UNIDO ONUDI

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
ORGANISATION DES NATIONS UNIES POUR LE DEVELOPPEMENT INDUSTRIEL

Project Implementation Report

(1 July 2020 – 30 June 2021)

Project Title:	Development and promotion of non-POPs alternatives of DDT
GEF ID:	4612
UNIDO SAP ID:	150058
GEF Replenishment Cycle:	GEF-5
Country(ies):	India
Region:	SA- Southeast Asia
GEF Focal Area:	Chemicals and Waste
Integrated Approach Pilot (IAP) Programs[1]:	N/A
Stand-alone / Child Project:	N/A
Implementing Department/Division:	**UNIDO**: Directorate of Environment and Energy, Department of Environment, Industrial Pollution Mitigation Division (EAE/ENV/IPM) **UNEP**: Economy Division, Chemicals and Health Branch, GEF Chemicals and Waste Unit
Co-Implementing Agency (if applicable):	UNEP
Executing Agency(ies):	Ministry of Environment, Forests and Climate Change (MOEFCC), Ministry of Chemicals & Fertilisers (MOCF), Ministry of Health & Family Welfare (MOHFW)
Other Project Partners:	Institute of Pesticide Formulation Technology (IPFT), National Botanical Research Institute (CSIR-NBRI), Hindustan Insecticides Limited [HIL (India) Ltd.], Central Institute of Plastics Engineering and Technology (CIPET)
Project Type:	Full-Sized Project (FSP)
Project Duration (months):	60 months
Extension(s):	1
GEF Project Financing:	USD 10,000,000 (UNIDO: USD 8,300,000; UNEP: USD 1,700,000)
Agency Fee:	USD 1,000,000 (UNIDO: USD 830,000; UNEP: USD 170,000)
Co-financing Amount:	USD 43,147,167
Date of CEO Endorsement/Approval:	10/04/2015
UNIDO Approval Date:	09/07/2015
Actual Implementation Start Date:	09/07/2015
Cumulative disbursement as of 30 June 2021	USD 7,774,669 (UNIDO); USD 745,086 (UNEP)

[1] Only for **GEF-6 projects**, if applicable

Expected Mid-term Review Date (MTR):	06/2021-07/2021 (UNIDO); 12/2021 (UNEP)
Expected Completion Date:	12/31//2022
Expected Terminal Evaluation Date (TE):	10/2022
Expected Financial Closure Date:	31/12/2023
UNIDO Project Manager[2]:	Ms. Erlinda Galvan

I. Brief description of project

Project Objective
The project aim to introduce bio- and botanical pesticides and other locally appropriate cost-effective and sustainable alternatives to DDT as first step for reduction and eventual elimination of dependency on DDT, ensuring food safety, enhancing livelihood and protecting human health and the environment. The transfer of environmentally sound technologies for manufacture of non-POPs alternatives to DDT will provide a financially comparable alternative to DDT use in the country that would eventually lead to the gradual phase out of 6,000 mt DDT produced and used in India and such discontinue its environmental burden.

Baseline
A large section of India's population suffers from a significant disease burden from vector borne diseases in the form of morbidity and mortality from malaria, kala-azar, dengue, chikungunya and other related diseases where about 95% of the population resides in malaria endemic areas. As early as 1950s, India has been addressing the control of vector borne diseases when the first plant of DDT manufacture has been set up by Hindustan Insecticide Limited (HIL). However, with the continued use of DDT in the country, some Anopheles mosquito species have developed resistance to DDT. The Government of India has established as a priority the phase out of DDT production and use in compliance with its obligations under the Stockholm Convention on POPs. Under the NVBDCP, all components of Integrated Vector Pest Management (IVPM) have been introduced to reduce the reliance of DDT in public health. Through the GEF grant, India will make the first step to reduce and ultimately eliminate the dependency on DDT by promoting the scaled up alternatives such as bio and botanical pesticides, thus will contribute to a global efforts to control toxic chemicals and to reduce uPOPs releases in particular. Large scale plantation of neem trees will have a beneficial effect on climate change and will bring additional income to a large segment of rural population and farming communities.

Overall Ratings[3]	
Global Environmental Objectives (GEOs) / Development Objectives (DOs) Rating	**Satisfactory (S)**
Implementation Progress (IP) Rating	**Satisfactory (MS)**
Overall Risk Rating	**Low risk (L)**

[2] Person responsible for report content
[3] Please refer to the explanatory note at the end of the document

II. Targeted results and progress to-date

Please describe the progress made in achieving the outputs against key performance indicator's targets in the project's **M&E Plan/Log-Frame at the time of CEO Endorsement/Approval**. Please expand the table as needed.

Project Strategy	KPIs/Indicators	Target level	Progress to-date
Component 1 – 1. Legislation, policy framework and institutional capacity (UNEP) Outcome 1: Efficient system for fulfilling legal requirements at the various stages of the lifecycle of alternatives to DDT			
Output 1.1: Regulatory mechanisms throughout the lifecycle of alternatives to DDT in place Activity 1.1.1: Establish an inter-ministerial working group to follow and guide the implementation of the activities Activity1.1.2: Identify the legal requirements at each stage of the lifecycle for the alternatives to DDT Activity1.1.3 Identify gaps in the legal framework throughout the lifecycle for the alternatives to DDT Activity 1.1.4: Identify the potential for strengthening and streamlining the legal requirements at each of the stages of the lifecycle	• Work plan developed • for introducing • regulatory mechanism • Drafting of the mechanism, the official approval and adoption of the mechanism • Regulatory mechanism is in effect	• One working group established to put together and officially endorse the consolidated • Regulatory guidelines for alternatives in place	*Activity 1.1.1:* - Inter-ministerial Technical Working Group has been constituted by Ministry of Environment Forest and Climate Change (MoEFCC) on UNEP's request. - MoEFCC has agreed to organize the TWG meeting in consultation with stakeholders to discuss the technical aspects of the project. *Activities 1.1.2 – 1.1.4:* - UNEP Law Division hired an expert legal consultant to support the activity who works in close coordination with other project partners including UNIDO. - Gap Analysis report on legal framework throughout lifecycle of alternatives to DDT has been completed. A draft action plan has been "to recommend necessary changes in the legal and institutional framework to the alternatives to DDT" has been completed. The same would be shared with the MoEFCC for inputs and approval.
Output 1.2: Guidance documents for producers, registration holders and users on the legal requirements for alternatives to DDT *Activity 1.2.1:* Develop guidance documents for producers, registration holders and users on the legal requirements for alternatives to DDT *Activity 1.2.2*: Testing by potential user of the guidance *Activity 1.2.3:* Finalize the guidance documents for alternatives to DDT	• Guidance documents developed and tested • Mechanisms to expedite registrations for: - neem coils - neem larvicide - neem-based IRS application - Bt cell self-spreading formulation for larvae; - domestic LLIN manufacture and use as well as end-of-life handling of LLIN	• 3 guidance documents for neem, 1 for Bt and 1 for LLIN covering full lifecycle • Efficient and fast fulfilment of legal requirements for alternatives to DDT	A*ctivity 1.2.1*: UNEP Law Division signed an agreement with Toxics Link (a not for profit organization) to support the development of guidance documents and carry out necessary pilot testing. First draft of the LLIN guidance document has been developed. The guidance documents for Neem based alternatives and *Bt* based alternatives in under progress. The activities are being carried out in consultation with relevant Ministries / Departments in India along with the subject matter experts. The guidance documents require inputs from Output 1.1 as well as UNIDO, the first draft is being reviewed by a legal expert. *Activity 1.2.2*: Pilot testing of the documents will be planned once all the guidance documents are ready for testing. *Activity 1.2.3:* Plan to finish this output by October 2022
Component 2 – Alternatives to vector control (UNIDO)			
Outcome 2: Gradually decreased use of DDT on the basis of availability of locally appropriate cost-effective and sustainable alternatives bio-and botanical pesticides and LLIN as well as other alternatives to DDT ready for enhancement to large scale production			

