



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

## **TERMS OF REFERENCE**

**Independent terminal evaluation of project**

# **Environmentally Sound Management of Medical Wastes in India**

**UNIDO ID: 104160**

**GEF PROJECT ID: 3803**

**May 2019**

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## I. PROJECT BACKGROUND AND CONTEXT

### 1. Project factsheet<sup>1</sup>

Project title	Environmentally Sound Management of Medical Wastes in India
UNIDO ID	104160
GEF Project ID	3803
Region	Asia and Pacific
Country	India
Project donor(s)	GEF
Project implementation start date	2 November 2011
Expected duration	96 months (originally planned for 60 months)
Expected implementation end date	31 October 2019
GEF Focal Areas and Operational Project	POPS - SP-1; SP-2; SP-3
GEF implementing agency	UNIDO
Government coordinating agency	Ministry of Environment, Forests and Climate Change (MoEFCC)
GEF executing partner(s)	Ministry of Environment, Forests and Climate Change (MoEFCC) and Ministry of Health and Family Welfare (MoH&FW)
GEF project grant (excluding PPG, in USD)	USD 10,000,000
Project GEF CEO endorsement / approval date	21 September 2011
UNIDO input (in kind, USD)	100,000
Co-financing at CEO Endorsement, as applicable	30,444,000 (cash and in-kind)
Total project cost (USD), excluding support costs and PPG	40,694,000
Mid-term review date	February-April 2016
Planned terminal evaluation date	June – October 2019

(Source: Project document)

### 2. Project context

The project *Environmentally Sound Management of Medical Wastes in India* promotes country-wide adoption of best available techniques/best environmental practices (BAT/BEP) in healthcare institutions, as well as in the evolving medical waste management infrastructure and industry in a manner that protects human health and reduces adverse environmental impacts. The project is funded by the Global Environmental Facility (GEF).

The notion of bio-medical waste (BMW) encompasses any waste which is generated during the diagnosis, treatment or immunization of human beings and animals or in research activities or in the production or testing of biologicals. Medical waste (infectious healthcare waste) is bio-hazardous with a potential to spread infection when improperly handled and/or managed and has the potential for

<sup>1</sup> Data to be validated by the evaluation team.

comparatively high formation and release of unintentionally produced persistent organic pollutants (UP-POPs).

Management of BMW is required throughout the complete life cycle in order to safeguard public health and protect the environment. Healthcare institutions (hospitals, health centres, primary health centres, community centres, etc.) generate large amounts of waste that fall into different categories. 75% to 90% of the medical waste produced is non-risk or general healthcare waste that is comparable to domestic waste. Improper handling in healthcare facilities poses an increased risk of infections to the patients as well as to the medical, nursing and other hospital staff from nosocomial infections (HIV, Hepatitis B and Hepatitis C, etc.). Injuries from sharps (needles, blades, etc.) facilitate the spread of infections and disease to health care personnel and waste handlers. The decay of organic portions through fermentation results in fly and other pests breeding and also facilitates the spread of disease.

Until early 1990s, healthcare waste management was not a priority issue in India. After 1990, health and environmental scientific research institutions in developed countries concluded that disposal of all medical waste by uncontrolled incineration would lead to severe environmental pollution. Incineration of the significant fraction of polyvinyl chloride (PVC) plastic and other chlorine compounds in medical waste can form PCDD/PCDF, which are emitted into the air or captured in residues in case the facility does not have a sophisticated air pollution control device (APCD). To achieve the goal of Environmentally Sound Management of Medical Wastes, one of the priority areas identified by the Government of India (GoI) is the minimization and/or elimination of the formation and releases of Polychlorinated dibenzodioxins/Polychlorinated dibenzofurans (PCDD/PCDF). To this effect, the project approach is to promote the adoption of BAT and BEP in the BMW management infrastructure and industry to minimize and/or eliminate the formation and releases of PCDD/PCDF, in compliance with the requirements under the Stockholm Convention on Persistent Organic Pollutants (POPs), signed by India on 14 May 2002 and ratified on 13 January 2006.

In the same year, India developed the National Environment Policy (NEP), a comprehensive policy framework developed to respond to national commitment to a clean environment, as mandated by the Constitution and intended to mainstream environmental concerns in all development activities. The Policy briefly describes the key environmental challenges faced by the country, the objectives of the policy, normative principles underlying policy action, broad indications of the legislative and institutional development needed to accomplish the strategic themes, and mechanisms for implementation and review. It also seeks to stimulate partnerships of different stakeholders, i.e. public agencies, local communities, academic and scientific institutions, the investment community, and international development partners in harnessing their respective resources and strengths for environmental management.

### **3. Project objective and expected outcomes**

The overall objective of the project is to reduce and ultimately eliminate the releases of unintentionally produced POPs (UP-POPs) and other globally harmful pollutants into the environment, and assist India in implementing its relevant obligations under the Stockholm Convention. The project will promote the country-wide adoption of best available techniques/best environmental practices (BAT/BEP) in the healthcare institutions of different complexity and size as well as in the evolving medical waste management infrastructure and industry in a manner that protects human health and reduces adverse environmental impacts.

The overall project objective will be achieved through private-public partnerships (PPPs) covering but not limited to:

- Segregation, decontamination and compaction of the medical wastes, thus reducing volume to be disposed of;
- Introduction of alternative technologies enhancing and optimizing incineration technologies;
- Raising of awareness and dissemination of know-how;
- Incorporation of management systems;
- Innovation and adaptation of appropriate and affordable technologies and techniques;
- Introduction of participatory funding systems; and
- Enhancement of relevant existing laws and regulations

The immediate objectives of the project are as follows:

- Harmonization of environmental and healthcare policy and regulatory instruments through appropriate networking for creation and promotion of environmentally sound management of medical waste, disposal sector and market
- Strengthening of institutional capacity for environmentally sound management (ESM) of medical waste, in particular in large, medium and small healthcare facilities in selected States namely Gujarat, Karnataka, Maharashtra, Odisha and Punjab
- Facilitation and promotion of public-private partnership (PPP) to improve support and supply capacities in medical waste management within the healthcare facility perimeter
- Facilitation and promotion of PPP to improve local technological and manufacturing capacities in medical waste transport and disposal sectors with specific reference to avoid generation of PCDD/PCDF and other unintentionally produced POPs releases by applying BAT/BEP measures
- Demonstration of participatory funded and integrated system for medical waste management and disposal in 5 selected states namely Gujarat, Karnataka, Maharashtra, Odisha and Punjab

The project covers strengthening institutional capacities and technical capabilities in healthcare institutions, efficient operation of incineration technology and increased reliance on non-combustion decontamination/disinfection technologies, supported by regulatory framework enhancement and consistent with the BAT/BEP guidelines and guidance. The project also promotes facilitating and involvement of industrial and service sectors through PPPs and participatory funding mechanisms. The project aims at decreasing the current PCDD/PCDF releases of 263.6 gTEQ/year estimated by the incineration according to the UNEP Toolkit methodology.

Moreover, properly designed and implemented management systems for incineration operation also contribute to the reduction of solid residues from the incineration process and the associated costs of posttreatment methods (landfilling or others).

#### *Expected Outcomes:*

Outcome 1: to enable and harmonize environmental and health-care policy and regulatory instruments through appropriate networking for creation and promotion of environmentally sound management of medical waste, disposal sector and market. Main activities include the establishment of inter-ministerial network, the introduction of regulatory, economic and market incentives and the placement of policy and regulatory enforcement mechanisms.

Outcome 2: to strengthen institutional capacity for environmentally sound management (ESM) of medical waste, in particular in large, medium and small healthcare facilities in five selected states, namely Gujarat, Karnataka, Maharashtra, Odisha and Punjab. Additionally, this outcome envisages the institutional capacity building, the strengthening of technical capabilities for ESM of medical wastes and awareness raising.

Outcome 3: to facilitate and promote PPP to improve support and supply capacities in medical waste management within the health-care facility perimeter. This outcome focuses on technologies / methods / systems and processes that can be adopted at healthcare facility level, of various capacities, to achieve reduction in waste volume. Activities include: introduction of specific training curriculum on medical wastes management; effective and efficient segregation of medical wastes at source will be enhanced by addressing its various co-variables vide technological approach; protocols for medical waste movement in health-care facilities from source to collection points and introduction of significant volume reduction of medical wastes at source.

