**“Elimination of obsolete pesticide stockpiles and addressing POPs contaminated sites within a Sound Chemicals Management Framework in Armenia” UNDP-GEF full-sized project**

**Project Results Framework**

| **Objective/Outcome** | **Indicator** | **Baseline** | **Mid-term target** | **End-project target** |
| --- | --- | --- | --- | --- |
| **Objective:** Protection of health and environment through elimination of obsolete pesticide stockpiles and addressing contaminated sites within a sound chemicals management strategy | Obsolete pesticides (OPs) stockpiles including POPs pesticides (Category 1 waste) and highly contaminated soil (Category 2 waste) are securely packaged and/or stored pending elimination; low contaminated soil (Category 3 waste) stored pending backfilling | The major current obsolete pesticides (OPs) stockpile site and major remaining location of POPs pesticides at the Nubarashen burial site is in a state that creates a risk to health and the environment. And has expanded to create a significant contaminated site  Lesser stockpiles and associated site contamination exist unaddressed at 24 OP storehouses  Contaminated soils classified sufficiently to constitute a potent risk remain uncontained at some of these storehouse sites | 1,052 t of obsolete pesticides (OPs) and POPs pesticides (Category 1 waste) excavated, packaged and securely stored pending removal and environmental sound disposal  4,123 t of highly contaminated POPs waste/soil (Category 2 waste) and  8,500 t of POPs low contaminated waste/soil (Category 3 soil) excavated and safeguarded for temporary storage on-site | Removal of 1,052 t of obsolete pesticides (OPs) and POPs pesticides (Category 1 waste) for environmentally sound disposal  4,123 t of Category 2 waste safeguarded and securely stored on-site before treatment  8,500 t of Category 3 waste/soil securely stored on-site before backfilling |
|  | Major stockpiles of OPs and POPs pesticide wastes have been disposed in an environmental sound manner | No elimination of national stockpiles of OPs has been attempted | Commercial arrangements made for the export and disposal of 1,052 t of Category 1 waste  Technology selection and demonstration along with commercial arrangements made for the treatment/disposal of 4,123 t of Category 2 waste | 1,052 t of Category 1 waste exported and disposed  4,123 t of Category 2 waste treated/disposed  8,500 t of Category 3 waste/soil backfilled and monitored at the restored and stabilized Nubarashen ex-burial site |
|  | National legal instruments and regulatory framework for hazardous waste (HW) and contaminated sites are updated with gaps filled, conflicts resolved and consistent with relevant international requirements | Current legal and regulatory framework for HW and contaminated site management has significant gaps and conflicting provisions | Completed analysis and definition of current gaps and requirements for legal and regulatory changes documented and actions agreed  (to be completed when Component 3 inputs received) | Respectively updated regulatory framework for chemical HW management documented |
|  | Core national technical capacity in place relative to HW management, risk assessment and contaminated site management | Limited technical capacity in key areas of expertise and support infrastructure | Identification and documentation of key methodologies and scope for the required risk assessment and initial application in the project activities | Environmental and health risk assessment methodologies documented, disseminated and implemented as part of the national regulatory assessment process for chemical HW and contaminated site management  Professionals in regulatory agencies, academia, NGOs and environmental service providers trained on their application |
|  | Co-financing is available timely to complete the planned activities | Government commitment letter on 16,02 million USD co-financing including in-kind and cash contribution | Development of a plan on timely availability of necessary co-financing cash component developed and agreed with the Government | Timely availability of necessary co-financing cash component |
| **ACTIVITY 1. Capture and Containment of Obsolete Pesticide Stockpiles and Wastes** | | | | |
| **Outcome 1.1:**  Removal of priority OP and POPs pesticides waste from the Nubarashen burial site, secure containment of residual contamination on-site, site stabilization and restoration, with the site secured under appropriate institutional arrangements providing effective access limitations, monitoring and future land use control, all endorsed by an informed public | Detailed site assessment, design documentation, tender specification, implementation procedures including Environmental Health and Safety (EHS) procedures, Environmental Impact Assessment (EIA) and required approvals in place to initiate Nubarashen burial site works | Preliminary site assessment completed during PPG  Conceptual design for waste excavation and containment, site stabilization completed during the PPG  No formal EIA or site approvals initiated | Detailed design with supporting tender documents and site clean-up specifications developed  EIA and formal approvals in place  Operational procedures including EHS procedures in place and utilized | Implementation of designed works, conformance of operational procedures with approved conditions verified |
