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**Terminal Review of the Project under the Specific International
Programme of the Minamata Convention on Mercury
Project Title: Implementing of Minamata Convention on Mercury
Management in Chlor-Alkali Plant in the Petrochemical Industry
Project ID: 2018/01/AP/IRN
2020 – 2021**

1. PROJECT INFORMATION

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| 1.1. Implementing Government and Implementing Government Institution | Implementing Government | Islamic Republic of Iran | | |
| | Implementing Government Institution | Research Institute of Petroleum Industry | | |
| | <input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms. | Project Focal Point | Nahid Etemad | |
| | Functional Title | Project Manager | | |
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| 1.2. Project Title [As per SSFA or PCA] | Implementing of Minamata Convention on Mercury Management in Chlor-Alkali Plant in the Petrochemical Industry | | | |
| 1.3. Budget USD | USD 100,000 | USD 45,000 (applicant contribution) | | |
| 1.4. Start Date | 05/05/2020 | | | |
| 1.5. End Date | 05/08/2021 | | | |
| 1.6. Review Date | 23/10/2021 | | | |

2. SUMMARY OF ACHIEVEMENTS AND OVERVIEW OF REPORT

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| 2.1. Project summary | <p>The Minamata Convention on Mercury is a global treaty to protect human health and the environment from the adverse effects of mercury. One of the major sources of mercury in the Islamic Republic of Iran is the chlor-alkali plant in the petrochemical industry. It should be noted that there is only one petrochemical plant in the I.R. Iran that uses mercury in chlor-alkali process. According to the UNEP Global Mercury Assessment in 2013, the global anthropogenic emissions of mercury from the chlor-alkali industry was 6% of the total emissions. The objective of this project was therefore to develop a guideline for minimization of mercury emissions and wastes and build capacity to manage mercury contaminated sites and wastes in petrochemical industry to protect human health and the environment. The outcomes of this project strengthen the institutional capacity of I.R.Iran in implementing the Minamata Convention on Mercury by focusing on environmentally sound management of mercury in chlor-alkali industry.</p> <p>The following activities were carried out in order to achieve the project objectives:</p> <ul style="list-style-type: none">• Launching the project, site visit and conducting an inventory on mercury pollution in chlor-alkali plant.• Undertaking a health risk assessment to identify the population groups most at risk.• Developing a guideline for decontamination, demolition of mercury wastes in the sites of mercury chlor-alkali plants.• Monitoring and review.; Periodic monitoring of implementation progress was undertaken through meetings. This allows parties to take stock and to troubleshoot any problems pertaining to the project to ensure smooth implementation of project activities. A terminal project review aims at summarizing project achievements as well as identifying lessons learned. |
| 2.2. About this Review | <p><i>Briefly introduce the reviewing team stating whether or not an external consultant was engaged and describe the terminal review objectives, the duration of the data collection period as guided by the terminal review schedule.</i></p> <p>The terminal review process was undertaken by Mr. Ebrahim Alaei, Deputy of Support at RIPI with the collaboration of Ms. Nahid Etemad, the project manager and no external consultant has been involved in this process. The terminal review involves the evaluation of project documents as well as holding meetings with other project partners and members of the steering committee to ensure that all stakeholders would be well informed of its results and findings.</p> <p>The objective of this terminal review is to analyze the implementation of the project, to assess the effectiveness and efficiency of project achievements in delivering the stated objectives and outcomes, as well as to evaluate the project's contribution towards the implementation of Minamata Convention at the national level. It establishes the relevance, performance and success of the project, including sustainability of results through analysis of best practices. The evaluation also brings together and analyzes best practices by reviewing specific lessons learned. Moreover, the objective of the review is the promotion of accountability and transparency of project results and impacts based on the Minamata Conventions goals. The terminal review also examines whether the project results would be sustainable and easily accessible by stakeholders.</p> |