Output 2.1:Existing Neem sheds scaled up for production of Neem- based botanical pesticides through PPP model	Domestic large scale production of neem-based self-surface spreading, cream, suspension concentrate and mosquito coil formulations established	- One (1) facility scaled up for production of neem-based pesticides - Ten (10) pilot plants for neem based pesticides strengthened through technology transfer - Number of individuals employed - Training materials prepared - Number of individual trained	- The Institute of Pesticide Formulation Technology (IPFT) has been working on the scaling up of various neem-based biopesticide formulations including technical training in formulation processes. - The process technologies have been standardized and scaled up for the commercial production of the following neem-based pesticides: • mosquito coil (pilot scale 1000 coil/shift) • repellent cream (pilot scale 10 kg/shift) • spreading oil (pilot scale 100KL/shift) • residual spay (pilot scale 100 KL/shift) and • suspension concentrate formulation (pilot scale 100 KL/shift) - Based on the standardized process technology, IPFT has prepared the design and developed the pilot plant layout for commercial scale production of the neem-based biopesticides. - Data have been generated for bio-efficacy, chemistry and packaging and based on these the dossier has been prepared to obtain the registration of the new products developed as alternatives to DDT with the Central Insecticide Board. - The composition of efficacious and stable formulation using plant based synergist, raw materials and other carriers have been finalized to take up the production of these efficacious formulations for pilot plant production upto the desired capacity. - Three (3) batches of varying sizes have been undertaken to standardize the pilot production of mosquito coil to achieve the production capacity of 1000 coil/shift and the standardized parameters including weight of the coil as 17-18 gm with the total time required for production as 455 minutes for a shift has been achieved. - With regard to the Neem Cream formulation, three (3) batches of pilot level of varying sizes were undertaken to achieve the desired level of production of 10kg/shift. - Composition and process have been optimized for the production of the Neem-based Suspension Concentrates (SC). The Pilot plant scale production has been achieved to produce 100 lit/ shift after successful three (3) batch trials of varying sizes. - In case of Spreading Oil formulation, the process has been standardized and scaled up successfully using equipment like High Shear Mixer. Low Shear Mixer, Low Shear mixer, Screen Sieve, Roller Mill and Feeding Pump.

			- The process for the Floating Tablet has been standardized and optimized at pilot level. The process includes steps such as grinding, sieving, blending and finally tablet making. - The development of the five (5) neem-based formulations at pilot level was completed in November 2018 and technologies were ready to be transferred for commercial production. - UNIDO and HIL India Limited signed the contract on 15/01/2020 for the establishment of infrastructure and facility to scale up the commercial production of five (5) neem based biopesticides formulations as alternatives to DDT. - On 17 February 2020, HIL India Limited and IPFT agreed and signed a Memorandunm of Understanding (MoU) for the smooth transfer of technology for commercial production of the five (5) neem-based formulations as alternatives to DDT. - A work order has been issued for DPR preparation and scale up studies. However, pilot plant data collection has been delayed due to COVID-19. Above activity will resume early August 2020 and after that, setting up of the manufacturing facility will start. - Pilot scale technology transferred to HIL from IPFT for five (5) formulations of neem based biopesticides namely Neem cream, neem coil, floating tablet, spreading oil and Suspension concentrate of neem. - Finalization of contract for market survey in progress. - Market feasibility study completed. - Toxicity studies of the neem formulations undertaken. - Packaging and labelling studies in progress. - Stability study is being done. - Negotiation with Indian Council of Medical Research (ICMR) are on for generation of bio-efficacy data for registration with CIB. Under the reporting period, the following are the progress to be reported: - Detailed Project Report (DPR) for scaling up from pilot to commercial scale level has been prepared and based on this the architectural drawings were prepared. - Tenders have floated for civil work of the production facility but due to COVID-19 situation in the country, response was poor; deadline has been extended. - Technical Specifications for required equipment and machinery prepared - Procurement process for equipment and machinery initiated. -
Output 2.2: One (1) pilot Bt-based bio-pesticides production facility established in the governmental sector	Large scale production of Bt-based pesticides established	- One (1) pilot plant for Bt-based bio-pesticides established and operational	Progress made under Output 2.2 up to the reporting date is as follows: - IPFT has been assigned to developed and optimized the formulations on Bt spreading oil (SO), suspension

meeting international operational standard		- Number of individual employed - Conformity with the international standards - Training materials prepared - Number of individuals trained	concentrate (SC) and wettable powder (WP) using the Bt technical grade from P.R. China. Activities were included in the contract signed by IPFT and UNIDO in December 2016. - Assessment on the requirement of the pilot plant facility for the production of Bt-based biopesticides has been done in 2017 and technical specifications for the pilot facility have been worked out in cooperation with experts from China. - Pilot plant machinery in IPFT has been made operational where composition and process parameters of formulation have been optimized for scale up production of Bt based formulations. - Bioassay studies revealed that mortality rate was highest (80.0% and 91.67%) in case of Bti 4% WP followed by Bti 4% SC (78.33% and 86.67%) and Bti 4% spreading oil (53.33% and 86.67%)) at 24hrs and 48 hrs respectively against A. aegypti mosquitoes larvae. - The stakeholders' meeting held in December 2017 agreed that HIL will execute project activities pertaining to the scaling up of the production at commercial level of Bt based bio-pesticides developed by IPFT. - Technologies for three (3) Bt based formulations arenow ready to be transferred to HIL for commercial production where terms of reference under preparation. - UNIDO and HIL(India) Ltd. signed the contract in November 2020 for the production and promotion of Bt based biopesticides as alternatives to DDT. - Appropriate training imparted by IPFT to HIL on the production of Bt based formulations at pilot scale level. Under the reporting period, - IPFT has transferred to HIL (India) Ltd. the pilot scale technology for 3 formulations of Bt based biopesticides namely (1) suspension concentrate; (2) wettable powder and (3) spreading oil for production at commercial level. - Due to COVID-19 pandemic, the proposed technology transfer from Wuhan, PR China could not take place. However, the project partners decided to procure the technology using a local Bt strain from Vector Control Research Centre (ICMR-VCRC), India. Agreement in this regard is expected to be signed by August 2021. - VCRC will provide the technology along with dossier of data for registration of Bt products with Central Insecticide Board (CIB). - The Chinese institution in Wuhan will provide the technical support in the establishment of the Bt production facility at HIL.
Output 2.3: Domestic LLIN production potential scaled	Synthetic pyrethroid based	- One (1) LLIN pilot plant established	Progress made under Output 2.3 up to the reporting date is as follows:

up and operational at one (1) site in the governmental sector	LLIN production established	- Terms of Reference for technology transfer - WHOPES approval obtained - Number of individuals employed - Training materials prepared - Number of individuals trained - Strategy on take back mechanism of end-of-life LLINs	- During the start up of the project in 2015, Hindustan Insecticide Limited (HIL) had shown unwillingness to undertake activities related to LLIN and Bt based biopesticides. - MoEFCC then took the decision to assign the work to other willing stakeholders such as the Defence Research & Development Organization (DRDO) and a corrigendum to the project document has been issued to reflect this. However, DRDO has not shown interest in taking up the responsibility and project activities did not progress. - During a review meeting held in March 2017, HIL expressed their willingness to establish infrastructure and develop capacity for the production of LLIN as a viable alternative to DDT. - Hindustan India Limited (new name) (HIL) has partnered with the Central Institute for Plastic and Engineering Technology (CIPET), Chennai, India for the commercial production of Long Lasting Insecticide Nets (LLINs). - Site for housing the LLIN facility is at Rasayani Unit of HIL, Maharashtra where civil construction has been on going since April 2018. Co-financing in cash amounting to 16.0 crores (US$ 2.4 million) has been arranged by HIL to put up the production facility at Rasayani. - UNIDO and HIL signed the contract in June 2018 for the establishment of the production and manufacturing facility of LLIN impregnated with synthetic pyrethroids - Based on the standardized parameters for the LLIN manufacturing machinery, the supply of the equipment and machineries (twin-screw extruder and Gas Chromatography - Flame Ionization Deterctor or GC-FID) has been procured and delivered at site on 23 September 2019. Installation of all equipment was completed in December 2019 and commissioned in January 2020 by the supplier M/s Neoplast. - Trial run of the facility conducted and required optimizations were achieved. - Manufactured master batch samples were sent to NABL accredited laboratory to identify its composition and quality. The results were found to be meeting the WHO specifications. - Further optimization of equipment planned to be carried out in April 2020 by M/S Neoplast before continuous commercial production. However, this activity is delayed as movements were restricted due to COVID-19 pandemic. Work of contractor will resume only in August 2020. - HIL outsourced the net making of LLIN from master batch production and awarded the contract to M/s Arogya Knitting Pvt. Ltd. and M/s Mohinder