Outcome 4: to facilitate and promote PPP to improve local technological and manufacturing capacities in medical waste transport (internal and external transportation) and disposal sectors with specific reference to avoid generation of PCDD/PCDF and other unintentionally produced POPs releases by applying BAT/BEP measures.

Outcome 5: to demonstrate participatory funded and integrated systems for medical waste management and disposal in the five above-mentioned selected states.

#### **4. Project implementation arrangements**

UNIDO is the GEF Implementing Agency (IA) for the project. It is managed by a project manager from UNIDO HQ in Vienna and a project team in India, who are supported by UNIDO Regional Office in India.

*Ministry of Environment, Forests and Climate Change (MoEFCC)* is the nodal ministry for planning, promoting and coordinating environmental programmes including the management of chemical disasters in India. The Ministry is mandated to protect the land, air and water systems and is responsible for the prevention and control of pollution including hazardous substances. It is the GEF and Stockholm Convention focal point in the country, which coordinates activities and cooperation between relevant stakeholders of the National Implementation Plan (NIP). MoEFCC is empowered to promulgate rules under the Environment Protection Act (EPA) and is responsible in ensuring effective implementation of legislation, monitoring and control of pollution.

*Ministry of Health and Family Welfare (MoH&FW)* mainly performs advisory role for matters related to bio medical waste management and handling (BMWM&H) Rules through regular meetings with the representatives of various health care authorities, health care institutions, Indian Medical Association, Non-Governmental Organizations (NGOs) and government functionaries. It is specifically responsible for providing funds to the government hospitals for strengthening their infrastructure facilities for better management of health care waste, assessment of current waste management practices in health care institutions, appointment of nodal officer in the ministry to oversee the waste management systems, preparing guidelines for training in BMW and preparing guidelines for infection control at all levels of healthcare delivery system.

*Central Pollution Control Board (CPCB)* advises the Central Government on any matter concerning prevention and control of water and air pollution and improvement of the quality of air. It coordinates the activities of the State Board and resolve disputes among them. CPCB provide technical assistance and guidance to the State Boards, carries out and sponsor investigation and research relating to problems of water and air pollution and plan a nation-wide program for prevention, control or

abatement of water and air pollution. CPCB also prepare manuals, codes and guidelines relating to treatment and disposal of sewage and trade effluents as well as for stack gas cleaning devices, stacks and dusts and disseminate information in respect of matters relating to water and air pollution and their prevention and control. CPCB is a member of the Project Steering Committee (PSC) and takes up the issues of proposed amendments in the existing legislation along with MoEFCC.

*State Pollution Control Board (SPCB)* in the states and Pollution Control Committees (PCC) in the Union Territories are the prescribed authority for enforcement of the provisions laid down in the BMW&H Rules. It is responsible for granting authorization, renewal of authorization to the healthcare institutions in handling BMW, renewal or cancellation of authorization to the healthcare institutions in handling BMW subject to satisfaction, can issue notices to the healthcare institutions for violating the norms of the healthcare waste management, responsible for inspecting all CBWTFs to ensure all norms laid out by BMW&H.

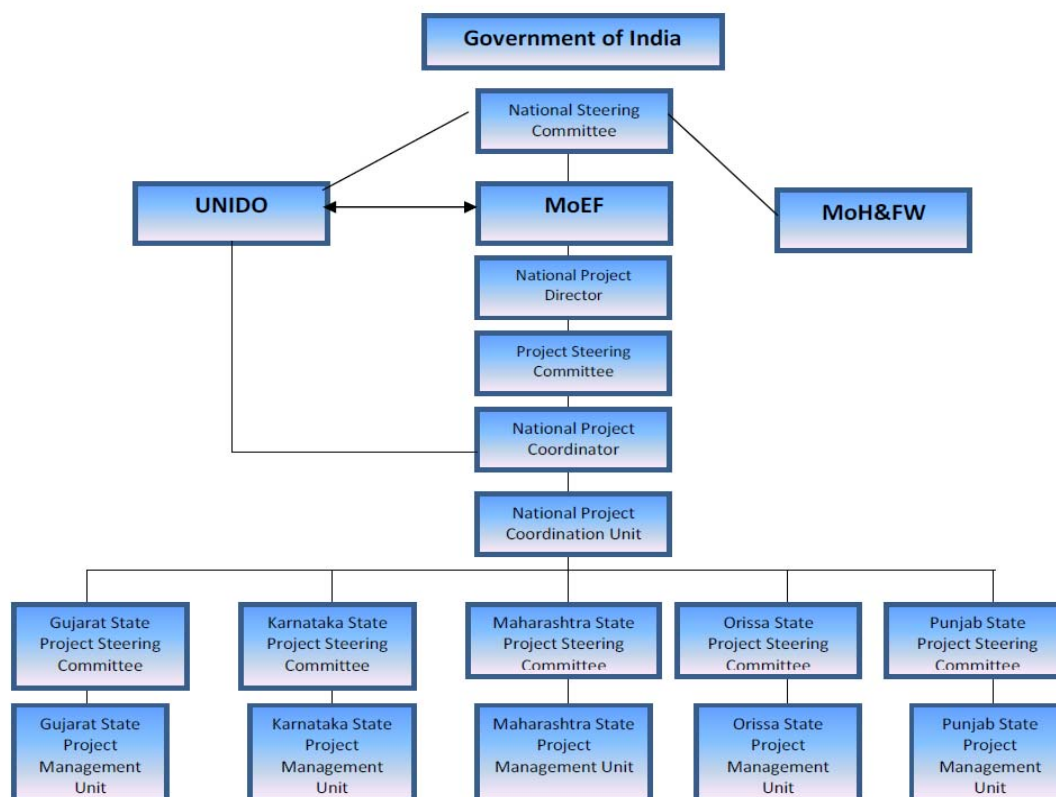
*National Steering Committee (NSC)*: consists of representatives from MoEFCC, MoH&FW and UNIDO. NSC provides guidance to PSC, addresses advocacy issues regarding amendments required for legislation and monitors funding and co-funding from state governments and NGOs.

*Project Steering Committee (PSC)*: consists of representatives from MoEFCC, CPCB, MoH&FW, SPCBs, Indian Medical Association (national level), Medical Council of India (MCI) private sector hospitals, UNIDO, National Project Director and National Coordinator. The PSC provides guidance and support to the project, National Coordinator and National Project Coordination Unit (NPCU).

*National Project Coordination Unit (NPCU)*: manages the project on a day-to-day basis and is ultimately responsible for ensuring the achievement of outputs and objectives stated. NPCU is headed by the National Project Coordinator (NPC) and it is supported by a team of experts on full time basis during the entire project.

*State Project Steering Committees (SPSC)*: one in each of the 5 selected states of Gujarat, Karnataka, Maharashtra, Odisha and Punjab. SSC consist of Principal Secretary (Department of Environment, Ecology and Forests) as chair, Principal Secretary (Department of Health & Family Welfare) as co-chair, Secretary (Medical Education), Member Secretary (SPCB), State IMA, representatives from private sector institutions, NGOs/civil representatives, representatives of Health University / leading medical college and NPCU. SPSC monitors implementation of project activities at stage level, provides guidance and support to State Project Management Units (SPMUs), ensures co-funding from state governments / NGOs / private sector, ensures cascading effect in all healthcare institutions and CBWTFs and publication of the Newsletter for the states with the assistance of SPMU of the respective state.

*State Project Management Units (SPMUs)*: one in each of the selected states. SPMUs consist of nodal officer of working group, members of working group and State project officer. SPMUs implements project activities as per logical framework, submit monthly/yearly monitoring reports to National Coordinator/Nodal officer/SSC; conducts weekly meetings, brings bottlenecks to the notice of project nodal officer/National Coordinator on a regular basis, performs activities suggested by NC/project nodal officer with the support of the state project officer, supports Steering Committee meetings and prepare the project newsletter.