3. INTRODUCTION

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| 3.1. Institutional context of the project | <p><i>Outline the Division/Branch/Unit, regions/countries that implemented the project.</i></p> <p>The project was carried out by the Department of Environment & Biotechnology at Research Institute of Petroleum Industry (RIPI), Islamic Republic of Iran. The project site was Abadan Petrochemical Complex in Khuzestan Province, south west of Iran.</p> |
| 3.2. Convention Articles to which the project contributed | <p>The project contributed to the following Minamata Convention Articles:</p> <ul style="list-style-type: none"> • Article 5 and Annex B, Manufacturing processes in which mercury or mercury compounds are used, phase out date of 2025 for mercury use in chlor-alkali production. • Article 3, Mercury Supply Sources and Trade, Paragraph 5(b), Take measures to ensure that, where the party determines that excess mercury from the decommissioning of chlor-alkali facilities is available, such mercury is disposed of in accordance with the guidelines for environmentally sound management referred to in paragraph 3(a) of Article 11, using operations that do not lead to recovery, recycling, reclamation, direct re-use or alternative uses. • Article 1, Objective, The objective of this Convention is to protect the human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds. • Article 12, Contaminated sites. • Article 14, Capacity-building, technical assistance & technology transfer • Article 16, Health aspects. |
| 3.3. Overall project outcome | <p>The project outcome was to develop a guideline on the process of shutting down the mercury chlor-alkali plant, as well as on waste management and site decontamination in the petrochemical industry (Abadan).</p> |
| 3.4. Summary of Project Outputs | <ul style="list-style-type: none"> • Establishing project team and conducting training workshop, sharing knowledge between key stakeholders, raising awareness. • Development of the guideline to decommissioning, disposal waste and decontaminated site in chlor-alkali plant in petrochemical industry. • Undertaking a health risk assessment report. • Final guideline is validated and available to key stakeholders. |

4. REVIEW METHODS

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| 4.1. Data collection | <p><i>Describe the review methods and information sources used. These will include indicators and means of verification from the logframe, periodic progress and expenditure reports of the project, interviews including the number and type of respondents, and observations. It will be useful to include ; justification for methods used (e.g. qualitative/quantitative/mixed methods; electronic/face-to-face); any selection criteria used to identify respondents, sites visited; strategies used to increase stakeholder consultation; details of how the data was verified (e.g. triangulation, review by stakeholders, etc.) and data analysis method(s) used.</i></p> |
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| | <p>The only mercury chlor-alkali plant to be decommissioned is Abadan Petrochemical Complex. The project team visited this site periodically to collect samples of mercury contamination in different media including soil, water and air. The collected samples were sent to RIPI labs to be analysed after stabilization. The analysis methods were developed and performed using Atomic Absorption Spectroscopy.</p> <p>After that an inventory of waste and contaminated materials was prepared. The project team constantly monitored its progress against the work plan. The guidelines developed under the Basel Convention were used to determine the treatment and disposal methods of mercury waste (Basel Convention: Technical guidelines on the environmentally sound management of wastes consisting of, containing or contaminated with mercury or mercury compounds). The treatment and disposal measures were codified and outlined to be easily accessible. The other activity of the team was to develop a method for risk assessment based on Job Hazard Analysis (JHA).</p> <p>The application of the methods was justified through on-line consultation with international experts. The representatives of the stakeholders were present in the project steering committee meetings to be informed of its progress.</p> |
| <p>4.2. Addressing Limitations</p> | <p><i>Describe the strategies employed to address any potential or actual limitations in the review process, such as strategies used to include the feedback of potentially marginalised groups (e.g. women, indigenous peoples, people with disabilities and youths). Describe strategies used to include divergent views while taking care not to violate human rights and ethical considerations (e.g. seeking consent to interview and take pictures) during the review process.</i></p> <p>Due to the nature of the project, there was not any limitation concerning the review process.</p> |

5. THE PROJECT CONTEXT AND RESULTS MONITORING FRAMEWORK

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| <p>5.1. Project Context</p> | <p><i>Describe the rationale of the project intervention clearly stating the problem(s) the project intended to address.</i></p> <p>According to Article 5 and Annex B of Minamata Convention, use of mercury or mercury compounds in chlor-alkali plants must be phased out or converted to non-mercury technologies at the latest by 2025. The project aimed at preparing a guideline to decommission the only active mercury-cell plant in the country.</p> |
| <p>5.2. Geographic coverage <i>[in the case of a regional project only]</i></p> | <p><i>List the geographic coverage of the project.</i></p> <p>The project site is Abadan Petrochemical Complex in Khuzestan Province, southwest of the I.R. Iran.</p> |
| <p>5.3. Results monitoring Framework</p> | <p><i>Present the project results monitoring framework (i.e. the results hierarchy as presented in the logical framework including the corresponding data sources/verification methods). It may be useful to attach the full project logframe</i></p> |

