl bromide, CFCs, HCFC);
- The greenhouse gases (i.e. carbon dioxide, methane);
- Hazardous chemicals that are contained in wastes as specified under the Basel Convention, i.e. cadmium, mercury, chromium, lead, etc. (regardless employee's numbers)

The substances proposed to report on the PRTR can be classified into 5 groups:

- GHG-Greenhouse Gases-Kyoto Protocol
    - Global Warming Potential (GWP)
- POPs - Persistent Organic Pollutants - Stockholm Convention,
- Criteria air pollutants,
- Metals, and
- Other substances.

Key activities covered by the National PRTR system are based on the UNECE Guidelines on the Implementation of the Protocol on Pollutant Release and Transfer Registers to the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters. In Appendix 1 and 2 (List of substances and parameters for PRTR), PRTR systems report emission and releases of hazardous chemicals to air (a), water (w) and for off-site transfers (o), respectively. The indicative list shall be made to help in the identification of contaminants that may be issued for a specific category of productive activity and can be used as a checklist for reporting.

Table 1: List of substances and parameters for PRTR pilot testing

CATEGORY	SUBSTANCE / PARAMETER
Greenhouse Gases (Climate Change Convention and Kyoto Protocol)	Methane
	Nitrous oxide
	Carbon Dioxide
Persistent Organic Pollutants (Stockholm Convention)[3]	Polychlorinated biphenyls (PCBs)
	Dibenzoparadioxins polychlorinated and dibenzofurans (PCDD / PCDF)

[3] For demonstration period, Cambodia wish to report only PCB and dioxin and furans due to these substances can be available. For POPs pesticides, they all are banned for import and use. Other POPs substances such as PDBE that and PFOS are very limited amount and they are

CATEGORY	SUBSTANCE / PARAMETER
Atmospheric pollutant criteria	Sulfur dioxide
	Nitrogen dioxide
	Carbon monoxide
	Total Particles
	PM_{10}
	Lead
Metals	Cadmium
	Chromium
	Copper
	Tin
	Methyl mercury
	Mercury, including mercury compounds, alkyl mercury compounds alkoxy alkyl and aryl mercury
	Zinc

4.2.2 Procedures for reviewing, adding, or deleting substances from the PRTR list

The procedure for the requisition of PRTR format is as follows:

Table 2: PRTR Reporting Procedure

Nº	Responsible Agent	Activity
1	Industrial facilities or service providers	The head of the industrial facility or service provider is presented to the competent authority to request information and PRTR format
2	Receipt by the National Environmental Authority	Delivery charge PRTR Format and instructions for filling in paper and electronic forms as well as help guide for filling.
3	Industrial facilities or service providers	Complete the form electronically and return it to the reception at the offices of the Environmental Authority.

contained in obsolete materials.

Nº	Responsible Agent	Activity
4	Receipt by the National Environmental Authority	Check that all fields are properly filled. If filling is correct, seal and signature of receipt PRTR format. If you find any incorrectly filled fields, the format returns to the company in writing indicating irregularities. If this occurs within the time limit for receipt, indicate in writing the reasons for return, giving a deadline for the company to submit the corrected format.
5	Industrial facilities or service providers	When returning the form, the company revises and corrects the filling of it. Delivery format corrected, upon receipt of the environmental authority, following the same steps above.
6	National Environmental Authority	Processes paperwork received PRTR electronic format and integrates the information into a database PRTR. PRTR integrates and publishes the annual releases and transfers of pollutants reported.

4.3 Criteria and thresholds that trigger PRTR reporting by facilities/ emissions sources

The thresholds determined in the Kiev Protocol on PRTRs shall be considered as a basis reporting threshold in Cambodia for PRTR implementation; however, thresholds quantitative shall be revised to reflect Cambodia situation. Further reporting thresholds shall be necessarily determined to reflect ENR Code, which are currently under preparation and waiting for adaptation by the executive body and legislative body. The thresholds that will be adapted from the Kiev Protocol for Cambodia's PRTR are the capacity thresholds, where input and output capacity is taken into account.

Therefore, during this interim period the reporting thresholds should be determined as indicated in the table below. Nevertheless, other capacity thresholds will also be determined later one after experiences gained from the pilot stage.

Table 3: Reporting thresholds and its related activities

No.	**Activity**	**Capacity threshold (column 1)**
1.	Energy sector	
(c)	Thermal power stations and other combustion installations	With a heat input of 50 megawatts (MW)

No.	Activity	Capacity threshold (column 1)
3.	Mineral industry	
(c)	Installations for the production of: (i) Cement clinker in rotary kilns (ii) Lime in rotary kilns (iii) Cement clinker or lime in other furnaces	With a production capacity of 500 tons per day With a production capacity exceeding 50 tons per day With a production capacity of 50 tons per day
5.	Waste and waste-water management	
(a)	Installations for the incineration, pyrolysis, recovery, chemical treatment or landfilling of hazardous waste	Receiving 10 tons per day
(d)	Landfills (excluding landfills of inert waste)	Receiving 10 tons per day or with a total capacity of 25,000 tons
6.	Paper and wood production and processing	
(b)	Industrial plants for the production of paper and board and other primary wood products (such as chipboard, fibreboard and plywood)	With a production capacity of 20 tons per day

4.4 Facilities or sources exempted from PRTR reporting

Chemicals can be released from two sources: the point sources and/or non-point (diffuse) sources of emissions. The point sources of emissions refers to installation sites such as industrial facilities, repairing workshops, warehouses, dumpsites, etc.; while the non-point sources of emission refers to chemicals that can be run-off from agricultural, mining, and transportation activities.

Cambodia does not have any experience on identification and selection of sources of chemicals wastes. Other experiences in reporting of chemicals related issues are also limited. In addition to this, there are inadequate chemicals information and data compilation procedures, resulting in limited knowledge and experiences in the calculation of chemical wastes generation and release to environmental media, for which further training and capacity building should be provided and strengthened.