| Volume of Category 1 waste excavated and removed and volume of Category 2 waste/soil excavated, displaced for temporary secure storage on-site and secure containment in stabilized Nubarashen ex-burial site | An estimated 5,175 t of Category 1 and Category 2 waste is found in and around the Nubarashen burial site  Risk assessments identified the need to ensure removal of high risk POPs waste | Excavation and packaging of 1,052 t Category 1 waste for secure temporary storage on-site  Excavation and safeguarding of 4,123 t of Category 2 waste for secure temporary storage on-site | Removal of 1,052 t Category 1 waste for secure temporary storage  Displacement of 4,123 t of Category 2 waste for secure temporary storage on-site and containment in stabilized Nubarashen ex-burial site after environmentally sound treatment |
| Excavation, displacement and secure storage of 8,500 t of Category 3 soil and backfilling in stabilized Nubarashen ex-burial site | Containment of pure pesticide burial cells compromised  Contamination has spread to soil across and around the Nubarashen site | Excavation, displacement of 8,500 t of Category 3 soil for secure temporary storage on-site | On-site secure permanent backfilling of 8,500 t of Category 3 soil at the restored and stabilized Nubarashen ex-burial site |
| Availability of restoration, monitoring and access control provisions for the Nubarashen burial site and completion of civil works to stabilize the surrounding land and drainage system | Only temporary containment works in place involving basic drainage, and cover of the burial site itself  Site is generally intact but poorly maintained and sparsely vegetated, subject to erosion, drainage blockage and surrounding geotechnical and hydrogeological instability  Basic ground water monitoring capability in place  Site security and access control as part of an emergency measures order but general public access to area permitted | Upgraded and enforced public access controls  Upgraded access roads, security controls and site protection measures suitable for the active excavation and restoration works  Temporary repairs and modification to on-site upstream and downstream drainage to assure minimum water ingress during active site excavation and remediation works | Fully restored site with sustainable phytoremediation vegetation, appropriately fenced and gated with signage including a 100m buffer zone around the former burial site  Upgraded and functional site drainage system  Permanent measures to maintain land stability upstream and downstream of site  Long term monitoring program in place and funded by national budgets  Institutional arrangements made respecting long-term land use of the site and surrounding territory |
|  | Availability of trained capability in the practical handling/management of chemicals HW and contaminated site clean-up | Limited national capability in the practical management of hazardous chemicals wastes and contaminated site clean-up | Training delivered to 20 national technical and regulatory staff in support of Nubarashen burial site HW waste excavation, packaging, secure storage, transportation and site restoration operations | Developed sustainable operational capability in the public and private sector for chemical HW and contaminated site clean-up management |
|  | High level of public awareness, engagement and support for the clean- up activities and ongoing custody and monitoring arrangements for the Nubarashen burial site supported by appropriate awareness products | Limited awareness on the site, risks and activities being undertaken with respect to its clean-up | 3 public consultation events held and 10 public documents/web/media products produced | 5 public consultation events held and 15 public documents/web/media products produced (cumulative numbers)  Survey indicating the views of affected public stakeholders conducted upon completion |
| **Outcome 1.2:** Development of the national chemical hazardous waste (HW) management site and upgrading with secure storage and basic infrastructure capacities to allow the secure storage of chemical HW | Availability of detailed design documentation, tender specification, implementation procedures including EHS procedures, EIA and required approvals to initiate the chemical HW management site development | Ministry of Emergency Situations site in Kotayk marz assessed as suitable for development  Preliminary conceptual design survey and cost estimate complete  Initial public consultation with authorities and local public undertaken | Developed detailed design with supporting tender documents and construction specifications for chemical HW site development  EIA and formal approvals in place  Operational procedures including EHS procedures developed and utilized | Implementation of designed works, conformance of operational procedures with approved conditions verified |
| National chemical HW management site developed and operates to international standards and number of trained and equipped staff for the practical operation of the facility | No suitable chemical HW storage or management facilities available in Armenia | Construction and upgrading works of the national chemical HW management site completed to national and international standards  Training delivered to 10 national technical and regulatory staff in support of national chemical HW facility operations  National chemical HW management site operational and being used for the storage of chemical HW | National chemical HW management site utilized for general chemical HW management activities on a sustainable basis  Sustainable operational capability for chemical HW management facility developed |