## 5. Main findings of the Mid-term review (MTR)

The MTR was conducted in 2015 and 2016 and has the following main findings:

*Design and Relevance:* the design was assessed as adequate and the project was assessed as Highly Relevant to national development at various levels – policy, economic, social and environmental – and to assist India to implement obligations under the Stockholm Convention.

*Effectiveness:* was assessed as Moderately Unsatisfactory at mid-term. Yet it was noted that it was too early to assess project outcomes, as in most cases, activities were still in the process of being carried out. Notwithstanding this, the project stakeholders have managed to hold the course and although progress has been lackluster, a series of outputs were expected to be achieved in rapid succession, which would be furthered thanks to the strong corrective actions and intervention by the Government of India (GoI).

*Efficiency:* Inputs from all project partners had been provided as planned and were considered to be adequate to meet the requirements. Not all the co-financing commitments had been materialized at the time of the MTR.

*Likelihood of sustainability of project outcomes:* the likelihood of sustainability of the project was rated as Likely to Highly Likely. The Evaluation Team received clear indications from all levels – Central, State, Institution, and enterprises - regarding the intention of continuing to support the project and its activities in the long term, facilitating and encouraging replication of results.

*Project management, M&E and crosscutting issues:* UNIDO HQ and field-based management and coordination had been provided in a timely and effective manner. Concerning M&E, on the other hand, the MTR had ascertained that although a carefully designed M&E system had been included in the



Project Document, implementation of this system had not been fully achieved. Gender data were not compiled for the project activities.

#### Key conclusions

The project was assessed to be ready for full implementation, however available time (till October 2016) to complete this would not be sufficient. The lack of fully operational M&E systems within National Project Coordination Unit (NPCU) contributed to operational inefficiencies.

#### Key recommendations

Project should take all necessary measures to ensure that an extension is requested and obtained; NPCU needs to be strengthened and regular monitoring and evaluation systems and mechanisms need to be fully deployed and implemented.

## **6. Budget information**

Table 1. Financing plan summary

\$	<i>Project Preparation</i>	<i>Project</i>	<i>Total (\$)</i>
Financing (GEF / others)	250,000	10,000,000	10,250,000
Co-financing (Cash and In-kind)	350,000	30,444,000	30,794,000
<b>Total (\$)</b>	<b>600,000</b>	<b>40,444,000</b>	<b>41,044,000</b>

Source: CEO endorsement document

Table 2. Financing plan summary - Outcome breakdown<sup>2</sup>

<b>Project outcomes</b>	<b>Donor (GEF/other) (\$)</b>	<b>Co-Financing (\$)</b>	<b>Total (\$)</b>
1. Enhancement of existing enabling and harmonized environmental and healthcare policy and regulatory instruments through networking	173,000	768,000	<b>941,000</b>
2. Strengthened institutional capacity, in particular in large, medium and small healthcare facilities and for the public at large	2,760,000	6,517,867	<b>9,277,867</b>
3. Public-private partnerships (PPP) to improve support and supply of capacities in medical waste management in healthcare facilities	1,137,000	2,812,566	<b>3,949,566</b>
4. PPP to improve local technological	2,450,000	7,778,700	<b>10,228,700</b>

<sup>2</sup> Source: Project document.

Project outcomes	Donor (GEF/other) (\$)	Co-Financing (\$)	Total (\$)
and manufacturing capacities in medical wastes transport and disposal sectors			
5. Participatory funded and integrated systems for medical waste management and disposal	2,980,000	11,352,367	<b>14,332,367</b>
6. Project Management	200,000	555,833	<b>755,833</b>
Monitoring & Evaluation	300,000	658,667	<b>958,667</b>
<b>Total (\$)</b>	<b>10,000,000</b>	<b>30,444,000</b>	<b>40,444,000</b>

Source: CEO endorsement document

Table 3. Co-Financing source breakdown

Name of Co-financier (source)	In-kind	Cash	% over total co-financing
Project Government contribution (MoEFCC / MoH&FW)	18,383,667		60,5%
<i>State Governments:</i> Gujarat (\$2,100,000); Karnataka (\$1914,000); Maharashtra (\$1,346,000); Orissa (\$2,100,000)		7,460,000	24,6%
<i>State Governments:</i> Maharashtra (\$754,000); Punjab (\$2,000,000)	2,754,000		9%
UNIDO	100,000		0,3%
Private Sector (MS Ramaiah Medical College)	1,696,333		5,5%
Others: (CBWTF: Ramky Group, Maridi Eco industries, SMS Enviro Clean, Water Grace Products, etc.,; user fees, NGOs)		50,000	0,1%
<b>Total Co-financing (\$)</b>	<b>22,934,000</b>	<b>7,510,000</b>	<b>30,444,000</b>

Source : Project document

Table 4. UNIDO budget execution, USD \$ (Grant n.200000252)

Items of expenditure	2012	2013	2014	2015	2016	2017	2018	2019	Total expend.	% /total
Contractual Services	0	1,375,000	6,000	0	305,246	643,414	1,488.7	84,750	<b>2,415,898.7</b>	29,9%
International Meetings	0	0	0	0	751	453	0	0	<b>1204</b>	>0,1%
Equipment	0	1,274	0	2,725	1,887,111	1,851,857	852,485.5	-151	<b>4,595,301.5</b>	56,8%
Premises	0	16,947	10,341	11,295	34,777	30,882	7,534.4	9,957.5	<b>121,733.9</b>	1,5%
Local travel	13,017	33,816	17,850	16,970	50,143	49,133	12,145	15,541.7	<b>208,615.7</b>	2,6%
Nat. Consult./Staff	2,695	39,290	71,241	75,982	66,238	68,006	66,635.5	82,560.9	<b>472,648.4</b>	5,8%
Other Direct Costs	47,555	5,240	-1,158	1,956	11,241	9,133	6,806	2,109.9	<b>82,882.9</b>	1,1%
Staff & Intern Consultants	28,630	41,158	16,009	19,765	41,164	10,657	3,478	0	<b>160,861</b>	2%
Train/Fellowship/Study	28,861	-4,717	0	0	0	144	0	0	<b>24,288</b>	0,3%
<b>Grand Total</b>	<b>120,758</b>	<b>1,508,008</b>	<b>120,283</b>	<b>128,693</b>	<b>2,396,671</b>	<b>2,663,679</b>	<b>952,591.1</b>	<b>196,788</b>	<b>8,083,434.1</b>	<b>100%</b>

Source: UNIDO Project Management database as of 9 May 2019

## II. Scope and purpose of the evaluation

The purpose of the evaluation is to independently assess the project to help UNIDO improve performance and results of ongoing and future programmes and projects. The independent terminal evaluation (TE) will cover the whole duration of the project from its starting date in 11/2/2011 to the estimated completion date in 31/10/2019.

The evaluation has two specific objectives:

- (i) Assess the project performance in terms of relevance, effectiveness, efficiency, sustainability and progress to impact; and
- (ii) Develop a series of findings, lessons and recommendations for enhancing the design of new and implementation of ongoing projects by UNIDO.

## III. Evaluation approach and methodology

The TE will be conducted in accordance with the UNIDO Evaluation Policy<sup>3</sup> and the UNIDO Guidelines for the Technical Cooperation Project and Project Cycle<sup>4</sup>. In addition, the GEF Guidelines for GEF Agencies in Conducting Terminal Evaluations, the GEF Monitoring and Evaluation Policy and the GEF Minimum Fiduciary Standards for GEF Implementing and Executing Agencies will be applied.

The evaluation will be carried out as an independent in-depth evaluation using a participatory approach whereby all key parties associated with the project will be informed and consulted throughout the evaluation. The evaluation team leader will liaise with the UNIDO Independent Evaluation Division (ODG/EIO/IED) on the conduct of the evaluation and methodological issues.

The evaluation will use a theory of change approach and mixed methods to collect data and information from a range of sources and informants. It will pay attention to triangulating the data and information

<sup>3</sup> UNIDO. (2015). Director General's Bulletin: Evaluation Policy (UNIDO/DGB/(M).98/Rev.1)

<sup>4</sup> UNIDO. (2006). Director-General's Administrative Instruction No. 17/Rev.1: Guidelines for the Technical Cooperation Programme and Project Cycle (DGAI.17/Rev.1, 24 August 2006)

collected before forming its assessment. This is essential to ensure an evidence-based and credible evaluation, with robust analytical underpinning.