For the initial stage of PRTR implementation, only point sources of emissions will be subject of reporting in Cambodia. Based on Cambodia's productive activities, the point sources of emissions that should be enforced under the PRTR system are industrial and waste management activities, which can include power generation, small and medium enterprises (SME), mineral production, paper and wood production and processing, and waste management.

Therefore, nonpoint source and other facilities beside SME shall be subjected to exempt from PRTR reporting.

4.5 Management of confidentiality claims

4.5.1 Procedures for filing, reviewing and granting/denying confidentiality claims

Information related to national/public security, international relations, the course of justice, intellectual property rights, confidential of commercial and industrial information, and confidentiality of personal data shall be highly respected and keep as "CONFIDENTIAL". For business and industrial sector, data and information that shall be considered as confidential information is referring to data related to raw materials, active ingredients or key composition elements for producing a product and requested by the facility owners to keep as confidential information. In this regard, facilities owners shall make set aside data/information and putting them in a sealed envelope/packing form, marking with alerting phase as "CONFIDENTIAL". The competent authority may use the existing chemicals management coordinating mechanism or establishing a new one as necessary (i.e. National PRTR Coordinating Team) to be responsible for the PRTR system management including keeping confidential data/information of the facilities.

Nevertheless, the competent authorities may have the right to review such data/information and consider such information as confidential one, unless those data and information may pose any negative impact to human health and the environment. Data and information on chemicals that would cause negative impact to human health, biodiversity and the environment when they enter the atmosphere shall not be regarded as confidential information and shall be subjected for public hearing under the PRTR system.

4.5.2 Procedures for entry of generic data into the PRTR database in place of data claimed as confidential

The industrial and/service facilities shall submit their PRTR information/data in hard copy with their stamp and signature to the competent authorities. Soft copy of such information shall be submitted together with hard copy or can be send by email to competent authority.

Concerning confidential information, the industrial or service facilities shall make notification of such information and data to the competent authority for consideration and request for confidential one. The competent authority has the right to review this information/data for granted confidential or refuse such request as confidential.

The National PRTR Coordination Team (NPCT) of the Department of Hazardous Substances Management will play role in reviewing all PRTR information provided by industrial and service

facilities and make database on pollutants reported. With soft copies returned by facilities, will enabling NPCT to computerize, analyze, document, and publicize; after the NPCT reviewed those data.

4.6 Data elements to be included in the reporting format

4.6.1 Facility specific data elements

This database will contain information from industrial facilities or services, established in Cambodia. PRTR data collected from facilities or services will include name and location of the reporting facility, the type of substances used and quantity of emissions to different media: water, air, soil or through disposal and transfer of hazardous waste.

The specific facility data elements to be covered in facility or pollutant source should incorporate the following information:

- Company name;
- Location, latitude and longitude of the plant site;
- Standard Industrial Classification (SIC) or another industrial sector classification;
- Number of employees;
- Environmental operating permits and licenses;
- Name and telephone number/address of facility contact person;
- Signature of a plant executive or other high-level company official.

Reporting format for the Pollutants Release and Transfer Register will be made available for hard and soft copies. The hard copy of PRTR reporting form shall be fill in or made by facilities and sign and stamp on it, as official document. The same information on hard copy shall be made available in electronic form and shall be submitted together with hard copy or can be send separately to NPCT for computerizing and keep as electronic database.

Table 4: Specimen of Cambodia reporting format for the PRTR

Reporting format for the Pollutants Release and Transfer Register

Reporting year:	

1. General Information

1.1. Information about the facility

1.1.1 Information about the company

Company name:	

Address:				
	Province/ town:		District/Quarter:	
	Commune/ Sangkat:		Village:	

1.1.2 Information about the industrial facility (reporting facility)

PRTR Code:	(to be classified and provided by MOE)			
Facility name:				
Address:				
	Province/ town:		District/Quarter:	
	Commune/ Sangkat:		Village:	
	Telephone number:		Fax number:	
	Email:			
Geographical location (Coordinates):	N: E:			
Geographical location (Map attached):				
Altitude (meters above sea level):				
Area (m^2):				
Activity/process and final product:				
Number of workers:				
Date of establishment:				

4.6.2 Chemical specific data elements

The specific chemical data elements shall include the following information:

- Identification of the substance (Chemical Abstract Service (CAS) number or other standard chemical classification);
- On-site emissions/discharges to air, water, land (specify units of measurement);
- Off-site transfers (specify units of measurement and quantities recycled, recovered, treated, and/or finally disposed including identification of the receiving locations);
- Accidental releases to air, water, land;

- Explanations of changes in quantities emitted/released or transferred since the previous report; and
- Anticipated or planned reductions in quantities emitted or transferred.

4.6.3 Other optional data elements

Other optional data elements such as energy and water use, emissions reduction measures, recycling methods, pollution prevention activities, chemical use information, etc. shall be also included in the reporting requirements to enable the facility to further be further considered on the application of clean development mechanism (CDM).

4.7 Emissions Estimation Methods

4.7.1 Acceptable procedures for estimating emissions

The industrial facilities or service providers shall provide information on the amount of releasing or transferring wastes/pollutants, by filling in the PRTR form (template for PRTR Reporting). Data on releases and emissions from industries and service providers will be done electronically, by filling an electronic form. If a company has two or three plants in different plots, must report form for each property.

The units can be used to report the amounts requested in each of the tables in the format indicated in the footnotes of the corresponding table, and must be strictly adhered to these notes and do NOT use for any reason, units not listed. For the calculation of annual emissions shall be used for monitoring results achieved to air emissions or water discharges by direct measure. Otherwise, facilities may use different estimation techniques such as: calculation of emissions or transfers by statistical trends of such issue or a similar process, engineering calculations, mass balance, emission factors.