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| | <p><i>including its indicators and means of verification as an annex; if so please fill in annex number here.</i></p> <p><i>In order to assess the project results, (whether quantitative or qualitative), measurable indicators show whether they were achieved or not.</i></p> <p>The project logframe, activities and intended outputs were clear enough for the evaluators to conduct analysis and assessment. Therefore, in this process the extent to which the project results were achieved was easily determined.</p> |
| <p>5.4. Project implementation structure and stakeholder engagement</p> | <p><i>Present the implementing institutions and supporting implementing partners and their respective roles in ensuring successful project delivery. Define how different stakeholder groups were involved in the project and the roles they played and the resultant benefits to the project in achieving desired results. Comment on the value of collaborations if any.</i></p> <p>The Project Implementation institution was Research Institute of Petroleum Industry (RIPI).</p> <p>The following entities were consulted at the stage of project design as well as throughout the project implementation:</p> <ul style="list-style-type: none"> • The Department of Environment (DoE) <p>The DoE used the project results towards performing its obligations within that framework.</p> <ul style="list-style-type: none"> • The Ministry of Foreign Affairs <p>This ministry as National Focal Point of the Convention coordinates between various domestic agencies and Secretariat of the Minamata Convention.</p> <ul style="list-style-type: none"> • The Petrochemical Industry Representatives <p>The petrochemical industry officials contributed to the project by facilitating the process of data gathering, issuing the required permits for site visits and assisting the members of project team through provision of technical information.</p> <ul style="list-style-type: none"> • The Academia <p>The project team consulted the academia on scientific issues whenever required.</p> |
| <p>5.5. Project change management</p> | <p><i>Describe any changes made to project plans to adapt to evolving needs, including approved budget revisions, if any.</i></p> <p>The project was implemented according to its logframe and work plan through considering adaptive management techniques despite the fact that the team faced a number of issues due to the outbreak of Covid-19.</p> <p>The timely allocation of proposed grant and ongoing support of UNEP officials facilitated the proper implementation of the project.</p> <p>Due to the outbreak of the Covid-19 pandemic and restrictions imposed on travelling to the project pilot site (Abadan) the meetings were held through online sessions.</p> |
| <p>5.6. Gender Strategies</p> | <p><i>Describe how the project implemented its gender strategies.</i></p> <p>Gender issues were taken into account in project design and implementation in the following dimensions:</p> <ul style="list-style-type: none"> • The involvement of women in the project team and implementation. • The risk assessment method used in the project (JHA) is a gender sensitive technique and focuses on the impact of mercury pollution on women's health. |

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| | <ul style="list-style-type: none"> The adverse effects of mercury releases and emissions from the chlor-alkali plant on breastfeeding and pregnant women might be mitigated through the application of measures set out in the guideline. |
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6. REVIEW FINDINGS

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| 6.1. Project design quality | <p><i>Discuss the strength and weakness of the project design in relation to the project context (i.e. both a project specific situational analysis and in relation to the broader mandates of the Convention).</i></p> <p>The project proposal, log frame and work plan are the main references for this terminal review. The proposal and log frame are clear and well designed. The project objectives, outcomes, outputs, activities and milestones, with key stakeholders responsible for the project activities were properly identified, and financial inputs appropriately budgeted. The overall project design is considered relevant to the national development policies.</p> |
| 6.2. Relevance | <p><i>How aligned is the project with the broader environmental/chemical mandates within the region/country/sector? How is the intervention aligned with the mandates of the Convention and other global environmental and sustainable development blueprints such as the United Nations Sustainable Development Goals?</i></p> <p>The project was not only of relevance to the needs and priorities identified in the country but also addressed Article 5 of the Minamata Convention on phasing out the mercury or mercury compounds chlor-alkali plant processes. Through the decommissioning of the Abadan petrochemical mercury cell, the policy and regulatory framework would be strengthened and implemented by environmentally sound management of mercury and mercury waste. All these verifiable practices would result in contribution to global environmental benefits towards sustainable development.</p> |
| 6.3. Coherence | <p><i>How well does the intervention fit in the country, sector etc? How does the project complement other ongoing or completed efforts within the country/sector? How did the project optimize through synergizing and avoiding duplication of effort with such efforts?</i></p> <p>The project was in line with the Minamata Convention and regulations outlined by I.R. Iran, Department of Environment (DoE). The project contributes to specific environmental legal frameworks of Iran, <i>inter alia</i> the Clean Air Law, and aims to minimize air pollution in order to protect human health and the environment.</p> |
| 6.4 Efficiency | <p><i>How well did the project deliver in relation to the available resources? Comment on timeliness and cost effectiveness, the delivery process, and the quality of results. How well did the project conduct timely tracking of results and progress?</i></p> <p>Efficiency (economic, operational and timeliness) of this project was due to the day-to-day project manager close involvement in project implementation by the assigned project team at RIPI.</p> |