			Knitting Pvt. Ltd. and around 13,000 pieces have been manufactured so far. - Samples of LLIN manufactured have passed quality assurance test done by CIPET and a third party laboratory. - Studies related to Bio-efficacy, Packaging, Chemistry and Toxicity were carried out following the guidelines of NIMR, Delhi-Insectary manual and SOPs 3000-3027 for mosquito rearing, WHO, Guidelines for Laboratory and Field Testing of Long Lasting Insecticidal Nets. 2013 and NVBDCP, Guidelines for ITNs and LLINs, 2019. Based on this, the LLIN has been found safe for use. - The National Institute of Malaria Research (NIMR-ICMR initiated Phase I evaluation of LLIN manufacture by HIL to determine the time required for insecticidal regeneration of LLIN after washing and the efficacy and wash-resistance of the LLIN against susceptible Anopheles culicifacies mosquitoes. - Eight pieces (four unwashed and four washed) were used to estimate regeneration time while 28 net pieces are required to evaluate wash-resistance (Four pieces are tested after 1, 3, 5, 10, 15, 20 and 25 washes (4 x 7 = 28 bioassays)). Twenty pieces (five pieces from four nets) were wrapped in aluminum foil and held at 4°C for chemical analysis in order to determine the between- and within net variability. Nets/Net pieces were stored wrapped in aluminum foil at 30 °C in an incubator for wash resistance studies. However, the test could not be completed due to the COVID-19 lockdown. With the ease in restriction and unlocking, the tests are expected to be completed for Phase I evaluation by August 2020. Under the reporting period: - The master batch production of LLIN pellets started in September 2020 with a capacity of 2,000 kg/shift of 8 hours (approx. 33,000 pcs of LLIN) - Tender for setting up of the second stream of LLIN master batch plant floated in December 2020, however, one offer was received and it is being retendered. - The Central Insecticide Board has granted the registration of the LLIN under Section 9(3b) and commercialization permit as well as export registration under Section 9(3). - HIL has applied for WHO PQT listing - HIL has also granted registration in Nepal for export purposes - Marketing of LLIN is being done through Central and State government institutions and the Defence establishments. - On 17 March 2021, HIL received a recognition award as product innovator during India Chem 2021 organized by the Federation of Indian Chambers of Commerce and Industry (FICCI).

			- Phase I evaluation of LLIN has been completed by ICMR-NIMR. The evaluation concluded that HILNET® (brand name of HIL LLIN), met the criterion of the WHO for knockdown rates in bioassays. -
Output 2.4: Business model for alternatives developed, promoted and marketed	- -Business plan to facilitate production of alternatives to DDT - Awareness raising plans in place	- Pilot plants set up in line with three (3) business models - Awareness raising campaigns undertaken	- Activities under this output has been assigned to HIL and will be worked out after due consultations amongst stakeholders. - LLIN business plan is at the draft stage and expected to be completed soon.
Component 3 – Promotion and propagation of new cultivars of Neem			
Outcome 3: **Promotion of new dwarf cultivars with early maturity and higher limonoids yield for large scale cultivation**			
Output 3.1: New cultivars with high yielding limonoids propagated using tissue culture technology and large scale clonal propagation	- Dissemination of new improved cultivars included in Farmer's Field Schools training programs – Micro-propagation of new neem cultivars established	- Four (4) sites for micro-propagation of neem cultivars - Number of seedlings prepared - Number of seedlings planted -	- In November 2018, the contract has been issued to National Botanical Rearch Institute (NBRI) to undertake project activities related to promotion and propagation of new dwarf cultivars with early maturity and higher limonoids yield though tissue culture technology and other means. - To cover different agro-climatic zones of India, five institutions namely (1) Banthra Research Station of CSR-NBRI in Lucknow; (2) Central Scientific Instruments Organization in Chandigarh, Punjab; (3) Research Centre of Central Institute of Medicinal and Aromatic Plants, Bangalore, Karnataka; (4) CSIR-Institute of Minerals and Materials Technology, Bhubaneshwar and (5) North Eastern Hill University (NEHU) in Shillong have been selected for establishing multi-location trial of 4 neem cultivars. - NBRI has screened large neem germplasm and selected 4 cultivars of high yielding liminoids dwarf variety. - Sixty four (64) cuttings of each cultivars were used to study the effect of two plant hormones (IAA and GA) and a biofertiliser (PSB) on rooting behavior and survival rate of the new cultivars. - All four accessions of Neem namely cultivar 1 (85 individuals), cultivar 2 (40 individuals), cultivar 3 (14 individuals) and cultivar 4 (27 individuals) are being conserved at Banthra Research Station (N 26.70; 38, E 80.83; 19; 120 MSL - To understand the specific soil and nutrient requirements for optimum growth, yield and quality of Neem accessions, soil analysis has been planned for all centres. - Technical specifications for a dedicated Green house has been finalised and indent has been processed for season independent clonal propagation of four accessions of Neem for planting at multiple locations. - Clonal propagation of four (4) neem cultivars has been initiated at Banthra Research Station, Lucknow using available poly house facility where a total of 3,556 cuttings were

			planted during March 2019 to November 2019. - During September 2019-February 2020 additional 2,500 cuttings of all cultivars were planted at Banthra and Biomass Research Centres. - During May-June 2020 about 1,000 cuttings of each of the four cultivars have been planted in newly commissioned (January 2020) humidity controlled advanced poly-house for macro-propagation and maintenance of propagated cultivars. - Established protocol has been followed for micro propagation of neem cultivars using tissue culture technique. Protocol is working well for all cultivars. - Efficient tissue culture protocol for rooting for *in vitro* regenerated shoots of neem has been achieved. - Of various media tested, all the four neem cultivars performed the best in MS medium with 6-benzylaminopurine and indole 3-acetic acid and out of total 926 explants, 289 explants survived. - Two teams of senior scientists visited field sites during February 2020 for taking stocks of multi-locational trials. Teams laid down designs and arranged basic amenities for plantation of neem cultivars at Bhubaneswar, Odisha and Chandigarh, Punjab centres. Under the reporting period: - Approx. 2500 plants of all cultivars are ready for further multi-location trials. The highest rate of clonal propagation was found in cultivar 4 and least in cultivar 2. - The HPLC analysis showed the highest content of Azadirachtin in cultivar 2 (cultivar hard to propagate through micro- and macro- propagation) followed by cultivar 3, 1 and 4 - Different shade loving crops (medicinal and aromatic plants viz. *Piper longum, Rauvolfia serpentina, Costus speciosus; Vetiveria zizanioides and Cymbopogon citratus and Curcuma longa*) have been evaluated for Neem based agroforestry models to make neem plantation economically viable for farmers and general public. - For dissemination of basic information on Neem plantations (agroforestry model), a brochure (4 pages document) has been prepared in Hindi (local language). The brochure is about Neem, preliminary results of the project and possible entrepreneurship based on products developed through different parts (leaves, seed soil, oil cake, etc.)
Component 4 – Development and Promotion of Integrated Vector Pest Management (UNEP)			