The theory of change will identify causal and transformational pathways from the project outputs to outcomes and longer-term impacts, and drivers as well as barriers to achieve them. The learning from this analysis will be useful to feed into the design of the future projects so that the management team can effectively manage them based on results.

## 1. Data collection methods

Following are the main instruments for data collection:

- (a) **Desk and literature review** of documents related to the project, including but not limited to:
  - The original project document, monitoring reports (such as progress and financial reports, mid-term review report, output reports, back-to-office mission report(s), end-of-contract report(s) and relevant correspondence.
  - Notes from the meetings of committees involved in the project.
- (b) **Stakeholder consultations** will be conducted through structured and semi-structured interviews and focus group discussion. Key stakeholders to be interviewed include:
  - UNIDO Management and staff involved in the project; and
  - Representatives of donors, counterparts and stakeholders.
- (c) **Field visit** to project sites in the Republic of India.

## 2. Evaluation key questions and criteria

The key evaluation questions are the following:

- (a) What are the key drivers and barriers to achieve the long term objectives? To what extent has the project helped put in place the conditions likely to address the drivers, overcome barriers and contribute to the long term objectives?
- (b) How well has the project performed? Has the project done the right things? Has the project done things right, with good value for money?
- (c) What have been the project's key results (outputs, outcome and impact)? To what extent have the expected results been achieved or are likely to be achieved? To what extent the achieved results will sustain after the completion of the project?
- (d) What lessons can be drawn from the successful and unsuccessful practices in designing, implementing and managing the project?

The evaluation will assess the likelihood of sustainability of the project results after the project completion. The assessment will identify key risks (e.g. in terms of financial, socio-political, institutional and environmental risks) and explain how these risks may affect the continuation of results after the project ends. Table 5 below provides the key evaluation criteria to be assessed by the evaluation. The details questions to assess each evaluation criterion are in annex 2 of UNIDO [Evaluation Manual](#).

Table 5. Project evaluation criteria

#	Evaluation criteria	Mandatory rating
A	Impact	Yes
B	Project design	Yes
1	<ul style="list-style-type: none"> <li>• Overall design</li> </ul>	Yes

#	Evaluation criteria	Mandatory rating
2	• Logframe	Yes
<b>C</b>	<b>Project performance</b>	<b>Yes</b>
1	• Relevance	Yes
2	• Effectiveness	Yes
3	• Efficiency	Yes
4	• Sustainability of benefits	Yes
<b>D</b>	<b>Cross-cutting performance criteria</b>	
1	• Gender mainstreaming	Yes
2	• M&E: ✓ M&E design ✓ M&E implementation	Yes
3	• Results-based Management (RBM)	Yes
<b>E</b>	<b>Performance of partners</b>	
1	• UNIDO	Yes
2	• National counterparts	Yes
3	• Donor	Yes
<b>F</b>	<b>Overall assessment</b>	<b>Yes</b>

### **Performance of partners**

The assessment of performance of partners will ***include*** the quality of implementation and execution of the GEF Agencies and project executing entities (EAs) in discharging their expected roles and responsibilities. The assessment will take into account the following:

- Quality of Implementation, e.g. the extent to which the agency delivered effectively, with focus on elements that were controllable from the given GEF Agency's perspective and how well risks were identified and managed.
- Quality of Execution, e.g. the appropriate use of funds, procurement and contracting of goods and services.

### **Other Assessments required by the GEF for GEF-funded projects:**

The terminal evaluation will assess the following topics, for which ***ratings are not required***:

- Need for follow-up:** e.g. in instances financial mismanagement, unintended negative impacts or risks.
- Materialization of co-financing:** e.g. the extent to which the expected co-financing materialized, whether co-financing was administered by the project management or by some other organization; whether and how shortfall or excess in co-financing affected project results.
- Environmental and Social Safeguards<sup>5</sup>:** appropriate environmental and social safeguards were addressed in the project's design and implementation, e.g. preventive or mitigation measures for any foreseeable adverse effects and/or harm to environment or to any stakeholder.

<sup>5</sup> Refer to GEF/C.41/10/Rev.1 available at: [http://www.thegef.org/sites/default/files/council-meetingdocuments/C.41.10.Rev\\_1.Policy\\_on\\_Environmental\\_and\\_Social\\_Safeguards.Final%20of%20Nov%2018.pdf](http://www.thegef.org/sites/default/files/council-meetingdocuments/C.41.10.Rev_1.Policy_on_Environmental_and_Social_Safeguards.Final%20of%20Nov%2018.pdf)

### 3. Rating system

In line with the practice adopted by many development agencies, the UNIDO Independent Evaluation Division uses a six-point rating system, where 6 is the highest score (highly satisfactory) and 1 is the lowest (highly unsatisfactory) as per Table 6.

Table 6. Project rating criteria

Score		Definition	Category
6	Highly satisfactory	Level of achievement presents no shortcomings (90% - 100% achievement rate of planned expectations and targets).	SATISFACTORY
5	Satisfactory	Level of achievement presents minor shortcomings (70% - 89% achievement rate of planned expectations and targets).	
4	Moderately satisfactory	Level of achievement presents moderate shortcomings (50% - 69% achievement rate of planned expectations and targets).	
3	Moderately unsatisfactory	Level of achievement presents some significant shortcomings (30% - 49% achievement rate of planned expectations and targets).	UNSATISFACTORY
2	Unsatisfactory	Level of achievement presents major shortcomings (10% - 29% achievement rate of planned expectations and targets).	
1	Highly unsatisfactory	Level of achievement presents severe shortcomings (0% - 9% achievement rate of planned expectations and targets).	

### IV. Evaluation process

The evaluation will be conducted from June to October 2019. The evaluation will be implemented in five phases which are not strictly sequential, but in many cases iterative, conducted in parallel and partly overlapping:

- i. Inception phase: The evaluation team will prepare the inception report providing details on the methodology for the evaluation and include an evaluation matrix with specific issues for the evaluation; the specific site visits will be determined during the inception phase, taking into consideration the findings and recommendations of the mid-term review.
- ii. Desk review and data analysis;
- iii. Interviews, survey and literature review;
- iv. Country visits;
- v. Data analysis and report writing.

### V. Time schedule and deliverables

The evaluation is scheduled to take place from June to October 2019. The evaluation field mission is tentatively planned between 2-20 September 2019. At the end of the field mission, there will be a presentation of the preliminary findings for all stakeholders involved in this project in India. The tentative timelines are provided in Table 7.

After the evaluation field mission, the evaluation team leader and the international waste management expert will visit UNIDO HQ for debriefing and presentation of the preliminary findings of the terminal evaluation. The draft TE report will be submitted 4 to 6 weeks after the end of the mission. The draft TE

report is to be shared with the UNIDO PM, UNIDO Independent Evaluation Division, the UNIDO GEF Coordinator and GEF OFP and other stakeholders for receipt of comments. The ET leader is expected to revise the draft TE report based on the comments received, edit the language and form and submit the final version of the TE report in accordance with UNIDO ODG/EIO/EID standards.

Table 7. Tentative timelines

<b>Timelines</b>	<b>Tasks</b>
June 2019	Finalization of TOR and recruitment of the evaluation team
July 2019	Desk review and writing of inception report
22-23 August 2019	Briefing with UNIDO project manager and UNIDO Independent Evaluation Division in Vienna
2-20 September 2019	Field visit to India
14-15 October 2019	Debriefing in Vienna Preparation of first draft evaluation report
31 October 2019	Internal peer review of the report by UNIDO's Independent Evaluation Division and other stakeholder comments to draft evaluation report
November 2019	Final evaluation report

## **VI. Evaluation team composition**

The evaluation team will be composed of one international evaluation expert acting as the team leader, one international waste management expert and one national evaluation expert. The evaluation team members will possess relevant strong experience and skills on evaluation management and conduct together with expertise and experience in waste, chemical and environment management. All consultants will be contracted by UNIDO.