The main features of National PRTR reporting format are:

- Generate annual multimedia information on pollutants releases and transfers;
- Monitor the environmental performance of facility's operations;
- Support the decision-making in environmental protection; and
- To contribute to the formulation of criteria and policies regarding environmental issues.

To achieve these objectives, the reporting format of PRTR requires the following information:

- Total PRTR emission of the different media (air, water, soil)
- Number of transfer of such substances outside the establishment, whether for treatment, recycling, reuse and / or disposal, in the case of generators.

Given the format of the multimedia approach of PRTR, industrial facilities or services may use the PRTR reporting as a tool to identify priority for processes that promote the use of clean technologies and the detection of specific environmental problems caused by mass transfer between the contaminants. This allows us to extend the concept of what is now known as technologies for monitoring and evaluating, on a firm basis, the desirability of replacing raw

materials and hazardous substances, change or update their processing technology, rationalize water use and energy consumption, use better fuels, and consider recycling or reuse of waste and by-products.

4.8 Assistance or support provided to reporting facilities

4.8.1 Information, instructions, and training activities for reporting industries

In order to facilitate compliance of establishments to integrate reporting and timely information, an advisory capacity management and communication of information should be consolidated at national level in the MOE. In particular, national consultants should assist the industries before and during the process of estimating and reporting their emissions. These activities will include: trainings, workshops, phone support, site visit to verifying information, site inspection, and the preparation and publication of support materials. Additionally, from now on, it will be necessary to consider the ongoing training of staff who will be responsible for managing and developing the following activities:

1. **National guidelines on estimation techniques:** Written guidance materials easily accessible by the establishments, in order to have a guide with clear examples to understand the use of different emission estimation tools. The report of emissions using estimation methods for non-regulated pollutants, will show new criteria for environmental management, taking the base of PRTR. This suggests that promote the development of responsible participation of facilities, as to how to estimate environmental priority substances. Thus, the purpose of the guides, sector specific and/or industrial activity, constitutes a basis for creating a culture of reporting emissions of PRTR using indirect measurement techniques.
2. **Ongoing training**: It is convenient to define a training period for PRTR reporting (filling the format) and interactive courses on estimation methodologies. This will assure that the data collected will be more complete and reliable. It is more likely that the training will be more intense in the early years of reporting, in order to become familiar with the reporting format, infer data from substance and estimation tools. While it is desirable to have trainings throughout the year, the period where they should be intensified is in the months prior the reporting. Moreover, further assistance can be provided with permanent staff of the facilities to answer to technical questions or create documents to support the dissemination of information such as brochures, publications, answers to frequently asked questions, etc. Courses must be designed to meet the needs of industrial facilities and/or managers responsible of the reporting and collection of data, as well as specialized courses to government authorities in charge of the receipt and review of information and creation and publication of the database. The aim of the training is to provide more accurate reports on PRTR data, avoiding errors deriving from wrong filling of PRTR format, considering some suggestions as set out below.
3. **Considerations and suggestions for filling the PRTR Format**: Given the PRTR multimedia format, it is likely that the information is covered and scattered among different

partners (managers, technicians, and administrative process) in the industrial or service establishment. The staff responsible for filling the format, need to establish the methodology for collecting information requested in the PRTR format, and thus develop knowledge on PRTR data. Since the report is annual and done through a software, we recommend that managers systematize this activity and write down the memories of calculation for estimating release and transfer of substances.

It is also convenient, together with the provision of annual data to provide information on the:

- Results of atmospheric monitoring
- Results of monitoring discharges
- Log of hazardous waste
- Document(s) of the consent of utilities of hazardous waste (transportation, treatment, disposal, etc.)
- Safety data sheets of the materials and substances as inputs

4.8.2 Assistance and services to be provided during the first reporting cycle

For the first reporting cycle, the numbers of hands on trainings shall be provided to facilities' personnel in charge of filling the PRTR form on key issues such as objectives of PRTR, contribution of the facility to disseminate PRTR information to the local community, management of emissions estimation tools. And make employees of the establishment and the general community aware of the benefits and implication of the development of Cambodia PRTR.

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5 TREATMENT OF NON-POINT AND NON-REPORTING POINT SOURCES OF EMISSIONS

5.1 Definitions of non-point, diffuse, and non-reporting sources

The non-point sources of emission refers to chemicals that can be run-off from agricultural, mining, and transportation activities, which unable to perform direct measure on the amount of waste generated and release into environmental media. Non-point source (NPS) pollution, unlike pollution from industrial and sewage treatment plants, comes from many diffuse sources.

5.2 Procedures for estimating emissions/releases from non-point, diffuse, or non-reporting point sources

There is some challenges in taking in account for non-point sources pollutants to be reporting under PRTR system in Cambodia during this time due to random and limitation of chemicals use is agricultural productivities, limited and small scale mining sites, and estimation of emission from transportation was calculated based on imported oils for use.

5.3 Procedures and format for including these emissions estimates in the general PRTR database

There is no procedure for non-point sources being considered yet by this time, nevertheless, data collection from this non-point sources will be taken into account for the second or third year of the report cycle.

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6 PRTR DATA MANAGEMENT SYSTEM

6.1 Software requirements and specifications for the PRTR system

Currently, the IT equipment in governmental institutions is adequate; a few computers are available in most of governmental office's levels. Nevertheless, such computers are mostly used for administrative purposes rather than data storing. Concerning PRTR data management, there are some disadvantage points as follows:

- Most office computers are not networking (standalone PC), have limited access to internet, and the one connected to the server has less functions in database sharing;
- There is no professional IT personnel looking after such server and network, resulting in server being down frequently;
- There are poor office computers and networks maintenance, resulting in computer viruses effects, data lost, and hardware crashes;
- Officers have limited computer literacy, where most of officers are just able to use basic MS Words programs;
- Limited English literacy and computer language prevent officers to have self-learning and gain skills in computer use;

The implementation of a PRTR system and PRTR database management will be effectively implemented UNITAR/UNEP Project support, which Cambodia will receive IT support from international expert. Thus, such IT international experts shall pay visit to Cambodia at the end of 2017 or early 2018 to conduct training for staff of MOE and relevant agencies. . Beside international IT experts, there are numbers of software that shall be incorporated for PRTR database management. Besides the application of Microsoft Office, other programs shall be introduced for data analysis such as SPSS, GIS (geographic information system). In addition, other communication software shall be also introduced including networks, internet, website design programs (i.e. dream weaver, font page, etc.) and other necessary programs.