Output 4.1: IVPM developed, promoted and pilot tested in selected sites ***Activity 4.1.1***: Prepared specific training modules for promoting IVPM at local level ***Activity4.1.2:*** Develop practical training courses for promoting IVPM in a train the trainer's course ***Activity4.1.3.*** Carry out pilot training (test the training materials and adapt where necessary	Four (4) IVPM modules and materials available and tested	• Four (4) training modules developed • Four (4) training materials prepared • Number of trainers trained • At least ten (10) pilot tests undertaken	Activity 4.1.1: CPCB as lead executing agency has signed an agreement with CSIR-National Environmental Engineering Research Institute (CSIR-NEERI) to carry out the project related activities. CSIR-NEERI is working with various stakeholders from different Ministries /Departments and domain experts in developing IVPM training modules and associated training materials. In this connection, following four modules have been developed through a consultative process covering all aspects of IVPM and vector control; • DDT and Vector Borne Diseases • Vector Morphology and Bionomics • Alternatives to DDT in Vector Control Management • Integrated Vector and Pest Management. All the above training modules have been approved by NVBDCP for pilot training which is planned from second half of 2021 • Training material associated with the modules have been developed. • Awareness raising material is being developed in consultation with expert stakeholders
Component 5 - Monitoring and evaluation of results (UNIDO/UNEP)			
Outcome 2: **Monitoring of project interventions and evaluation of results**			
Output 5.1: Technical reporting prepared and made available at each stage of the project	- All project partners, donors and stakeholders informed about content and achievements of the project - All technical reporting	- Project implementation monitored and results assessed against the set of indicators - Terminal report submitted	- All stakeholders have been informed about the implementation monitoring procedures during the inception workshop.
Output 5.2: Project implementation management and M& E mechanism in place	- Project implementation monitored and results assessed against set of indicators - M&E mechanism in place	- Inception workshop held - SC augmented - NPCU established and staffed - Detailed workplan prepared - Financial audit completed - Annual TPR meeting held - Bi-annual NSC meeting held - Final workshop held	- Inception workshop organised successfully. - NPCU established at MOEF&CC - Workplan prepared - Review meeting at MOEFCC, GOI organised. - Review meeting at UR office with stakeholders organised. - Regular Review meetings at project sites organised to get updates on the project progress. - UNIDO Project Manager also visited project sites and participated in the review meetings - On review the progress, MOEFFCC, GOI approved the extension of the project until December 2022. - Revised workplan with new timelines finalised and budget has been rephased accordingly. Under the reporting period: - Review meeting on the progress of the project was convened on 11 September 2020 under

			the chairmanship of Ms Geeta Menon, Joint Secretary and National Project Director, GoI - Plan of action to address the recommendations of the Review meeting prepared and undertaken - Action plan of DDT phased out prepared and submitted to MoEFCC - Two (2) stakeholders' meeting held in Nov 2020 and February 2021 respectively
Output 5.3: Project Evaluation	Project implemented and evaluated	All outputs achieved and documented	Due to COVID-19 lockdown in the country, the Mid-Term Evaluation of UNIDO component started in June 2021. UNEP component will be undertaken in December 2021.

III. Project Risk Management

1. Please indicate the overall risk management: (i) as identified in the CEO Endorsement document, and (ii) progress to-date. Please expand the table as needed.

	(i) Risks	(i) Risk level	(i) Mitigation measures	(ii) Progress to-date	New defined risk[4]
1	Due to conflicting interests of the involved ministries, the adoption of policy and legislative framework is delayed	Modest risk (M)	Establishment of a coordination committee including the relevant government institutions, private sector, academia and civil society	All relevant Ministries, Departments, Institutions, Academia and Civil society are involved in meetings, workshops organised for this project. This will help to understand each other and result in better coordination.	☐
2	Lack of multi-departmental commitment to support alternatives to DDT	Low risk (L)	Sensitization of policy makers is timely made and environmentally sound and socioeconomically acceptable alternatives will be provided	Ministry of Health & Family Welfare (MoH&FW) has endorsed the project for the alternatives to DDT. Central and state departments involved in vector control programs are sensitized on India's commitment made in National Implementation Plan and obligations to Stockholm Convention.	☐
3	Business model for scaling up production and marketing faces unforeseen obstacles due to inadequate interdepartmental coordination	Low risk (L)	Inter-departmental coordination is established and close coordination ensured throughout project life	National Steering Committee (NSC) is in place for coordination among different departments	☐
4	For propagating new cultivars at all agro-climatic zones of higher productivity are not prioritized	Low risk (L)	Propagation of new cultivars is assigned a high priority in the work program of relevant stakeholders. Special attention	Contract has been signed with NBRI for establishing high yielding new cultivars. NBRI strengthen the activities with respect to in-house propagation of new cultivars of neem. Five (5) centres for multiplication of new cultivars are identified and designs have been laid down for transplantation.	☐

[4] New risk added in reporting period. Check only if applicable.

			will be made to exploit domestic cultivars at state level	However, the work of second year (April - May 2021) season is also lost due to 2nd wave of COVID 19 pandemic.	
5	Regional and interregional outreach program does not receive adequate Government support	Low risk (L)	Government fully sensitized to provide support for the outreach program. The signed endorsement letter confirms the commitment of the Government. Fund raising activities carried out by all involved agencies will clearly minimize this risk.	Endorsement/ commitments of all stakeholders obtained. HIL and MoCF extended all support and ready to meet the requirements of LLIN and other alternatives locally as well as regional and global level. Outreach programs such webinars helps to engage stakeholders and keep them on board.	☐
6	Monitoring and results indicators are not agreed upon by stakeholders	Low risk (L)	Both environmental and socio-economic indicators are identified and agreed upon at the early planning (PPG) stage of project & taking into consideration those already adopted in the NVBDCP and other programmes.	Being discussed with different stakeholders	☐
7	Climate Change	Low risk (L)	Risk on climate change is negligible	Not applicable at this stage	☐
8	Delay in project implementation activities at project sites due to COVID-19 pandemic	Low risk (L)	Revised timelines for implementation prepared	Stakeholders have been informed and agreed on the revised workplan considering the crisis of COVID 19 pandemic. The work further suffered due to surge of COVID 19 pandemic in 2021.	☐
9		(select)			☐

2. If the project received a sub-optimal risk rating (H, S) in the previous reporting period, please state the actions taken since then to mitigate the relevant risks.

Not applicable as the project did not received a sub-optimal risk rating in the previous reporting period.

3. Please indicate any implication of the **COVID-19** pandemic on the progress of the project.

The major implication of the COVID-19 pandemic is as follows:

- complete halt of the activities at commissioning of the manufacturing plant at Rasayani Unit of HIL;
- Transfer of technology from Bt Institute, Wuhan, PR China for the commercialization of the Bt;
- Trials of mass multiplication of new cultivars at multi-locational centres across different parts of the country;
- Inordinate delay due to complete lockdown in the country since March 2020 resulting in no

reporting for work at site by the engineers, technicians, labours, etc. as per the directions/orders of the State Government as well as Central Government of India.
- Further delay resulted due to surge in COVID 19 pandemic as 2nd wave during 2021.

As a result of this, unforeseen delays, will impact the implementation of project activities.

IV. Environmental and Social Safeguards (ESS)

1. As part of the requirements for **projects from GEF-6 onwards**, and based on the screening as per the UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP), which category is the project?

☐ Category A project

☐ Category B project

☐ Category C project

(By selecting Category C, I confirm that the E&S risks of the project have not escalated to Category A or B).

	E&S risk	**Mitigation measures undertaken during the reporting period**	**Monitoring methods and procedures used in the reporting period**
(i) Risks identified in ESMP at time of CEO Endorsement	N/A	N/A	N/A
(ii) New risks identified during project implementation (if not applicable, please insert 'NA' in each box)	N/A	N/A	N/A

V. Stakeholder Engagement

1. Please provide information on **progress, challenges and outcomes** regarding engagement of stakeholders in the projects (based on the description of the Stakeholder Engagement Plan or equivalent document submitted at CEO Endorsement/Approval).