The tasks of each team member are specified in the job descriptions annexed to these terms of reference. The ET is required to provide information relevant for follow-up studies, including terminal evaluation verification on request to the GEF partnership up to three years after completion of the terminal evaluation.

According to UNIDO Evaluation Policy, members of the evaluation team must not have been directly involved in the design and/or implementation of the project under evaluation.

The UNIDO Project Manager and the project team and the UNIDO Regional Office in India will support the evaluation team. The UNIDO GEF Coordinator and GEF OFP(s) will be briefed on the evaluation and provide support to its conduct. GEF OFP(s) will, where applicable and feasible, also be briefed and debriefed at the start and end of the evaluation mission.

An evaluation manager from UNIDO Independent Evaluation Division will provide technical backstopping to the evaluation team and ensure the quality of the evaluation. The UNIDO Project Manager, UNIDO Representative in India and national project teams will act as resourced persons and provide support to the evaluation team and the evaluation manager.

## **VII. Reporting**

### **Inception report**

This Terms of Reference (ToR) provides some information on the evaluation methodology, but this should not be regarded as exhaustive. After reviewing the project documentation and initial interviews

with the project manager, the Team Leader will prepare, in collaboration with the national consultant, a short inception report that will operationalize the ToR relating to the evaluation questions and provide information on what type of and how the evidence will be collected (methodology). It will be discussed with and approved by the responsible UNIDO Evaluation Manager.

The Inception Report will focus on the following elements: preliminary project theory model(s); elaboration of evaluation methodology including quantitative and qualitative approaches through an evaluation framework ("evaluation matrix"); division of work between the International Evaluation Consultant and national consultant; mission plan, including places to be visited, people to be interviewed and possible surveys to be conducted and a debriefing and reporting timetable<sup>6</sup>.

### **Evaluation report format and review procedures**

The draft report will be delivered to UNIDO's Independent Evaluation Division (the suggested report outline is in Annex 4) and circulated to UNIDO staff and national stakeholders associated with the project for factual validation and comments. Any comments or responses, or feedback on any errors of fact to the draft report provided by the stakeholders will be sent to UNIDO's Independent Evaluation Division for collation and onward transmission to the project evaluation team who will be advised of any necessary revisions. On the basis of this feedback, and taking into consideration the comments received, the evaluation team will prepare the final version of the terminal evaluation report.

The ET will present its preliminary findings to the local stakeholders at the end of the field visit and take into account their feed-back in preparing the evaluation report. A presentation of preliminary findings will take place at UNIDO HQ after the field mission.

The TE report should be brief, to the point and easy to understand. It must explain the purpose of the evaluation, exactly what was evaluated, and the methods used. The report must highlight any methodological limitations, identify key concerns and present evidence-based findings, consequent conclusions, recommendations and lessons. The report should provide information on when the evaluation took place, the places visited, who was involved and be presented in a way that makes the information accessible and comprehensible. The report should include an executive summary that encapsulates the essence of the information contained in the report to facilitate dissemination and distillation of lessons.

Findings, conclusions and recommendations should be presented in a complete, logical and balanced manner. The evaluation report shall be written in English and follow the outline given in annex 4.

### **VIII. Quality assurance**

All UNIDO evaluations are subject to quality assessments by UNIDO Independent Evaluation Division. Quality assurance and control is exercised in different ways throughout the evaluation process (briefing of consultants on methodology and process of UNIDO Independent Evaluation Division, providing inputs regarding findings, lessons learned and recommendations from other UNIDO evaluations, review of inception report and evaluation report by UNIDO's Independent Evaluation Division).

The quality of the evaluation report will be assessed and rated against the criteria set forth in the Checklist on evaluation report quality, attached as Annex 5. The applied evaluation quality assessment

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<sup>6</sup> The evaluator will be provided with a Guide on how to prepare an evaluation inception report prepared by the UNIDO ODG/EVQ/IEV.



criteria are used as a tool to provide structured feedback. UNIDO Independent Evaluation Division should ensure that the evaluation report is useful for UNIDO in terms of organizational learning (recommendations and lessons learned) and is compliant with UNIDO's evaluation policy and these terms of reference. The draft and final evaluation report are reviewed by UNIDO Independent Evaluation Division, which will submit the final report to the GEF Evaluation Office and circulate it within UNIDO together with a management response sheet.

## Annex 1: Project Logical Framework

Interventions	Objectively Verifiable Indicators	Sources of Verification	Assumptions and Risks
To reduce and ultimately eliminate the releases of UP-POPs and other globally harmful pollutants into the environment in incineration of medical waste, and assist India in implementing its relevant obligations under the Stockholm Convention. The proposed project will promote the country-wide adoption of BAT/BEP in the health care institutions of widely differing in their complexity and size as well as in the evolving medical waste management infrastructure and industry in a manner that reduces adverse environmental impacts of UP-POPs and protects human health.	In the 5 selected demonstration states (Gujarat, Karnataka, Maharashtra, Orissa and Punjab) about 50g TEQ/year reduction of PCDD/PCDF releases are to be achieved.	Regular project reports of accredited dioxin laboratory on specific monitoring programs of medical waste incinerators in demonstration states	Infrastructure and logistical support is in place and operational for performing sampling, transport of samples and analytical determination of dioxin
<b>Outcome 1: Enabling and harmonized environmental and health-care policy and regulatory instruments through appropriate networking for creation and promotion of environmentally sound management of medical waste, disposal sector and market</b>			
<b>Output 1.1: Augmented inter-ministerial network for Ministries of Environment and Forest, and Health for harmonizing environmental and health-care policy and regulatory instruments</b>			
<p><b>Activity 1.1.1:</b> Augment membership for inter-ministerial networking at central level for harmonizing environmental and health care policy and regulations relevant to medical waste management and disposal.</p> <p><b>Activity 1.1.2:</b> Augment membership for state level networking for harmonizing environmental and health care policy and regulations relevant to medical waste management and disposal.</p> <p><b>Activity 1.1.3:</b> Gaps analysis of Stockholm Convention requirements and existing legal/regulatory framework.</p> <p><b>Activity 1.1.4:</b> Reconsiderations made for new and/or modified laws, regulations and guidelines to implement Stockholm Convention requirements relevant to medical waste management and disposal.</p>	<ul style="list-style-type: none"> <li>➤ Terms of Reference of inter-ministerial network for Ministries of Environment and Forest, and Health</li> <li>➤ Terms of Reference of state level networking</li> <li>➤ Number of identified gaps between Stockholm Convention requirements and existing legal/regulatory framework</li> <li>➤ Number of proposed new and/or revised laws, regulations and guidelines to implement Stockholm Convention requirements</li> </ul>	<ul style="list-style-type: none"> <li>➤ Regular meeting reports on activities of inter-ministerial network</li> <li>➤ Regular meeting reports on activities of state level networking</li> <li>➤ Report on gaps analysis</li> <li>➤ Report on recommendations on new and/or revised laws, regulations and guidelines</li> </ul>	<ul style="list-style-type: none"> <li>➤ Timely establishment of networking at central and state levels</li> <li>➤ Gaps identified and agreed upon in time</li> <li>➤ Based on the gaps analysis the new and/or revised laws, regulations and guidelines are formulated without delay</li> </ul>