6.2 Hardware requirements and configuration for the PRTR system

In Cambodia, there is limited capable computers/server that can play role as storage hub for database management. In this regard, a powerful server computer shall be installed and made available for networking between respective ministries for data entry and sharing. Nevertheless, such installation may not be immediate due to limited resources for such installation, as well as server hub, network, maintenance, and a backup system procedure have not yet been addressed. In addition to this, there is no IT professional officers assigned and trained to carry out such duties. Unstable electricity supply that may influence on data entry and maintenance could be another consideration to have a powerful server computer.

Therefore, the latest computers with minimum capacity of about 1000 GB with processor about 2.5 MHz and RAM 4 GB shall be installed. IT equipment that may be needed for PRTR database management would be:

- Servers and network systems (hubs, and data storage and backup facilities) for PCs clients connecting to;
- High capacity PCs (including laptops) with processor not less than 2.5 MHz and 4 GB in RAM for data entry, analysis, mapping, and publication;
- Internet connection;
- Other equipment and programs including printers, plotters, GIS, GPS, ArcView, database software (Excel, Access and/or SPSS), web design program, etc.

6.3 Reporting format

Based on growing computer literacy of officers, the reporter shall provide both soft and hard copy of PRTR data to respective institutions for further action. The soft copy can be sent via IT communication facility and/or submitted in CDROM or flash media as preferred by the reporters. Submission of such soft copy will lighten data entry work and avoid any missed data entry. Nevertheless, hard copy must be made available with stamped on each copy to acknowledge the submitted data and illustrate the accountability of the facility owners.

To facilitate the data entry and reporting, a template form for reporting shall be made available in soft and hard copies. Reporters just fill in such forms and send back to respective institutions for further actions. Reporting format shall be developed by the NPCT.

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7 ADMINISTRATION OF THE NATIONAL PRTR SYSTEM

7.1 Institutional responsibilities for data collection and management

7.1.1 Specification of procedures and agencies responsible for

In order to carry out PRTR data collection, management and dissemination, a National PRTR Coordinating Team (NPCT) has already been established under the Department of Hazardous Substance Management of the General Directorate of Environmental Protection, Ministry of Environment, the NPCT is responsible of the following duties:

- Designing the data collection and management procedures of the PRTR system and a set of design tasks involving technical and administrative decisions. These tasks include the design of reporting forms and reporting instructions, the specifications for the PRTR hardware and software, and the development of procedures for database management, data collection, data quality control, and related matters;
- Identifying government agency[4] that will host the database and identifying the resources that will be needed for its operation including staff, computer systems and software, annual operating budget, etc. Precise data handling procedures, from the point that a facility documents its report to the point when the data are finally entered into the PRTR database, also need to be defined. A data flow model should be created which outlines all of the data management procedures for every step of a complete PRTR reporting cycle;
- Checking the precision and accuracy of the figures submitted by reporters and administrative controls to ensure that the reported data are entered fully, consistently and accurately into the PRTR database. An error correcting procedure should likewise be established. When data quality check procedures suggest errors in reporting, there should be an established mechanism by which the authorities will contact the reporter and correct the problem;
- The treatment of PRTR data claimed as confidential is another data management issue that needs to be addressed. Clear and concise guidance must be provided to reporters on the conditions for claiming data as confidential, including instructions on how to file a confidentiality claim. Procedures for reviewing confidentiality claims and for handling the data once it is submitted should be clearly laid out. A procedure for filing generic information related to the data points held as confidential should be developed to avoid undermining the integrity and completeness of the PRTR database.

[4] Currently, there are two main departments are seems involved in database management within MOE: one is the Department of Hazardous Substances Management and another one is the Department of Geospatial Information Service. Nevertheless, in the future, the GIS department may responsible for all MOE database management as part of E-government implementation.

In response to the above duties, the following points shall be taking into account for the data collection and management procedure. Such consideration shall be focused on governmental roles, software for data entry and analysis, hardware for data storing, reporting format, reporting instruction, data estimation technique, and data entry and verification.

The NPCT shall play important role in coordinating between central and local authorities for the purposes of PRTR data handling and management. In this regard, the NPCT will communicate with central ministries and shall perform the following tasks:

- Collect data and information for PRTR system and computerize such data;
- Do data analysis and make database for further use, i.e. database for professional use, and data and information for dissemination and public hearing; and
- Verify data and information provided by local government and authorities;

Data collection shall be responsible by local governments (provincial departments) and authorities who shall communicate with facilities to obtain necessary data for PRTR system. Furthermore, local authorities shall assist NPCT for data verification and modification.

Nevertheless, to perform the above tasks, governmental officers who works for NPCT and PRTR related issues shall have appropriate professional knowledge on data collection, analysis and dissemination. Beside professional skills, those officers shall have computer use and software literacy skills such as Microsoft Words, Excel, Access, Publishers, Networks, GIS, SPSS, and other database analysis programs. In this regard, number of professional training on PRTR system implementation shall be provided.