U**NIDO**:
Several stakeholders such as the Hindustan India Limited (HIL), National Botanical Research Institute (NBRI), Institute of Pesticides Formulation Technology (IPFT), National Institute Malaria Research (NIMR), National Vector Borne Disease Control Programme (NVBDCP) and Central Institute for Plastic and Engineering Technology (CIPET) are fully involved in the implementation of the project activities with sole aim to develop, manufacture and promote non-POPs alternatives to DDT.

The project has gone through certain challenges in the beginning due to stakeholders' involvement. HIL, the sole producer and supplier of DDT for malaria and kala-zar vector control in the country showed unwillingness to participate in the project that led to the Ministry of Environment, Forest and Climate Change (MoEFCC) decision to amend the project document and include the Defence Research & Development Organization (DRDO) as substitute to HIL on 26 February 2016. DRDO has invented the LLIN indigenous technology and could have been a good partner for the commercial production of LLIN, however, they were not ready to take up the responsibility. In March 2017, HIL finally announced their interest to establish the infrastructure and develop capacity for the production of LLIN as a viable alternative to DDT. CIPET has developed the process technology and transferred it to HIL to produce 5.0 million LLINs per annum at commercial level. Since then, HIL has put up a cash co-financing of INR 16 crores (US$ 2.4 million) for civil and building infrastructure of the LLIN

manufacturing facility. Construction of the facility has been completed in 2019, machineries have been installed and commissioned, and trial runs and master batch production undertaken. The bio-efficacy, toxicology and packaging data are being undertaken by NVBDCP, NCDC and NIMR and Phase 1 trial is completed.

IPFT has been assigned to undertake the development of formulations for neem-based and Bt-based biopesticides. It successfully completed the formulations of five (5) neem based products namely: coil, cream, suspension concentrate, floating tablets and spreading oil in November 2018. A Memorandum of Understanding (MoU) has been signed in February 2020 with HIL to transfer the technology of neem based bio-pesticides formulations for commercial production. Technology of 5 neem based formulations have been transferred to HIL(India) Ltd. Training has also been imparted to HIL by IPFT on the pilot scale level production. IPFT has also completed three (3) formulations of Bt based biopesticides namely: Bt spreading oil, suspension concentrate and wettable powder using the Bt technical grade from Bt Research Institute, Wuhan, P R China. Technology scaled up at pilot level has been transferred to HIL by IPFT. Blueprint of the setting up of facility has been prepared in collaboration with Chinese experts. Due to COVID 19 pandemic, the proposed technology from Wuhan, P R China could not take place. Instead it was decided to procure it from Vector Control Research Centre (ICMR-VCRC). Agreement in this regard is expected to be signed by July 2021. Under the agreement, VCRC will provide the technology along with dossier of data for registration of the Bt products at the Central Insecticide Board (CIB). HIL entrusted the task of registration to a consultant. Chinese institution in Wuhan has agreed to extend all technical support in the establishment of the production facility at HIL.

Another challenge was with NBRI, who signed a contract with UNIDO in January 2017 to undertake project activities related to the promotion of dwarf cultivars of Neem with early maturity and higher limonoids yield for large scale cultivation as well as large-scale production of neem and Bt, whose formulations were developed by IPFT. Due to the changes in higher management at NBRI, the contract has been terminated and reissued in November 2018 to cover only the promotion of dwarf cultivars. HIL meanwhile agreed to take over the project activities related to commercial production of neem-based products and Bt based bio-pesticides as mentioned above.

UNEP:

The project demands consultative work between different departments of Government of India, UNEP, UNIDO and the executing agencies. Some of the components implemented by UNEP require inputs from UNIDO. To address this, UNEP and UNIDO are in constant touch and exchange information as applicable. CPCB/CSIR-NEERI has constituted a working group of experts to support development of training modules, training materials and awareness material and is coordinating with other executing agencies such as Law Division. The project has also established a Technical Working Group (TWG) under the chairmanship of MoEFCC to provide technical guidance during the project implementation. The project also has a Project Steering Committee (PSC) to review the project regularly and provide necessary guidance and suggestions along with decisions on important aspects. UNEP and its partners is also working closely with the State Governments as they will be the main recipients of the project work through training programmes.

2. Please provide any feedback submitted by national counterparts, GEF OFP, co-financiers, and other Partners/Stakeholders of the project (e.g. private sector, CSOs, NGOs, etc.).

No feedback received so far from co-financiers, partners, stakeholders.

3. Please provide any **relevant stakeholder consultation** documents.

1. 4612_Extension approval of MOEFCC July 20
2. 4612_Review meeting MOM MOEFCC Sept 11 2020
3. 4612_Minutes of Stakeholder Review Meeting DDT alternative project Nov 5 2020

4. 4612_ Action Taken Report MoEFCC UNIDO GEF Projects
5. 4612_ DDT action plan
6. 4612_MoM UNIDO 09.02.21
7. 4612_ PSC meeting notice June 25 2021

VI. Gender Mainstreaming

1. Please provide information on **progress on gender-responsive measures** and **gender-sensitive indicators** as documented at CEO Endorsement/Approval (in the project results framework or gender action plan or equivalent).

As a GEF-5 project the CEO Endorsement did not foresee main gender issues. However, it is worth mentioning here that gender participation has been observed in the project especially in the net manufacturing activity of LLIN production where most of the activities are handled by women (over 75% participation). Also, in the collection of the neem seed and processing involves women participation in large number. Application of alternatives in the field are also done by women. in the training programmes, the gender representation has been observed so encourage women to participate and get trained.

VII. Knowledge Management

1. Please elaborate on any **knowledge activities / products** (when applicable), as outlined in knowledge management approved at CEO Endorsement / Approval.

The new products (alternatives) such as LLIN, Neem based botanical pesticides and Bt based larvicides developed under the project will be demonstrated to the field staff, operators, technicians, others that are engaged and responsible for the judicious use of these alternatives to the existing strategy of the application of DDT against mosquitoes. The alternatives will be promoted through organising training programmes under IVPM jointly with UNEP, who are given the responsibility to organise such programmes in the field across the country. Knowledge would be disseminated through videos, field demonstrations, hand on training, distribution of leaflets, brochures, poster, etc. Progress made with regard to the infrastructure and development of alternatives are attached in this PIR as per the list below in para 2.

2. Please provide any **relevant knowledge management mechanisms** / **tools** that the project has generated.

UNIDO:

1. 4612_Yarn making LLIN
2. 4612_LLIN Stitching
3. 4612_LLIN packaging
4. 4612_Gender participation in LLIN making
5. 4612_Agro forestry model of neem with different medicinal and aromatic plants
6. 4612_Neem brochure NBRI
7. 4612_Advanced propagation House

UNEP:

1. Six webinars have been organised on various topics related to the project as a means of stakeholder's engagement/knowledge dissemination

2. Information, Education and Communication (IEC) materials such as Pamphlets – 34, Brochures - 7

   Door Stickers – 2, Booklets-4, FAQs – 13 have been prepared for distribution among training participants.

VIII. Implementation progress

1. Please provide information on **progress, challenges and outcomes** on project implementation activities.

The project has made the following progress/outcomes:

Output 1:

The project is progressing well as per the updated workplan approved by the Ministry. Significant progress has been made during the reporting period and some good results have been obtained. The most significant achievement is the approval for testing/training of training modules on IVPM by National Vector Borne Disease Control Programme (NVBDCP) which required rigorous consultation and revision of the original modules submitted. Summary of the progress is provided below;

- Gap analysis report and action plan under Component 1 has been completed
- Draft guidance document on legal framework for LLIN developed and other guidance documents is under progress.
- Prepared four IVPM training modules and approval of National Vector Borne Disease Control Programme (NVBDCP) has been obtained for carrying out pilot testing.
- Practical training courses have been prepared
- Pilot testing of IVPM training modules is going on in online mode. Tentative timeline of completion 31 March 2022.