Interventions	Objectively Verifiable Indicators	Sources of Verification	Assumptions and Risks
<b>Output 1.2: Regulatory, economic and market incentives introduced for creation and promotion of environmentally sound management of medical waste, disposal sector and market</b>			
<b>Activity 1.2.1:</b> Domestic market analysis of medical waste management and disposal. <b>Activity 1.2.2:</b> Revisit regulatory, economic and market incentives for environmentally sound management and disposal of medical wastes.	➤ Number of domestic and/or local vendors identified by the market analysis ➤ Number of incentives formulated	➤ Report on domestic market analysis ➤ Report on incentives	➤ Market analysis conducive to introduce incentives ➤ Government introduces incentives creating an enabling environment for domestic waste disposal sector
<b>Output 1.3: Policy and regulatory enforcement mechanisms are in place</b>			
<b>Activity 1.3.1:</b> Revisit existing State enforcement mechanisms of medical waste management and disposal related laws and regulations. <b>Activity 1.3.2:</b> Synergize State implementation measures with National and Stockholm Convention requirements. <b>Activity 1.3.3:</b> Support State governments to adopt amended and/or new measures ensuring environmentally sound management and disposal of medical waste.	➤ State enforcement of medical waste management and disposal related laws and regulations evaluated in 5 selected states ➤ Number of gaps identified in 5 selected states ➤ Number of new measures adopted and amount of medical waste managed and disposed of in environmentally sound manner in 5 selected states	➤ Analysis report ➤ Activity reports, copies / summaries of new State measures adopted	➤ States may not be able to enforce implementing medical waste management and disposal requirements
<b>Outcome 2: Institutional capacity for environmentally sound management (ESM) of medical waste strengthened, in particular in large, medium and small health-care facilities</b>			
<b>Output 2.1: Enhanced existing institutional and technical capacity in 4 large health-care facilities in each of the 5 selected states namely Gujarat, Karnataka, Maharashtra, Orissa and Punjab</b>			
<b>Activity 2.1.1:</b> Facilitate interventions based on situation analysis of medical waste management system in 4 large health-care facilities in each of the 5 selected states. <b>Activity 2.1.2:</b> Facilitate interventions based on situation analysis and evaluation of Common Treatment Facilities (CBWTFs) in each 5 selected states.	➤ Situation analysis of medical waste management system ➤ Situation analysis and evaluation of Common Treatment Facilities (CBWTFs) ➤ Number of stakeholders identified	➤ Situation analysis reports ➤ Evaluation reports ➤ Capacity building program reports ➤ Training workshop reports	➤ Low level participation and support of key stakeholders for implementing the project in 4 large health-care facilities in 5 selected states



Interventions	Objectively Verifiable Indicators	Sources of Verification	Assumptions and Risks
<p><b>Activity 2.1.3:</b> Identify stakeholders to be targeted in institutional and technical capacity building and their capacity building needs.</p> <p><b>Activity 2.1.4:</b> Organize one training workshop in each of 5 selected states in institutional and technical capacity building</p>	<ul style="list-style-type: none"> <li>➤ Stakeholders capacity building needs identified</li> <li>➤ Training workshops held in each of 5 selected states</li> </ul>		
<b>Output 2.2: Institutional capacity building in 8 medium and 16 small health-care facilities in each of 5 selected states</b>			
<p><b>Activity 2.2.1:</b> Identify areas of concerns and assess training requirements for institutional capacity building at various levels of medium and small health-care facilities.</p> <p><b>Activity 2.2.2:</b> Prepare training materials including SOPs on institutional capacity building for environmentally sound medical waste management and disposal.</p> <p><b>Activity 2.2.3:</b> Organize training workshops for institutional capacity building to medium and small health-care facilities in 5 selected states.</p>	<ul style="list-style-type: none"> <li>➤ Review of training requirements</li> <li>➤ Training materials prepared</li> <li>➤ Number of workshops and participants</li> <li>➤ Number of individuals trained</li> </ul>	<ul style="list-style-type: none"> <li>➤ Training materials</li> <li>➤ Training reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ Training is practical enough to create useful capabilities for new job opportunities</li> </ul>
<b>Output 2.3: Strengthened technical capabilities for ESM of medical wastes in 8 medium and 16 small health-care facilities in each of 5 selected states (Gujarat, Karnataka, Maharashtra, Orissa and Punjab)</b>			
<p><b>Activity 2.3.1:</b> Identify areas of concerns and assess training requirements for technical capacity building at various levels of medium and small health-care facilities.</p> <p><b>Activity 2.3.2:</b> Prepare training materials and promote regular training activities for technical capacity building in environmentally sound medical waste management and disposal.</p> <p><b>Activity 2.3.3:</b> Organize training workshops for technical capacity building to medium and small health-care facilities in 5 selected states.</p>	<ul style="list-style-type: none"> <li>➤ Review of training requirements</li> <li>➤ Training materials prepared</li> <li>➤ Number of workshops and participants</li> <li>➤ Number of individuals trained</li> </ul>	<ul style="list-style-type: none"> <li>➤ Training materials</li> <li>➤ Training reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ Stakeholders unwilling to participate in training activities</li> </ul>

Interventions	Objectively Verifiable Indicators	Sources of Verification	Assumptions and Risks
<b>Output 2.4: Five (5) targeted awareness raising campaigns for the least educated through their community leaders in 5 selected states</b>			
<b>Activity 2.4.1:</b> Identify target population for awareness raising campaigns <b>Activity 2.4.2:</b> Prepare targeted awareness raising materials and translate into local languages <b>Activity 2.4.3:</b> Organize awareness raising campaigns	<ul style="list-style-type: none"> <li>➤ Awareness raising materials formulated</li> <li>➤ 5 awareness raising reports prepared</li> <li>➤ Number covered member of Standing Committee – Health and Zilla Panchayath and Town/City Municipality/Corporation where demonstration sites and CBWTFs are located</li> </ul>	<ul style="list-style-type: none"> <li>➤ Awareness raising materials</li> <li>➤ Campaign reports</li> </ul>	Campaign logistics are supported by medical students
<b>Outcome 3: Facilitating and promoting PPP to improve support and supply capacities in medical waste management within the health-care facility perimeter</b>			
<b>Output 3.1: Specific training curriculum on medical wastes management for 150,000 medical students of 297 medical colleges spread over 4.5 years of the course</b>			
<b>Activity 3.1.1:</b> Prepare curriculum and training modules in medical waste management for medical students <b>Activity 3.1.2:</b> Develop practical training courses in medical waste management for medical students <b>Activity 3.1.3:</b> Strengthen the subject of medical waste management into the medical curriculum <b>Activity 3.1.4:</b> Strengthen practical training courses in medical waste management into the medical curriculum	<ul style="list-style-type: none"> <li>➤ Curriculum and training modules prepared</li> <li>➤ Practical training course materials prepared</li> <li>➤ Medical curriculum</li> <li>➤ Number of students trained</li> <li>➤ Number of medical colleges involved</li> </ul>	<ul style="list-style-type: none"> <li>➤ Training modules</li> <li>➤ Amended medical curriculum</li> <li>➤ Study certificates</li> <li>➤ Medical college certificates</li> <li>➤ Training activity reports</li> </ul>	➤ Project resources inadequate
<b>Output 3.2: Enhanced effectiveness and efficiency of segregation of medical wastes at source</b>			
<b>Activity 3.2.1:</b> Develop methodology for improving and increasing segregation of medical waste streams at source in the health-care institutions of widely differing in their complexity and size	<ul style="list-style-type: none"> <li>➤ Protocols developed on segregation of medical waste at source</li> <li>➤ Regulations on use of standardized color codes for medical waste collection are in effect</li> </ul>	<ul style="list-style-type: none"> <li>➤ Copy of protocols</li> <li>➤ Copy of regulations</li> </ul>	➤ Stakeholders implement best environmental practices (BEP)