| Number of public consultation held and public documents/web/ media products delivered to display high level of public awareness, engagement and enhancement support for the national chemical HW facility activities | Initial public consultations with local authorities and affected public stakeholders undertaken | 3 public consultation events held and 5 public documents/web/media products delivered | 5 public consultation events held and 10 public documents/web/media products delivered |
| **Outcome 1.3:** Remaining significant historical obsolete pesticides (OPs) storehouses addressed, OP stocks packaged and removed and residual site contamination cleaned up | Availability of completed/ documented screening assessments of identified historical OP storehouse stockpile sites and volume of OP stockpiles and cleaned residuals packed and removed to storage | Fragmented historical assessment and inventory work consolidated for project preparation  24 OP stockpile sites identified and up to 6 sites considered priorities for substantive clean-up  Preliminary commitment for EU funding of initial work pending | EU/Ministry of Agriculture - MoA/FAO administered site assessment, packaging and surficial clean-up undertaken to make available 150 t of OPs and residuals for storage and environmentally sound disposal arranged by FAO  Public consultation conducted at priority OP storehouse sites | Under MoA supervision the former priority OP storehouse sites are maintained for other productive uses |
| Availability of completed/ documented detailed contaminated site and risk assessments and remediation/clean-up designs on identified priority storehouse sites and a number of public consultation events held at number of priority storehouse sites and public acceptance of actions | Limited site assessment work done by local and international NGOs  No dedicated public consultation activities on priority sites to date | Preliminary site assessment reports received from MoA and reviewed/evaluated  Priority OP storehouse sites for substantive clean-up agreed with MoA and MNP | Detailed contaminated site and risk assessments and remediation/clean-up designs on identified up to 6 priority OP storehouse sites completed/documented  6 public consultation events held in the communities of 6 priority OP storehouse sites |
| Volume of OPs stockpiles packed, removed from a number of priority OP storehouse sites and residual site contamination cleaned-up | No clean-up activity undertaken at any OP storehouse site | No action | Excavation/removal, disposal and/or containment of up to 150 t of POPs waste from up to 6 priority OP storehouse sites completed |
| **ACTIVITY 2. Obsolete Pesticide Stockpile and Waste Elimination** | | | | |
| **Outcome 2.1:**  Export and environmentally sound disposal of Category 1 waste | Volume of Category 1 waste exported and disposed under an environmentally sound | No destruction of POPs pesticides, POPs wastes or OPs yet undertaken | International pre-qualification of Category 1 waste disposal facility, tender and contract documents prepared and implemented  Export from Armenia and environmentally sound disposal of 1,052 t Category 1 waste for destruction at a qualified disposal facility | Environmentally sound disposal of any contingency volumes of Category 1 waste at a qualified disposal facility |
| **Outcome 2.2:** Environmentally sound treatment of Category 2 waste/soil | Volume of treated Category 2 waste below the low POPs content and demonstration of commercial viability of the Category 2 waste/soil treatment technology in Armenia | No highly contaminated soil treatment/remediation facilities available in the country | International pre-qualification of Category 2 waste treatment technology, tender and contract documents prepared and implemented  Waste treatability testing of candidate shortlisted technologies completed  Site preparation arrangements for hosting the feasible technology as required completed | Environmentally sound treatment of 4,123 t of Category 2 waste to levels below the low POPs content |
| Number of national technical personnel completed operational training, availability of service providers of a modern contaminated soil treatment technology | No currently qualified technical personnel or service providers in Armenia for treatment of POPs contaminated soil | 20 national technical personnel trained on a modern contaminated soil treatment technology | 20 national technical personnel qualified on a modern contaminated soil treatment technology operation |
| **ACTIVITY 3. Institutional and Regulatory Capacity Strengthening for Sound Chemicals Management and Contaminated Sites** | | | | |