Output 2.1: Neem-based pesticides:

- Five (5) Neem based pesticide formulations developed, trialled and requisite process technology standardized and scaled up to pilot plant level by the Institute for Pesticides Formulation Technology (IPFT).
- In December 2019, UNIDO awarded the contract to HIL (India) Limited for the commercialization of the neem-based biopesticides through transfer of technology developed by IPFT.
- Market feasibility study and toxicity studies of the neem formulations completed during March to April 2021.
- Packaging and labelling studies as well as stability study in progress.
- Preparation of the commercial production facility for Neem based pesticides is ongoing in Bhatinda, Punjab.
- Procurement of equipment and machineries initiated in June 2021.
- Negotiation with Indian Council of Medical Research (ICMR) for generation of bio-efficacy data for registration with CIB is ongoing.

Output 2.2: Bt-based biopesticides

- Three (3) Bt based biopesticides formulations developed, trialled and requisite process technologies standardized and scaled up to pilot plant level also by IPFT.
- Pilot scale technology transferred to HIL (India) Ltd. from IPFT for 3 formulations of Bt based biopesticide.
- Technical specifications and feasibility report for pilot plant for Bt based biopesticide has been worked out.
- Due to COVID 19 pandemic, the proposed technology from Wuhan, P R China could not take place. Instead it was decided to procure the technology with Bt local strain from Vector Control Research Centre (ICMR-VCRC).

- The agreement in this regard is expected to be signed by July 2021 where VCRC will provide the technology along with dossier of data for registration of Bt products to Central Insecticide Board (CIB), India
- The Chinese institution in Wuhan has agreed to extend all technical support in the establishment of the Bt production facility at HIL.

Output 2.3: Long Lasting Insecticidal Net (LLIN) manufacturing

- HIL (India) Limited has arranged a co-financing of INR 16 Crores (equiv. to 2.4 USD) in cash to establish the LLIN production facility at Rasayani, Maharashtra.
- In June 2018, HIL and UNIDO signed the contract for production of LLIN at commercial level. Manufacturing facility constructed from April 2018 to December 2019 at HIL Rasayani Plant with their co-financing.
- A feasibility study on commercialisation of LLIN undertaken where LLIN technology developed by the Central Institute for Plastic Engineering and Technology (CIPET) identified and procured.
- Based on standardized parameters for LLIN manufacturing, procurement of required machineries and equipment completed in September 2019.
- Commercial level manufacturing plant for 5.0 million/year LLINs erected and commissioned at the Rasayani Plant of HIL (India) Limited in December 2019.
- Technical training of operators took place during December 2019 to January 2020.
- Commercial production of master batch commenced in January 2020.
- Downstream vendor empanelment for net making in March 2020.
- In December 2020, tender floated for setting up the second stream of LLIN Masterbatch plant at Rasayani. However, only one offer was received and retendering is in progress.
- Marketing of LLIN is being done through Central and State government institutions and the Defence establishments.
- LLIN registration under Section 9 (3b), commercialization permit and also export registration under Section 9(3) for Nepal granted by the competent authority (Central Insecticide Board) in December 2020 and June 2021 respectively.
- HIL applied for WHO PQT Listing in April 2021.
- LLIN business plan drafted in June 2021.

Output 2.1: Propagation of neem cultivars

- Protocol has been standardised and established for micro propagation of neem cultivars using tissue culture technique for all new cultivars conserved at NBRI.
- Approx. 2500 plants of all cultivars are ready for further multi-location trials.
- The highest rate of clonal propagation was found in cultivar 4 and least in cultivar 2.
- All plants raised through tissue culture were damaged due to closure of institute (lockdown).
- The HPLC analysis showed the highest content of Azadirachtin in cultivar 2 (cultivar hard to propagate through micro- and macro- propagation) followed by cultivar 3, 1 and 4.
- Different shade loving crops (medicinal and aromatic plants viz. *Piper longum, Rauvolfia serpentina, Costus speciosus; Vetiveria zizanioides and Cymbopogon citratus and Curcuma longa*) have been evaluated for Neem based agroforestry models to make neem plantation economically viable for farmers and general public.
- For dissemination of basic information on Neem plantations (agroforestry models), a four page brochure has been prepared in local language, Hindi. The brochure will be translated to English, which includes basic information about Neem, preliminary results of the project and possible entrepreneurship based on products developed through different parts (leaves, seed soil, oil cake, etc.) of neem.

Challenges:

- Further to the inherent challenges associated with development and commercialization of new pesticides, the project encountered as its critical challenge in securing the co-financing for putting up the facility (civil and associated works) for the commercial production of LLINs and the biopesticides. HIL (India) Limited has arranged loan from the government bank to finance the civil construction of the LLIN facility.
- Pilot testing of guidance documents on legal framework may be affected due to COVID-19.
- IVPM training module pilot testing is a field-oriented programme. Due to COVID-19, virtual testing of the modules is being planned. However, the challenge remains to receive active participation of stakeholders. All efforts are being made to involve relevant stakeholders during the training programmes.

- Few activities/reports are dependent on UNIDO's progress. UNEP and UNIDO are coordinating on exchange of information and reports to complement the project activities.
- The major implication of the COVID-19 pandemic is the complete halt of the activities at the ground level. This has caused inordinate delay due to complete lockdown in the country twice from March 2020 to October 2020 and again from April 2021 to mid-June 2021 resulting in no reporting for work at site by the technicians, labours, etc. as per the directions/orders of the State Government as well as Central Government of India. As a result of this, the project has suffered badly resulting in unforeseen delays in the implementation of the activities.

Outcomes

1. NVBDCP has given approval for IVPM training modules for pilot testing/training
2. State and central government departments actively participating in webinars and are keen to join the pilot testing/training programs

2. Please provide information related to the **financial implementation** of the project.

During the reporting period, UNIDO has issued Amendment 2 on HIL contract to include project activities on commercial production of Bt based biopesticides.

Financial implementation progress:

UNIDO:
Expenditure till 30 June 2021: USD 7,774,669.52
Available funds till 30 June 2021: USD 525,330.48

UNEP:
Expenditure till 30 June 2021: USD 745,086
Available funds till 30 June 2021: USD 954,914

The ***UNIDO Project Delivery Report*** is given below**:**

PROJECT DELIVERY REPORT

		Project:	150058 - DEVELOPMENT AND PROMOTION OF NON-POPS ALTERNATIVE TO DDT	**Project Manager:**	Erlinda Galvan	**Project Validity:** **Status:**	25.06.2015 - 31.12.2022 Implement
Reporting Period:	**09.07.2015 - 30.06.2021**	**Project Theme:**	Energy and Environment	**Country:**	India	**Region**	Asia and Pacific

Sponsor Nr.	Sponsor	Grant	Grant Description	Fund	Currency	Grant Status	Grant Validity
400150	GEF - Global Environment Facility	2000003105	GFIND_150058	GF	USD	Authority to implement	09.07.2015 - 31.12.2022