Interventions	Objectively Verifiable Indicators	Sources of Verification	Assumptions and Risks
<b>Output 3.3: Established protocols for medical waste movement in health-care facilities from source to collection points</b>			
<p><b>Activity 3.3.1:</b> Develop standard operating procedures (SOPs) for identification of medical waste in health-care facilities</p> <p><b>Activity 3.3.2:</b> Develop SOPs for tracking and record keeping of medical waste in health-care facilities</p> <p><b>Activity 3.3.3:</b> Develop SOPs for medical waste collection and transport within health-care facilities to collection points</p> <p><b>Activity 3.3.4:</b> Develop SOPs for cleaning and maintaining the medical waste storage in health-care facilities</p> <p><b>Activity 3.3.5:</b> Train technical personnel in management system requirements and procedures</p>	<ul style="list-style-type: none"> <li>➤ SOPs prepared for waste identification</li> <li>➤ SOPs prepared for waste tracking</li> <li>➤ Number of personnel trained</li> <li>➤ Number of health-care facilities participated</li> <li>➤ SOPs prepared for waste collection and transport</li> <li>➤ SOPs prepared for waste storage</li> </ul>	<ul style="list-style-type: none"> <li>➤ Copy of SOPs</li> <li>➤ Training activity reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ Health-care facility layout allows environmentally sound and safe flow of medical wastes from source to collection points</li> </ul>
<b>Output 3.4: Five (5) PPPs (one in each selected states) promoted to provide uninterrupted services and supplies, supporting and meeting demands of medical waste management in health-care facilities</b>			
<p><b>Activity 3.4.1:</b> Identify relevant areas and partners for PPP</p> <p><b>Activity 3.4.2:</b> Develop PPP for developing appropriate curriculum and syllabus for undergraduates and postgraduates in medical waste management</p> <p><b>Activity 3.4.3:</b> Develop PPP for providing uninterrupted services and supplies in medical waste management</p>	<ul style="list-style-type: none"> <li>➤ PPP agreements developed and signed in 5 relevant areas</li> <li>➤ List of PPP partners</li> </ul>	<ul style="list-style-type: none"> <li>➤ Copies of PPP agreements</li> <li>➤ PPP activity reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ The project goals and the services provided through the project are appealing to private sector</li> </ul>
<b>Output 3.5: Significant reduction of volume of medical wastes at source by introducing alternative techniques</b>			
<p><b>Activity 3.5.1:</b> Properly segregate and disinfect / decontaminate microbiological and biotechnological wastes, sharps, soiled wastes, solid and liquid wastes.</p>	<ul style="list-style-type: none"> <li>➤ Percentage of medical waste segregated and disinfected / decontaminated</li> <li>➤</li> </ul>	<ul style="list-style-type: none"> <li>➤ Annual progress reports from 5 states</li> <li>➤ Individual activity reports from all participating health-care facilities</li> </ul>	<ul style="list-style-type: none"> <li>➤ Delays in procurement of equipment will delay introduction of alternative techniques</li> </ul>



Interventions	Objectively Verifiable Indicators	Sources of Verification	Assumptions and Risks
<b>Activity 3.5.2:</b> Disinfect / decontaminate, destructure and reprocess solid wastes especially plastic wastes <b>Activity 3.5.3:</b> Compact disinfected / decontaminated bulky wastes <b>Activity 3.5.4:</b> Train technical staff in alternative techniques	<ul style="list-style-type: none"> <li>➤ Percentage of medical waste disinfected / decontaminated, destructured and reprocessed</li> <li>➤ Percentage of medical waste compacted</li> <li>➤ Number of personnel trained</li> <li>➤ Number of healthcare facilities participated</li> </ul>	Training reports	
<b>Outcome 4: Facilitating and promoting PPP to improve local technological and manufacturing capacities in medical waste transport and disposal sectors with specific reference to avoid generation of PCDD/PCDF and other unintentionally produced POPs releases by applying BAT/BEP measures</b>			
<b>Output 4.1: Five (5) PPPs promoted (one in each selected states) to enhance new domestic technological and manufacturing capacities in medical waste transport and disposal sectors</b>			
<b>Activity 4.1.1:</b> Identify relevant areas and partners for one PPP in each of 5 selected states <b>Activity 4.1.2:</b> Develop PPP for transport of medical waste from health-care facilities to CBWTFs <b>Activity 4.1.3:</b> Develop PPP for medical waste disposal <b>Activity 4.1.4:</b> Develop PPP for medical waste disposal technology <b>Activity 4.1.5:</b> Develop PPP for manufacturing medical waste disposal equipment	<ul style="list-style-type: none"> <li>➤ PPP agreements developed and signed in 5 relevant areas</li> <li>➤ List of PPP partners</li> </ul>	<ul style="list-style-type: none"> <li>➤ Copies of PPP agreements</li> <li>➤ PPP activity reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ The project goals and the services provided through the project are appealing to private sector</li> </ul>
<b>Output 4.2: Enhanced environmental protection standards for medical waste disposal technologies complying with BAT/BEP requirements</b>			
<b>Activity 4.2.1:</b> Minimize risk for personnel, the general public and the environment by using personal protective equipment (PPE) and optimizing package type and size for different waste streams	<ul style="list-style-type: none"> <li>➤ Environmental protection protocols issued</li> <li>➤ Occupational safety protocols issued</li> <li>➤ Using PPE made mandatory</li> </ul>	<ul style="list-style-type: none"> <li>➤ Copies of protocols</li> <li>➤ Training records</li> </ul>	<ul style="list-style-type: none"> <li>➤ Health-care facility layout allows environmentally sound and safe flow of medical wastes from source to collection points</li> </ul>

Interventions	Objectively Verifiable Indicators	Sources of Verification	Assumptions and Risks
<p><b>Activity 4.2.2:</b> Establish safe routes for the transportation of the waste within the perimeter of health-care facility</p> <p><b>Activity 4.2.3:</b> Ensure cleanliness and safety of deposit areas in the wards and for storage area</p> <p><b>Activity 4.2.4:</b> Use PPE and keep safety measures in operating alternative technologies for medical waste disposal</p> <p><b>Activity 4.2.5:</b> Train technical personnel in BEP requirements</p>	<ul style="list-style-type: none"> <li>➤ Number of personnel trained</li> <li>➤ Number of health-care facilities participated</li> </ul>		
<b>Output 4.3: Established achievable release limits of PCDD/PCDF in respect of medical waste disposal technologies</b>			
<p><b>Activity 4.3.1:</b> Identify and select appropriate medical waste incinerators as pilots, one in each of 5 selected states</p> <p><b>Activity 4.3.2:</b> Enhancing and optimization of incineration technologies of pilots</p> <p><b>Activity 4.3.3:</b> Adaptation of appropriate and affordable BAT technologies and techniques of pilots</p> <p><b>Activity 4.3.4:</b> Establish achievable release limits of PCDD/PCDF for flue gas and scrubber effluent</p> <p><b>Activity 4.3.5:</b> Design and initiate monitoring program to measure PCDD/PCDF releases</p> <p><b>Activity 4.3.6:</b> Train technical personnel</p>	<ul style="list-style-type: none"> <li>➤ Description of optimized BAT technology</li> <li>➤ Monitoring programs developed</li> <li>➤ Results of PCDD/PCDF measurements</li> <li>➤ PCDD/PCDF release limits established</li> <li>➤ Number of CBWTFs participated</li> <li>➤ Number of technical personnel trained</li> </ul>	<ul style="list-style-type: none"> <li>➤ Annual reports of CBWTFs</li> <li>➤ Annual reports of accredited dioxin laboratories</li> <li>➤ Training activity reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ Introduction of BAT would not lead to the required decrease of PCDD/PCDF releases</li> </ul>
<b>Output 4.4: Significant reduction of volume of medical wastes by introducing alternative BAT/BEP compliance technologies</b>			
<p><b>Activity 4.4.1:</b> Reduce volume of medical waste by properly segregating and disinfecting / decontaminating microbiological and biotechnological wastes, sharps, soiled wastes, solid and liquid wastes</p>	<ul style="list-style-type: none"> <li>➤ Volume reduction achieved by medical waste decontamination</li> <li>➤ Volume reduction achieved by medical waste shredding</li> </ul>	<ul style="list-style-type: none"> <li>➤ Annual progress reports from 5 states</li> <li>➤ Individual activity reports from all participating health-care facilities</li> <li>➤ Reports on trainings</li> </ul>	<ul style="list-style-type: none"> <li>➤ Delays in procurement of equipment will delay in introducing alternative techniques</li> </ul>