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| <p>6.5. Effectiveness</p> | <p>The successful achievement of project objectives and all the project outcomes and outputs was the result of cooperation between all the stakeholders as well as proper allocation of resources. The Project Steering Committee coordinated the smooth implementation of the project. The project was completed in accordance to its initial timeline in spite of facing some issues which were beyond the control of project team such as unexpected lockdowns and other limitations due to the Covid-19 pandemic.</p> <p><i>Did the intervention achieve its objectives? How well did the project achieve its desired outcomes (Assess both the quality and quantity of achievements as they apply)? Comment on any project revisions and their effect on achieving results.</i></p> <p>All outputs, outcomes and the project objectives have been successfully achieved. The project developed mercury measurement techniques in different media as well as identified mercury waste and contaminated materials / their treatment and disposal methods in mercury chlor-alkali plant.</p> |
| <p>6.6. Impact</p> | <p><i>What difference does the intervention make? Discuss the potential and achieved long lasting positive benefits of the project. If not already attained, assess the likelihood of the intended, positive impacts becoming a reality. Assess the likelihood that the intervention may lead, or contribute to, unintended negative effects (e.g. effect on livelihood of vulnerable groups).</i></p> <p>With respect to the sustainability of the project at a higher level, the project contributed to the protection of the environment and human health by reducing mercury emission and release. Moreover, controlling mercury release leads to reducing mercury hazard for wildlife. This issue is a major concern as Abadan Petrochemical Company is located near water resources. The project impact contributed to global environmental benefits as a result of the environmentally sound management of mercury and mercury waste.</p> |
| <p>6.7. Sustainability of outcomes</p> | <p><i>To what extent will the net benefits of the intervention continue? Describe the socio-political, financial and institutional sustainability achievements. Assess the plans for project continuity following project closure through any commitments made including legal and policy enforcement. Comment on the nature of any relationships and collaborative partnerships that were developed through SIP support and how their continuity will be sustained.</i></p> <p>The sustainability of the project is ensured by the following factors:</p> <ul style="list-style-type: none"> • The outcome depends on institutional frameworks and governance and takes into consideration the involvement of stakeholders and their cooperation. • The project outcome is part of country ownership while being in line with institutional capacity development; therefore, it is sustainable as it can be applied to the future projects. • The project is environmentally sustainable as it is responsive to the protection of human health and the environment from the anthropogenic emission and release of mercury and mercury compounds. |

7. CONCLUSIONS AND RECOMMENDATIONS

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| 7.1. Conclusion | <p><i>Provide a summary of the review findings in a logical manner from cause to effect. Highlight the major strengths and weaknesses of the project with an evidence base including how the positive outcomes were achieved, and what hindered the achievement of the less successful aspects. This should include if any the effect of the COVID-19 pandemic.</i></p> <p>The project's findings and achievements can be summarized as follows:</p> <ul style="list-style-type: none">• Producing a waste and contaminated materials inventory in mercury cell chlor-alkali plant.• Developing mercury sampling and analysing methods in different media.• Utilizing risk assessment in order to determine the controlling measures.• Preparing a guideline on the decommissioning process of the mercury cell in petrochemical industry, which can be used across similar industries. |
| 7.2. Lessons Learnt | <p><i>Provide the positive and negative lessons learnt.</i></p> <p>The major lessons learnt through this project are as follows:</p> <ul style="list-style-type: none">• It is essential to have a motivated and coordinated team consisting of members with relevant experience and sound expertise.• Professional planning is essential for achieving the project outcome based on its time frame.• Clear roles and responsibilities of project partners and adequate resources are needed prior to project implementation.• All stakeholders should have an understanding of the potentials benefits and merits of implementing the project.• The experience and knowledge gained through this project is an asset to be shared with international entities.• The project partners gained awareness of the importance of positive and responsive communication in order to implement such projects as well as of sharing their experience with international bodies.• The sampling and analysing of mercury and mercury compounds can be used for all the mercury contamination anywhere in the world.• Sharing experiences with the Ministry of Environment of Japan (MoEJ) and other international experts is a key to ensure smooth implementation of the project.• It is a challenge for private owners of a chlor-alkali plant to invest on decommissioning of the mercury cells; thus, Government needs to provide sufficient incentives (or in some cases take punitive measure) to convince them to take initiative and begin converting the mercury cells to a cleaner process.• The project findings have promoted the Minamata Convention at the national level.• The implementation of the project has led to institutional capacity building. |
| 7.3. Recommendations | <p><i>Provide recommendations for addressing any programming challenges, scaling up, and for ensuring sustainability of achieved results or any other recommendations within the context of the Minamata Convention's capacity building and technical assistance support towards implementing the mandates of the Convention.</i></p> |

It is recommended that infrastructures and capacity developed through this project would be applied to the future programs and interventions to enhance the implementation of the requirements as defined by other articles of the Minamata Convention. Moreover, providing financial and technical assistance to the developing parties would promote implementation of the Minamata Convention.