	Description	Released Budget Current Year (a)	Obligations Current Year (b)	Disbursements Current Year (c)	Expenditures Current Year (d=b+c)	Total Agreement Budget (e)	Released Budget (f)	Obligations + Disbursements (g)	Funds Available* (h=f-g)	Support Cost (i)	Total Expenditures (j=g+i)
2000003105											
150058-1-01-01	**2.1 Neem sheds scaled up**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**
1500	Local travel	0.00	0.00	0.00	0.00	1,730.82	1,730.82	1,730.82	0.00	0.00	1,730.82
1700	Nat.Consult./Staff	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2100	Contractual Services	13,804.70	(88,074.18)	120,100.84	32,026.66	1,370,440.35	1,370,440.35	1,363,662.31	6,778.04	0.00	1,363,662.31
3000	Train/Fellowship/Study	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4300	Premises	2,227.97	0.00	(342.34)	(342.34)	58,103.75	58,103.75	55,533.44	2,570.31	0.00	55,533.44
4500	Equipment	0.00	0.00	0.00	0.00	568.67	568.67	568.67	0.00	0.00	568.67
5100	Other Direct Costs	2,102.20	0.00	(88.30)	(88.30)	5,051.19	5,051.19	1,860.69	3,190.50	0.00	1,860.69
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	142,335.59	142,335.59
150058-1-01-01	**Total**	**18,134.87**	**(88,074.18)**	**119,670.20**	**31,596.02**	**1,435,894.78**	**1,435,894.78**	**1,423,355.93**	**12,538.85**	**142,335.59**	**1,565,691.52**
150058-1-01-02	**2.2 Pilot Bt based biopesticides**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**
1100	Staff & Intern Consultants	35,000.00	0.00	0.00	0.00	50,686.76	50,686.76	15,686.76	35,000.00	0.00	15,686.76
1500	Local travel	20,273.94	0.00	0.00	0.00	36,426.00	36,426.00	16,152.06	20,273.94	0.00	16,152.06
1700	Nat.Consult./Staff	19,103.15	5,225.38	5,605.56	10,830.94	44,832.00	44,832.00	36,559.79	8,272.21	0.00	36,559.79
2100	Contractual Services	(49,952.55)	0.00	0.00	0.00	2,013,127.45	2,013,127.45	2,013,080.00	47.45	0.00	2,013,080.00
3000	Train/Fellowship/Study	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4300	Premises	0.00	0.00	0.00	0.00	3,592.73	3,592.73	3,592.73	0.00	0.00	3,592.73
4500	Equipment	(4.14)	0.00	0.01	0.01	819.16	819.16	823.31	(4.15)	0.00	823.31
5100	Other Direct Costs	1,822.84	269.25	305.47	574.72	3,916.39	3,916.39	1,668.27	2,248.12	0.00	1,668.27
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	208,756.31	208,756.31
150058-1-01-02	**Total**	**26,243.24**	**5,494.63**	**5,911.04**	**11,405.67**	**2,153,400.49**	**2,153,400.49**	**2,087,562.92**	**65,837.57**	**208,756.31**	**2,296,319.23**

*** Does not include Unapproved Obligations**

PROJECT DELIVERY REPORT

		Project:	150058 - DEVELOPMENT AND PROMOTION OF NON-POPS ALTERNATIVE TO DDT	**Project Manager:**	Erlinda Galvan	**Project Validity:** **Status:**	25.06.2015 - 31.12.2022 Implement
Reporting Period:	**09.07.2015 - 30.06.2021**	**Project Theme:**	Energy and Environment	**Country:**	India	**Region**	Asia and Pacific

Sponsor Nr.	Sponsor	Grant	Grant Description	Fund	Currency	Grant Status	Grant Validity
400150	GEF - Global Environment Facility	2000003105	GFIND_150058	GF	USD	Authority to implement	09.07.2015 - 31.12.2022

	Description	Released Budget Current Year (a)	Obligations Current Year (b)	Disbursements Current Year (c)	Expenditures Current Year (d=b+c)	Total Agreement Budget (e)	Released Budget (f)	Obligations + Disbursements (g)	Funds Available* (h=f-g)	Support Cost (i)	Total Expenditures (j=g+i)
150058-1-01-03	**2.3 Domestic LLIN production**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**
1100	Staff & Intern Consultants	0.00	0.00	0.00	0.00	9,527.94	9,527.94	9,527.94	0.00	0.00	9,527.94
1500	Local travel	(49.87)	0.00	0.00	0.00	12,772.26	12,772.26	12,822.13	(49.87)	0.00	12,822.13
1700	Nat.Consult./Staff	(1,416.01)	0.00	0.00	0.00	9,215.33	9,215.33	10,631.34	(1,416.01)	0.00	10,631.34
2100	Contractual Services	(19.46)	0.00	0.00	0.00	3,088,795.24	3,088,795.24	3,088,814.70	(19.46)	0.00	3,088,814.70
3000	Train/Fellowship/Study	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4500	Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5100	Other Direct Costs	2,361.86	0.00	0.00	0.00	2,978.34	2,978.34	616.48	2,361.86	0.00	616.48
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	312,241.32	312,241.32
150058-1-01-03	**Total**	**876.52**	**0.00**	**0.00**	**0.00**	**3,123,289.11**	**3,123,289.11**	**3,122,412.59**	**876.52**	**312,241.32**	**3,434,653.91**
150058-1-01-04	**2.4 Business model for alternatives**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**
1100	Staff & Intern Consultants	10,000.00	0.00	0.00	0.00	20,000.00	20,000.00	0.00	20,000.00	0.00	0.00
1500	Local travel	10,000.00	0.00	0.00	0.00	10,000.00	10,000.00	0.00	10,000.00	0.00	0.00
1700	Nat.Consult./Staff	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2100	Contractual Services	(13.30)	0.00	0.00	0.00	333,000.00	333,000.00	333,013.30	(13.30)	0.00	333,013.30
3000	Train/Fellowship/Study	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5100	Other Direct Costs	1,973.40	0.00	0.00	0.00	5,050.00	5,050.00	193.19	4,856.81	0.00	193.19
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33,320.65	33,320.65
150058-1-01-04	**Total**	**21,960.10**	**0.00**	**0.00**	**0.00**	**368,050.00**	**368,050.00**	**333,206.49**	**34,843.51**	**33,320.65**	**366,527.14**
150058-1-02-01	**3.1 New cultivars of neem**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**
1100	Staff & Intern Consultants	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1500	Local travel	685.71	287.57	0.00	287.57	1,364.06	1,364.06	965.92	398.14	0.00	965.92
1700	Nat.Consult./Staff	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2100	Contractual Services	11,358.59	0.00	0.00	0.00	504,722.10	504,722.10	493,363.51	11,358.59	0.00	493,363.51
4500	Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5100	Other Direct Costs	0.00	0.00	0.00	0.00	(5.51)	(5.51)	(5.51)	0.00	0.00	(5.51)
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49,432.40	49,432.40
150058-1-02-01	**Total**	**12,044.30**	**287.57**	**0.00**	**287.57**	**506,080.65**	**506,080.65**	**494,323.92**	**11,756.73**	**49,432.40**	**543,756.32**

PROJECT DELIVERY REPORT

		Project:	150058 - DEVELOPMENT AND PROMOTION OF NON-POPS ALTERNATIVE TO DDT	Project Manager:	Erlinda Galvan	Project Validity: Status:	25.06.2015 - 31.12.2022 Implement
Reporting Period:	09.07.2015 - 30.06.2021	Project Theme:	Energy and Environment	Country:	India	Region	Asia and Pacific

Sponsor Nr.	Sponsor	Grant	Grant Description	Fund	Currency	Grant Status	Grant Validity
400150	GEF - Global Environment Facility	2000003105	GFIND_150058	GF	USD	Authority to implement	09.07.2015 - 31.12.2022