7.1.2 Staffing and training needs for the operation of data collection and management procedures

It will also be necessary to identify or establish the personnel within the Department of Hazardous Substance Management (DHSM) of the General Directorate of Environmental Protection, Ministry of Environment, who will perform tasks to implement the PRTR. When staffing a PRTR, the DHSM shall identify:

- Required skills for PRTR staff (e.g. an understanding of database administration to perform data collection and management procedure);
- Whether there are personnel within the DHSM who have training relevant to PRTR operation (e.g. training in information technology, chemicals safety, communication, data collection and analysis, etc.); and
- Additional training that might be needed for PRTR staff due to new staff are employed to work at DHSM.

7.1.3 Infrastructure and budget requirements for the operation of data collection and management procedures

It is proposed that 2018 will be the first year to register with the PRTR. The first reporting cycle PRTR involves a sequence of activities involving different groups of participants: the MOE/GDEP

and the industries they report. The General Directorate of Environmental Protection (GDEP) should be the central body assigned responsibility for each activity within the reporting cycle and oversee the coordination of different stakeholders at both the federal and provincial or municipal level. Planning for the first reporting cycle will submit in 2018-2019 includes description of activities, responsibilities and budget. In the Table 5 below are showed the activities that will be carried out during the implementation of the first cycle of PRTR reporting and data collection and management procedures, the institutions and stakeholders liabilities and the estimated budget and timeframe.

Table 5: Estimated costs for implementing the PRTR collection and management procedures

Activity	Institutions responsible	Estimated costs (USD)	Period
Legal instruments (ministerial agreement)	MOE	$20,000	6 months
Launch of PRTR and communication campaign	MOE	$20,000	6 months
Training of government staff and industry	UNITAR-MOE	$60,000	24 months
Emission estimation manual development	MOE	$60,000	16 months
Reporting process and receipt of information PRTR	MOE and industrial chambers	$20,000	10 months
Capture and quality assurance information PRTR (Reviewing and verification)	MOE	$40,000	12 months
Subtotal		**$220,000.00**	

The above amount of estimated cost for PRTR implementation is referring in kind contribution from the government and other funding to be provided by development partners.

7.2 Institutional responsibilities for data analysis and dissemination

7.2.1 Specification of procedures and agencies responsible for data analysis

After receiving data from reporters, the NPCT shall take further tasks related to PRTR data analysis and dissemination. Among the tasks that need to be addressed are developing appropriate data accumulation and analysis methodologies, so that useful information can be extracted from the raw PRTR data to achieve the objectives set forth for the national PRTR system. Useful information that could be derived from PRTR data, for example, include: regional

or national estimates of the total burden of specific pollutants, trends in chemical-specific emissions which can indicate the level of response to policy actions, geographic distribution of pollutant emissions and proximity to sensitive ecosystems or population centers, etc.

7.2.2 Data access and dissemination mechanisms

A national policy for dissemination of PRTR data will need to be developed and agreed upon by the NPCT with input from potential users of PRTR data. Decisions need to be made regarding the form and mechanisms through which the PRTR data will be made available for public hearing as well as to other interested parties.

The issue of data dissemination is very important because the incentive for improved environmental performance depends in part on the degree of transparency and public availability of the emissions data provided through the PRTR. Thus, the national PRTR system should be designed to promote information transparency and increase accountability for releases/transfers of pollutants as a means for ensuring its effectiveness as a policy instrument and to spur risk reduction efforts.

To facilitate PRTR data dissemination, the NPCT shall consider on the following approaches:

- PRTR data analysis shall be made available in various categories including location of emission sources/facilities, specific pollutants, environmental media, trend identification, GIS mapping of pollution sources, etc.
- After analysis, PRTR data shall be made available in different format including annual report, fact sheets, and electronic copies. In addition to this, such analyzed data be classified and made available for different target groups, i.e. decision makers, planner, professional users, researchers, students, and the public;
- Confidential data shall be highly respected;
- Access to and dissemination of PRTR data shall be made differently for targeted users such as government ministries and agencies, public interest groups, industry, research institutes, etc.;
- PRTR data dissemination shall be made available in different accessing tools including print copies, research books, mass media, electronic form (i.e. internet), and in requested form for individual or institutions, etc.

7.2.3 Infrastructure and budget requirements for the operation of data analysis and dissemination procedures

It is proposed that 2018 could be the first year to register with the PRTR. The first reporting cycle PRTR involves a sequence of activities involving different groups of participants: the MOE/GDEP and the industries they report. The General Directorate of Environmental Protection (GDEP) should be the central body assigned responsibility for each activity within the reporting cycle and oversee the coordination of different stakeholders at both the federal and provincial or municipal level. Planning for the first reporting cycle shall be made in 2018-2019 includes description of

activities, responsibilities and budget. In the Table 6 below are showed the activities that will be carried out during the implementation of the first cycle of PRTR data analysis and dissemination and the estimated budget and timeframe.

Table 6: Estimated costs for implementing the PRTR analysis and dissemination

Activity	Institutions responsible	Estimated costs (USD)	Period
Training of government staff and industry on data analysis and dissemination	UNITAR-MOE	$120,000	24 months
PRTR system (include software) and data analysis training	MOE	$150,000	6 months
Emission estimation manual use dissemination	MOE	$56,000	8 months
Data dissemination	MOE	$60,000	12 months
Publication and dissemination of PRTR report	MOE	$40,000	8 months
Subtotal		**$426,000.00**	

The above amount of estimated cost for PRTR implementation is referring in kind contribution from the government and other funding to be provided by development partners.

7.3 Coordination and enforcement of the national PRTR system

7.3.1 Coordination mechanism among agencies involved in the operation of the PRTR system

The Department of Hazardous Substance Management (DHSM) of the General Directorate of Environmental Protection, Ministry of Environment will play important role in coordinating RPTR system related works, i.e. data collection, analysis, verification, documenting, and publication. With such coordination, DHSM shall establish National PRTR Steering Committee which shall be comprise member from MOE line departments, relevant ministry and local authorities. This working group will play role in data collection, review and verification, computerizing database, analysis and dissemination PRTR data via dissemination tools, and finally, publicize such analysis data for the public to be accessed.