| **Outcome 3.1:** Legal/regulatory and technical guidance tools for management of chemical wastes, including POPs, and, contaminated sites management within a national sound chemicals management framework strengthened | Policies, legislation and regulatory measures respecting chemical HW and contaminated sites management reviewed, updated and appropriate revisions implemented | Basic framework legislation in place but has gaps, inconsistencies and conflicts with international standards and obligations under Stockholm and Basel Conventions | Systematic review and clarification of existing legislation and regulations on chemical HW and contaminated sites management completed  Action plan for streamlining and filling gaps in existing legislation consistent with international practice adopted and implemented | List of project specific legislative and regulatory review measures |
| Availability of technical guidance on environmental and health risk assessment methodologies and practices applicable to chemical HW and contaminated sites and on operational and EHS procedures for chemical HW handling, transport, storage and disposal, developed in accordance with international practices and a number of relevant national personnel trained | While requirements exist in legislation requiring technical guidelines on operational safety procedures for hazardous chemicals waste handling, transport, storage and disposal to be in place these have not been developed and adopted  Limited national expertise exists in implementation of operational procedures for HW management  No nationally adopted guidance materials exist for environmental and health risk assessment | Draft guidance materials on environmental and health risk assessment methodologies and practices applicable to chemical HW and contaminated sites developed in accordance with international practice prepared and reviewed  Draft guidance materials on operational and EHS procedures for chemical HW handling, transport, storage and disposal consistent with international practices prepared and reviewed  Training program on chemical HW handling, transport, storage and disposal developed  Training sessions involving at least 10 train-the-trainers is undertaken | Guidance materials on environmental and health risk assessment methodologies/practices and on operational and EHS procedures applicable to chemical HW and contaminated sites handling, transport, storage and disposal consistent with international practice adopted and implemented  At least 50 relevant technical professionals from regulatory authorities, academia, NGOs and environmental service provider personnel in regulatory and private sectors attained relevant certification for completion of the national training program |
| **Outcome 3.3:**  Basic national capacity for effective POPs containing hazardous chemicals sampling and analysis developed, operational to be certified to international standards | Availability of adopted national strategy for rationalization and upgraded national laboratory capability to serve a sound chemicals management framework focusing for POPs analysis and management | Highly fragmented under-equipped and resourced laboratory infrastructure distributed across the regulatory, academic and private sector  Lack of fully creditable capability to service the needs of regulators and the industrial/private sector | National laboratory enhancement strategy developed, endorsed by major institutional and public stakeholders and endorsed for implementation by the government | National laboratory enhancement strategy supporting the availability of capability for effective hazardous chemicals sampling and analysis for sound POPs chemicals management implemented |
| Number of designated national laboratories upgraded with suitable capability for POPs hazardous chemical waste sampling/analysis and number of laboratory personnel completed training program | Reasonably good but somewhat outdated capability in MNP regulatory laboratory and one modern academic laboratory.  Growing number of private sector laboratories  Variable levels of training and qualifications in existing laboratory personnel | Selection of 2 designated laboratories from regulatory and academic/private sector for upgrading  Approved specifications and plans for upgrading of designated laboratories  10 technical personnel from designated laboratories and regulatory institutions trained | 2 designated laboratories upgraded and operational  Long term national budget commitments and/or business plans in place ensuring sustainable operation of upgraded laboratories  15 technical laboratory personnel from designated laboratories and regulatory institutions completed training program |
| Number of designated national laboratories initiated introduction of international certification methods and practices | Only one laboratory operating with partial internationally certified methods | 1 designated laboratory initiated introduction of international certification methods and practices for POPs analysis | 2 designated laboratories initiated introduction of international certification methods and practices for POPs analysis |
| **Activity 4. Monitoring, learning, adaptive feedback, outreach, and evaluation** | | | | |
| **Outcome 4:** Monitoring, learning, adaptive feedback, outreach, and evaluation | M&E and adaptive management applied to project in response to needs, mid-term evaluation findings with lessons learned extracted | No Monitoring and Evaluation system  No evaluation of project output and outcomes | Monitoring and Evaluation system developed  Mid-term evaluation of project output and outcomes conducted with lessons learned | Final evaluation report developed in the end of the project |