Interventions	Objectively Verifiable Indicators	Sources of Verification	Assumptions and Risks
<p><b>Activity 4.4.2:</b> Reduce volume of medical waste by disinfecting / decontaminating, destructuring and reprocessing of solid wastes especially destructed / shredded plastic wastes</p> <p><b>Activity 4.4.3:</b> Reduce volume of medical waste by compacting decontaminated bulky waste</p> <p><b>Activity 4.4.4:</b> Train technical staff in alternative techniques</p>	<ul style="list-style-type: none"> <li>➤ Volume reduction achieved by medical waste compacting</li> <li>➤ Number of technical staff trained on alternative techniques</li> </ul>	<ul style="list-style-type: none"> <li>➤</li> </ul>	<ul style="list-style-type: none"> <li>➤</li> </ul>
<b>Outcome 5: Demonstration of participatory funded and integrated systems for medical waste management and disposal in 5 selected states</b>			
<b>Output 5.1: Established participatory funding system for medical waste management and disposal</b>			
<p><b>Activity 5.1.1:</b> Identify appropriate areas and partners for establishing participatory funding systems</p> <p><b>Activity 5.1.2:</b> Establish training in medical waste management and disposal through participatory funding</p> <p><b>Activity 5.1.3:</b> Establish participatory funding of medical waste management in large health-care facilities</p> <p><b>Activity 5.1.4:</b> Establish participatory funding of medical waste disposal</p>	<ul style="list-style-type: none"> <li>➤ Five MOUs prepared and signed for participatory funding</li> <li>➤ Annual progress reports on demonstration activities prepared</li> </ul>	<ul style="list-style-type: none"> <li>➤ Copies of MOUs</li> <li>➤ Annual progress reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ The integrated medical waste management systems proposed through the project are appealing to public, private and governmental sector</li> </ul>
<b>Output 5.2: Established integrated system for medical waste management and disposal</b>			
<p><b>Activity 5.2.1:</b> Identify potential areas for establishing integrated medical waste management</p> <p><b>Activity 5.2.2:</b> Identify potential areas for establishing integrated medical waste disposal</p> <p><b>Activity 5.2.3:</b> Establish integrated system for medical waste management</p> <p><b>Activity 5.2.4:</b> Establish integrated system for medical waste disposal</p>	<ul style="list-style-type: none"> <li>➤ TORs of integrated medical waste management and disposal systems prepared</li> <li>➤ 5 integrated systems established and operational</li> </ul>	<ul style="list-style-type: none"> <li>➤ Copies of TORs</li> <li>➤ Annual progress reports of 5 integrated systems</li> </ul>	<ul style="list-style-type: none"> <li>➤ Logistical challenges hamper establishing integrated systems at district level</li> </ul>

Interventions	Objectively Verifiable Indicators	Sources of Verification	Assumptions and Risks
<b>Output 5.3: Guidance manual developed for district administrators on integrated system for medical waste management and disposal</b>			
<b>Activity 5.3.1:</b> Formulate guidance manual for integrated medical waste management system <b>Activity 5.3.2:</b> Formulate guidance manual for integrated medical waste disposal system <b>Activity 5.3.3:</b> Provide training for district administrators	<ul style="list-style-type: none"> <li>➤ Guidance manuals formulated</li> <li>➤ Training modules prepared</li> <li>➤ Number of district administrators trained</li> </ul>	<ul style="list-style-type: none"> <li>➤ Copies of guidance manuals</li> <li>➤ Copies of training modules</li> <li>➤ Training activity reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ District administrators actively participate in training</li> </ul>
<b>Output 5.4: Demonstration of participatory funded and integrated system for medical waste management and disposal in 5 selected states</b>			
<b>Activity 5.4.1:</b> Identify and select one demonstration district in each 5 selected states <b>Activity 5.4.2:</b> Establish one demonstration district in each 5 selected states	<ul style="list-style-type: none"> <li>➤ Annual progress reports on demonstration in each 5 selected states prepared</li> </ul>	<ul style="list-style-type: none"> <li>➤ Progress reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ Participatory funds are fully and timely available</li> </ul>
<b>Output 5.5: Country-wide dissemination of experience gained and lessons learned through extensive communication and demonstration programme</b>			
<b>Activity 5.5.1:</b> Prepare an action plan for country-wide dissemination <b>Activity 5.5.2:</b> Organize workshop in each 5 regions of India to disseminate experience gained and lessons learned <b>Activity 5.5.3:</b> Organize demonstration programs for each 5 regions of India to disseminate experience gained and lessons learned	<ul style="list-style-type: none"> <li>➤ Action plan for country-wide dissemination prepared</li> <li>➤ Five workshop reports</li> <li>➤ Five demonstration program report</li> </ul>	<ul style="list-style-type: none"> <li>➤ Action plan</li> <li>➤ Workshop reports</li> <li>➤ Demonstration program report</li> </ul>	<ul style="list-style-type: none"> <li>Stakeholders are timely identified and invited country-wide for workshops and demonstration events</li> </ul>
<b>Outcome 6: Project management and monitoring &amp; evaluation</b>			
<b>Output 6.1: Project management structure established</b>			
<b>Activity 6.1.1:</b> Establish National Project Coordination Unit (NPCU) and appoint project leadership staff	<ul style="list-style-type: none"> <li>➤ NPCU established and staffed</li> <li>➤ PSC augmented</li> <li>➤ NSC established</li> </ul>	<ul style="list-style-type: none"> <li>➤ List of NPCU staff</li> <li>➤ List of PSC members</li> <li>➤</li> </ul>	<ul style="list-style-type: none"> <li>➤ Changes in project input prices and exchange rates may increase project costs</li> </ul>

Interventions	Objectively Verifiable Indicators	Sources of Verification	Assumptions and Risks
<b>Activity 6.1.2:</b> Augment Project Steering Committee (PSC) <b>Activity 6.1.3:</b> Establish National Steering Committee (NSC) <b>Activity 6.1.4:</b> Establish State Steering Committee (SSC) in each 5 selected states <b>Activity 6.1.5:</b> Recruit project advisor(s), policy experts and technical experts in medical waste management and disposal, project evaluation and program development <b>Activity 6.1.6:</b> Hold project management training for project management staff <b>Activity 6.1.7:</b> Establish SPMUs within participating organizations and sign MoAs as agreement on participation to the project	<ul style="list-style-type: none"> <li>➤ SSC established and nodal officers identified in each 5 selected states</li> <li>➤ Project experts recruited</li> <li>➤ Project Management training held</li> <li>➤ Stakeholder SPMUs established and staffed</li> <li>➤ MIS established</li> </ul>	<ul style="list-style-type: none"> <li>➤ Terms of references for experts, copy of appointment notice</li> <li>➤ Copy of training materials, training reports</li> <li>➤ Contact list for stakeholder SPMUs</li> <li>➤ MIS specifications and user instruction</li> </ul>	
<b>Output 6.2: An M&amp;E mechanism designed and implemented according</b>			
<b>Activity 6.2.1:</b> Prepare and hold Inception Workshop <b>Activity 6.2.2:</b> Measure impact indicators <b>Activity 6.2.3:</b> Carry out annual project financial audits <b>Activity 6.2.4:</b> Prepare Annual Project Reports and Project Implementation Reports <b>Activity 6.2.5:</b> Hold annual tripartite review meetings <b>Activity 6.2.6:</b> Carry out mid-term external evaluation <b>Activity 6.2.7:</b> Hold biannual National Steering Committee meeting <b>Activity 6.2.8:</b> Carry out final external evaluation <b>Activity 6.2.9:</b> Complete Terminal Report	<ul style="list-style-type: none"> <li>➤ Inception Workshop held</li> <li>➤ Detailed workplan prepared</li> <li>➤ Updated impact indicators</li> <li>➤ Financial audit completed</li> <li>➤ Annual reports and PIRs completed</li> <li>➤ Annual TPR meetings held</li> <li>➤ Mid-term evaluation completed</li> <li>➤ Bi-annual NSC meeting held</li> <li>➤ Final external evaluation held</li> <li>➤ Project Terminal Report completed</li> </ul>	<ul style="list-style-type: none"> <li>➤ Monitoring reports</li> <li>➤ Inception report</li> <li>➤ Progress Reports</li> <li>➤ Copy of audit reports</li> <li>➤ Copies of annual reports and PIRs</li> <li>➤ TPR meeting proceedings</li> <li>➤ Copy of mid-term evaluation report</li> <li>➤ PSC/NSC meeting reports</li> <li>➤ Copy of final external evaluation report</li> <li>➤ Copy of project terminal report</li> </ul>	<ul style="list-style-type: none"> <li>➤ Delays in project implementation and low quality performance</li> </ul>