Table 7: Typical flow of PRTR data from facilities to the public

No	Data flow	Activities	Responsible agencies
1.	Facilities	Facilities record and submit PRTR data using reporting forms or reporting	Facilities

No	Data flow	Activities	Responsible agencies
		software (Hard copy with stamp for official reporting and soft copy must send to competent authority for verification and database)	
2.	Reporting form/software	The governing agency gathers the reported data, verified, and compiles the data into PRTR database	DoE, Local governments, DHSM
3.	Database Disseminations	The governing agency transfer data from the database into data disseminations tools (e.g. reports websites, etc.)	DHSM, Dept. of Geospatial Information Service- DGIS
4.	Public	PRTR stakeholders use the data dissemination tools to access PRTR data	DHSM, Dept of Environmental Information and Extension-DEIE

7.3.2 Enforcement provisions

Currently, PRTR is not regulated yet in Cambodia and the Ministry of Environment is being drafting governmental ordinance/regulation to require industrial facilities to self-report their pollutants released to the environment. Moreover, enforcement provisions related to the requirement for providing information are addressing in the draft ENR Code, which is stated under Book 9 (Environmental Offences, Enforcement, And Remedies) of this code. One provision (Article 1226 of the 8th draft ENR Code) is addressing the obligation to report pollutants that impact the environment by stating that "*Will fines in cash under Class 3 Offence for physical person or legal person who fail to report the pollution that impact on the environment as stated in article 829*". In addition to this, Article 1227 of the 8th draft ENR Code also mentioned the reporting obligation n pollution that impact on the environment by stated that "*Will fines under Class 4 Offence for physical person or legal person who fail to list chemicals into industrial list on the release of pollutants into the environment as stated in Article 841*".

The above mentioned are the PRTR enforcement provision's related issues and it can be affected sooner after the ENR Code adapted. For the meant time, MOE is encouraging facilities to conduct self-reporting on pollutants release and transfer and also being drafting new regulation to request facilities to undertake self-reporting.

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8 NATIONAL IMPLEMENTATION WORK PLAN

8.1 Workplan and budget of activities

It is proposed that 2018 could be the first year to register with the PRTR as demonstration activities. The first reporting cycle (2018-2019) PRTR involves a sequence of activities involving different groups of participants: the MOE/DHSM and the industries they report. The DHSM should be the central body assigned responsibility for each activity within the reporting cycle and oversee the coordination of different stakeholders at both the national and provincial/municipal level. Planning for the first reporting cycle includes aspects of activities, responsibilities and budget. The operation of the first cycle of reporting and communication and dissemination of information is necessary complete the following activities in accordance with the responsibilities and costs estimated in the following table:

Table 8: Estimated costs and time frame for implementing the PRTR

Activity	Institutions responsible	Estimated costs (USD)	Period (2018-2019)
Legal instruments (ministerial agreement)	MOE	$20,000	6 months
Launch of PRTR and communication campaign	MOE	$20,000	6 months
Training of government staff and industry	UNITAR-MOE	$60,000	24 months
Emission estimation manual development	MOE	$60,000	16 months
Reporting process and receipt of information PRTR	MOE and industrial chambers	$20,000	10 months
Capture and quality assurance information PRTR (Reviewing and verification)	MOE	$40,000	12 months
Training of government staff and industry on data analysis and dissemination	UNITAR-MOE	$120,000	24 months
PRTR system (include software) and data analysis training	MOE	$150,000	6 months
Emission estimation manual use dissemination	MOE	$56,000	8 months
Data dissemination	MOE	$60,000	12 months

Activity	Institutions responsible	Estimated costs (USD)	Period (2018-2019)
Publication and dissemination of PRTR report	MOE	$40,000	8 months
Subtotal		**$646,000.00**	

Note: This table is combination of table 5 (Estimated costs for implementing the PRTR collection and management procedures) and table 6 (Estimated costs for implementing the PRTR analysis and dissemination)

8.2 Activities in preparation for the first PRTR reporting cycle

As the first PRTR demonstration will be taking place in 2018, thus the draft PRTR report may be release at the end of 2018 as trial one. Then when lesion learnt and experience gain from year one (2018), the PRTR team will make further updating PRTR system, i.e. data collection, verification, analysis, computerizing, and finally make reporting. Such report can be available for soft copy and hard copies. For soft copy, PRTR information will be put on MOE website while numbers of hard copies will be publicized for public, which is planned to be available in 2019

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9 REVIEW PROCEDURES

The National PRTR Coordinating Team (NPCT) established under the Department of Hazardous Substance Management of the General Directorate of Environmental Protection will play important role in reviewing and updating the National PRTR system. The NPCT shall be responsible the reviewing procedure as specified in section 7.1.1 (Specification of procedures and agencies responsible for)

Last but not least, a procedure for periodic review and update of the national PRTR system shall be taking into account as proposed in the below table. The NPCT have reserve their right for changing PRTR reporting format and timeline for periodical PRTR release for the public.

Table 9: Procedures for periodic review and update of the national PRTR system

No	Data flow	Timeline	Responsible agencies
1.	Facilities	January to March, annually Facilities submit PRTR data in last year (i.e. 2017) by using reporting forms or reporting software	Facilities
2.	Verification/reviewing process	April to August, annually, NPCT (both national and provincial bodies) will review PRTR data submitted by facilities, verified and computerize the verified/reviewed data into PRTR database	DoE, Local governments, DHSM
3.	Database Disseminations	June to November, Annually The governing agency transfer data from the database into data disseminations tools (e.g. reports websites, etc.)	DHSM, DEIE
4.	Public	October-December, Annually Annually updated PRTR is available for public and stakeholders use via data dissemination tools to access PRTR data	DHSM, DEIE

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10.1 Appendix 1: List of substances and parameters for PRTR (Proposal for Long-term Run)

CATEGORY	SUBSTANCE / PARAMETER
Greenhouse Gases (Climate Change Convention and Kyoto Protocol)	Methane
	Nitrous oxide
	Hydrofluorocarbon (HFC)
	Perfluorocarbons (PFC)
	Carbon Dioxide
	Sulfur hexafluoride
Substances Depleting of the Ozone Layer (Montreal Protocol)	CFC
	Halons
	Others CFC fully Halogenated
	Carbon tetrachloride
	1,1,1- Trichloroethane (Methylchloroform)
	HBFC
	Methylbromide
	Bromochloromethane
Persistent Organic Pollutants (Stockholm Convention)	Perfluorooctane sulfonic acid, their salts and perfluorooctane sulfonyl fluoride
	Perfluorooctane sulfonic acid, their salts and sulfonyl fluoride perfluorooactano
	Aldrin
	Alpha hexachlorocyclohexane
	Beta hexachlorocyclohexane
	Beta-Chlordane
	Polychlorinated biphenyls (PCBs)
	Chlordecone
	DDT

CATEGORY	SUBSTANCE / PARAMETER
	Dibenzoparadioxins polychlorinated and dibenzofurans (PCDD / PCDF)
	Dieldrin
	Endrina
	Hexabromodiphenyl ether and ether heptabromodiphenyl
	Hexabromodiphenyl ether, heptabromodiphenyl, octabromodiphenyl ether
	Tetrabromodifenil ether and pentabromodiphenyl ether
	Tetrabromodiphenyl ether and pentabromodiphenyl ether
	Heptachlor
	Hexabromobiphenyl
	Hexachlorobenzene
	Lindane
	Mirex
	Pentachlorobenzene
	Toxaphene
Atmospheric pollutant criteria	Sulfur dioxide
	Nitrogen dioxide
	Carbon monoxide
	Total Particles
	PM_{10}
	$PM_{2.5}$
	Plumb
	Ozone
Metals	Aluminum
	barium
	Cadmium
	Total cyanide
	Chromium
	Antimony

CATEGORY	SUBSTANCE / PARAMETER
	Arsenic
	Cobalt
	Copper
	Tin
	Methyl mercury
	Mercury, including mercury compounds, alkyl mercury compounds alkoxy alkyl and aryl mercury
	Nickel
	Palladium
	Plomo ll
	Silver
	Platinum
	Selenium
	Thallium
	Tellurium
	Vanadium
	Zinc
Other substances	Acids or bases that can cause pollution, explosives or flammable
	Chloroform
	Compounds phenolics
	Volatile organic compounds (VOCs)
	Polycyclic aromatic hydrocarbons, PAHs
	Total petroleum hydrocarbons (TPH)
	Sulfates
	Sulfides
	Sulfides carbon

10.2 Appendix 2: List of substances and parameters for PRTR Pilot test

CATEGORY	SUBSTANCE / PARAMETER
Greenhouse Gases (Climate Change Convention and Kyoto Protocol)	1. Methane
	2. Nitrous oxide
	3. Carbon Dioxide
Persistent Organic Pollutants (Stockholm Convention)	4. Polychlorinated biphenyls (PCBs)
	5. Dibenzoparadioxins polychlorinated and dibenzofurans (PCDD / PCDF)
Atmospheric pollutant criteria	6. Sulfur dioxide
	7. Nitrogen dioxide
	8. Carbon monoxide
	9. Total Particles
	10. PM10
Metals	11. Lead
	12. Cadmium
	13. Chromium
	14. Copper
	15. Tin
	16. Mercury, including mercury compounds, alkyl mercury compounds alkoxy alkyl and aryl mercury
	17. Zinc

10.3 Appendix 3: Template for PRTR Reporting

Template for reporting document shall be made by the GDEP/DHSM (General Directorate of Environmental Protection/Department of Hazardous Substance Management).

Pollutants Release and Transfer Register – Reporting Format

Reporting year:	

I. General Information

I.1: Information about the facility

I.1.1: Information about the company

Company name:				
Address:				
	Province/ town:		District/Quarter:	
	Commune/ Sangkat:		Village:	

I.1.2: Information about the industrial facility (reporting facility)

PRTR Code:	(to be classified and provided by MOE)			
Facility name:				
Address:				
	Province/ town:		District/Quarter:	
	Commune/ Sangkat:		Village:	
	Telephone number:		Fax number:	
	Email:			
Geographical location (Coordinates):		N: E:		
Geographical location (Map attached):				

Altitude (meters above sea level):	
Area (m^2):	
Activity/process and final product:	
Number of workers:	
Date of establishment:	

I.2: Information about the legal representative of the facility

Name and last name:		
Identity number:		
Contact information	Telephone number:	
	Email:	

I.3: Information about the person in charge of filling in this form

Name and last name:		
Identity number:		
Contact information	Telephone number:	
	Email:	

II. Description of Facilities

II.1: Chemicals contained in raw materials used (inputs)

Raw material	Commercial name	CAS number	Annual consumption	Measurement Unit	Used in [5]

[5] Select one of the following: Process (P), Energy production (E) or Auxiliary services (A) and add description for subprocess

(1): Select one of the following: Process (P), Energy production (E) or Auxiliary services (A) and add description for subprocess					

II.2: Manufactured products (outputs)

Products	Annual production	Measurement unit	Type of process	
			Continuous	Seasonal

II.3 Water consumption

Source		Water consumption flow (m^3/hour)	Consumption Volume (m^3)		
			Daily	Monthly	Annual
Drinking water network					
Superficial	River				
	Lake				
	Sea				
	Watering canal				
Underground					
Others (specify)					
Total					

II.4: Electricity consumption

Source		Consumption	Monthly consumption	Annual consumption
		Kw-hour	kw	kw
Distribution network				
Own source	Thermic (Diesel)			
	Thermic (Gas)			
	Thermic (Coal)			
	Other (specify)			
Total				

III. Waste generation

III.1: Solid Waste Generation

Process or sub-process[6]	Type of waste[7]	Quantity (ton/year)	Quantity of waste in stock (ton/year)	Treated directly in-site		Transferred to treatment company or off-site landfill		
				Quantity (ton/year)	Method of treatment	Quantity (ton/year)	Treatment Method[8]	Name of the landfill or company

III.2: Liquid Waste Generation

6 **Process/sub-process:** (Select one of the following): Process (P), Energy production (E) or Auxiliary services (A) and add description for subprocess

7 **Type of waste**: (Select one of the following): General Waste (GW); Hazardous Waste (HW); and Infectious Waste (IW)

8 **Treatment Method**: Reuse, Recycling, Chemical treatment, Incineration, Other

Process/sub-process	Pollutants in liquid waste/effluents		Amount or volume of liquid waste/effluent generated		Treatment method
	Substance or Parameter (2)	Unit	Quantity	Unit (ton/year or m3/year)	

Select one of the following: Process (P), Energy production (E) or Auxiliary services (A) and add description for sub-process

III.3: Air Emission

Process/sub-process	Substance or Parameter[9]	Air emissions (Unit; mg/Nm3, ppm, etc.)		Amount of exhaust generated		Prevention or control method
		Conducted [10]	Fugitive[11]	Quantity	Unit (Nm3/h, etc.)	

Select one of the following: Process (P), Energy production (E) or Auxiliary services (A) and add description for sub-process

9 Any substance or parameter mentioned any Annexes of environmental legislation: Sub-decrees on Solid waste management, Water pollution control, and Air pollution and noise disturbance.

10 Conducted: emission collected and released through installed equipment (emitted through chimney system)

11 Fugitive: emission escaped from installed equipment (out of chimney system)

IV: Emissions or transfers of listed chemical substances

IV.1: Emissions and transfers

Emission / transfers		Chemical identity		Generation point	Emission or transfer			
		Chemical Name	CAS RN		Quantity	Unit	Estimation method	
							MB/ DM/ EF/ EC[12]	Description
Emmisions to:	Air							
	Water							
	Soil (land)							
Transfers to:	Reuse							
	Recycle							
	Coprocessing							
	Treatment							

[12] MB: Mass Balance, DM: Direct Measurement, EF: Emission Factor, EC; Engineering Calculation

Emission / transfers		Chemical identity		Generation point	Emission or transfer			
		Chemical Name	CAS RN		Quantity	Unit	Estimation method	
							MB/ DM/ EF/ EC[12]	Description
	Incineration							
	Final disposal							
	Sewage							
	Other (especify)							

_____ _____

Signature

Name and signature of legal representative

Name

ID of person filling the form

10.4 Appendix 4: Glossary

The purpose of this glossary is to facilitate the understanding of key words and criteria of PRTR, which are necessary to know and comprehend during the collection and reporting of PRTR data.

Direct inputs: Those materials or substances involved in the production process or treatment. Include raw materials.

Environment: The set of natural and artificial or induced by the man who made possible the existence and development of humans and other living organisms that interact in space and time.

Estimation Method: The method used to estimate the amounts reported. This is direct measurement, material balance, use of emission factors, etc.

Gas combustion in gaseous substances from the process of burning of combustible materials. These may be carbon oxides, nitrogen oxides, sulphur oxides and hydrocarbons, among others.

Hazardous material: elements, substances, compounds, mixtures thereof or residues that regardless of their physical condition poses a risk to the environment, health or natural resources due to their corrosive, reactive, toxic, flammable or biological - infectious

Hazardous waste: All those wastes, in any physical state, which due to their corrosive, reactive, toxic, flammable or infectious biological and pose a threat to the ecological balance or the environment.

Indirect inputs: Those materials or substances that are not involved directly in production processes or treatment and are employed within the establishment in ancillary services, maintenance and cleaning, in laboratories, etc.

Industrial or service: The production unit, settled permanently in one place, under the control of a single owner entity that carries out processing, processing, manufacturing, or assembly all or part of one or more products.

Point of generation: All equipment, machinery or activity generates pollutants to air, water and / or hazardous waste. Can share a single emission point (stack or duct discharge) or have multiple emission points.

Point of issue: All equipment, machinery or activity that emits pollutants into the atmosphere, water or soil directly. The same emission point may correspond to multiple points of generation.

Point of use: All equipment, machinery or activity that uses water, energy and / or direct input and / or indirect.

Point source: Any facility permanently settled in a place that is intended to develop operations or processes that generate or may generate pollutants.

Pollutant emission: direct or indirect discharge of any substance or energy, in whatever physical states and forms, to enter or to act in any way alter or modify the composition or natural condition.

Pollutant: Any substance or energy in all its forms and physical states, that by joining or acting in the atmosphere, water, soil, flora, fauna or natural element, alter or modify its composition and natural condition.

Pollution: The presence in the environment of one or more contaminants or any combination of them to cause ecological imbalance.

Process: Any transaction or series of transactions involving one or more physical or chemical activity that occurs through physical or chemical change in a material or mixture of materials. Also known as the production process.

Reporting Unit: Unit of measure (mass, volume, etc.) by which the amounts reported in the format requested.

Transfer: The transfer of contaminants to a place that is physically separated from the establishment that produced it. Includes among others: wastewater discharge into public sewer, the transfer of hazardous waste for recycling, recovery or reclamation for energy recovery off-site treatment and as neutralization, biological treatment, incineration or physical separation.

Waste: Any material generated in the processes of extraction, beneficiation, processing, production, consumption, utilization, quality control or treatment which does not allow use again in the process that produced it.

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