	Description	Released Budget Current Year (a)	Obligations Current Year (b)	Disbursements Current Year (c)	Expenditures Current Year (d=b+c)	Total Agreement Budget (e)	Released Budget (f)	Obligations + Disbursements (g)	Funds Available* (h=f-g)	Support Cost (i)	Total Expenditures (j=g+i)
150058-1-51-01	**Project Monitoring**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**
1100	Staff & Intern Consultants	20,145.94	0.00	0.00	0.00	20,227.62	20,227.62	81.68	20,145.94	0.00	81.68
1500	Local travel	25,000.00	0.00	0.00	0.00	40,000.00	40,000.00	0.00	40,000.00	0.00	0.00
1700	Nat.Consult./Staff	46,602.11	4,906.92	33,367.80	38,274.72	164,942.28	164,942.28	108,614.89	56,327.39	0.00	108,614.89
3000	Train/Fellowship/Study	0.00	0.00	0.00	0.00	726.62	726.62	726.62	0.00	0.00	726.62
3500	International Meetings	5,000.00	0.00	0.00	0.00	10,000.00	10,000.00	0.00	10,000.00	0.00	0.00
4300	Premises	0.00	0.00	0.00	0.00	7,665.55	7,665.55	7,665.55	0.00	0.00	7,665.55
5100	Other Direct Costs	3,001.17	0.00	840.35	840.35	14,358.02	14,358.02	3,017.78	11,340.24	0.00	3,017.78
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11,810.64	11,810.64
150058-1-51-01	**Total**	**99,749.22**	**4,906.92**	**34,208.15**	**39,115.07**	**257,920.09**	**257,920.09**	**118,106.52**	**139,813.57**	**11,810.64**	**129,917.16**
150058-1-51-03	**Project Management**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**
1100	Staff & Intern Consultants	1,743.56	(0.01)	16,699.67	16,699.66	20,021.59	20,021.59	24,977.69	(4,956.10)	0.00	24,977.69
1500	Local travel	25,150.15	0.00	0.00	0.00	42,419.91	42,419.91	10,291.35	32,128.56	0.00	10,291.35
1700	Nat.Consult./Staff	41,553.02	0.00	0.00	0.00	140,394.25	140,394.25	92,001.02	48,393.23	0.00	92,001.02
2100	Contractual Services	0.00	0.00	0.00	0.00	553.89	553.89	553.89	0.00	0.00	553.89
3000	Train/Fellowship/Study	0.00	0.00	0.00	0.00	80.77	80.77	80.77	0.00	0.00	80.77
3500	International Meetings	0.00	0.00	0.00	0.00	(29.18)	(29.18)	(29.18)	0.00	0.00	(29.18)
4300	Premises	58,184.88	278.75	14,570.82	14,849.57	107,330.92	107,330.92	27,408.44	79,922.48	0.00	27,408.44
4500	Equipment	3,878.53	0.00	16.32	16.32	19,827.73	19,827.73	15,965.52	3,862.21	0.00	15,965.52
5100	Other Direct Costs	279.17	0.00	949.95	949.95	8,765.00	8,765.00	9,435.78	(670.78)	0.00	9,435.78
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18,068.64	18,068.64
150058-1-51-03	**Total**	**130,789.31**	**278.74**	**32,236.76**	**32,515.50**	**339,364.88**	**339,364.88**	**180,685.28**	**158,679.60**	**18,068.64**	**198,753.92**
150058-1-53-01	**Mid-term and Final Evaluation**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**
1100	Staff & Intern Consultants	14,000.00	1,842.88	5,717.42	7,560.30	38,000.00	38,000.00	7,560.30	30,439.70	0.00	7,560.30
1500	Local travel	30,000.00	0.00	0.00	0.00	60,000.00	60,000.00	0.00	60,000.00	0.00	0.00
1700	Nat.Consult./Staff	9,000.00	0.00	0.00	0.00	18,000.00	18,000.00	0.00	18,000.00	0.00	0.00
2100	Contractual Services	0.00	5,942.73	1,512.84	7,455.57	0.00	0.00	7,455.57	(7,455.57)	0.00	7,455.57
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,501.59	1,501.59
150058-1-53-01	**Total**	**53,000.00**	**7,785.61**	**7,230.26**	**15,015.87**	**116,000.00**	**116,000.00**	**15,015.87**	**100,984.13**	**1,501.59**	**16,517.46**

PROJECT DELIVERY REPORT

		Project:	150058 - DEVELOPMENT AND PROMOTION OF NON-POPS ALTERNATIVE TO DDT	Project Manager:	Erlinda Galvan	Project Validity: Status:	25.06.2015 - 31.12.2022 Implement
Reporting Period:	09.07.2015 - 30.06.2021	Project Theme:	Energy and Environment	Country:	India	Region	Asia and Pacific

Sponsor Nr.	Sponsor	Grant	Grant Description	Fund	Currency	Grant Status	Grant Validity
400150	GEF - Global Environment Facility	2000003105	GFIND_150058	GF	USD	Authority to implement	09.07.2015 - 31.12.2022

	Description	Released Budget Current Year (a)	Obligations Current Year (b)	Disbursements Current Year (c)	Expenditures Current Year (d=b+c)	Total Agreement Budget (e)	Released Budget (f)	Obligations + Disbursements (g)	Funds Available* (h=f-g)	Support Cost (i)	Total Expenditures (j=g+i)
2000003105	Total	362,797.56	(69,320.71)	199,256.41	129,935.70	8,300,000.00	8,300,000.00	7,774,669.52	525,330.48	777,467.14	8,552,136.66
150058	USD Total	362,797.56	(69,320.71)	199,256.41	129,935.70	8,300,000.00	8,300,000.00	7,774,669.52	525,330.48	777,467.14	8,552,136.66

* Does not include Unapproved Obligations

IX. Work Plan and Budget

VII.1 Please provide **an updated project work plan and budget** for the remaining duration of the project, as per last approved project extension. Please expand/modify the table as needed.

Outputs by Project Component	2021				2022								GEF Grant Budget Available (US$)
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Component 1 – Legislation, policy framework and institutional capacity (UNEP) **Outcome 1: Efficient system for fulfilling legal requirements at the various stages of the lifecycle of alternatives to DDT**													
Output 1.1: **Regulatory mechanisms throughout the**	☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	☐	

lifecycle of alternatives to DDT in place													
A1.1.1: Establish an inter-ministerial working group to follow and guide the implementation of the activities	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
A1.1.2: Identify the legal requirements at each stage of the lifecycle for the alternatives to DDT	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
A1.1.3 Identify gaps in the legal framework throughout the lifecycle for the alternatives to DDT	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
A1.1.4: Identify the potential for strengthening and streamlining the legal requirements at each of the stages of the lifecycle	☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	☐	
Output 1.2: **Guidance documents for producers, registration holders and users on the legal requirements for alternatives to DDT**	☒	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	
A1.2.1: Develop guidance documents for producers, registration holders and users on the legal requirements for alternatives to DDT	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	
A1.2.2: Testing by potential user of the guidance	☒	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	
A1.2.3: Finalize the guidance documents for alternatives to DDT	☒	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	
Component 2 – Alternatives to vector control (UNIDO)													
Outcome 2: Gradually decreased use of DDT on the basis of availability of locally appropriate cost-effective and sustainable alternatives bio-and botanical pesticides and LLIN as well as other alternatives to DDT ready for enhancement to large scale production													
Output 2.1: Existing Neem sheds scaled up for production of Neem- based botanical pesticides through PPP model	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐	12,538.85
A.2.1.1 Setting-up of manufacturing plant including civil construction of the facility for the commercial production of neem-based pesticides	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	
A. 2.1.2 Installation and commissioning of manufacturing plant	☐	☐	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐	
A.2.1.3. Generation of bio-efficacy and other related data for securing CIB registration of the neem-based pesticides	☐	☐	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐	
Output 2.2: One (1) pilot Bt-based bio-pesticides production facility established in the governmental sector meeting international operational standard	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐	65,837.57
A.2.2.1 Civil construction of the Bt manufacturing facility	☐	☐	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	
2.2.2 Setting up of plant (placing order, delivery,	☐	☐	☐	☐	☒	☒	☒	☒	☐	☐	☐	☐	

installation and commissioning) for commercial production of Bt based bio-pesticides													
A2.2.3 Generation of bio-efficacy and other related data for securing CIB registration of the Bt based bio-pesticides	☐	☐	☐	☒	☒	☒	☒	☒	☐	☐	☐	☐	
Output 2.3: Domestic LLIN production potential scaled up and operational at one (1) site in the governmental sector	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐	876.52
A2.3.1 LLIN Plant commissioned and fully operational	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
A2.3.2 Generation of bio-efficacy and other related data for LLIN	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐	
A2.3.3 Erection and commissioning of 2nd LLIN plant	☐	☐	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	
Output 2.4: Business model for alternatives developed, promoted and marketed	☐	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	☐	34,843.51
Outcome 3: Promotion of new dwarf cultivars with early maturity and higher limonoids yield for large scale cultivation **(UNIDO)**													
Output 3.1:New cultivars with high yielding limonoids propagated using tissue culture technology and large scale clonal propagation	☒	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	11,756.73
A3.1.6 Optimize rooting, acclimatization of field transfer of *in vitro* regenerated shoots	☐	☐	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	
A3.1.8 Multiplication by clonal propagation of selected cultivars	☐	☐	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐	
A3.1.11 Set up multi-location trials for evaluation of growth, yield and quality at 5 different agroclimatic zones viz.,1. North East (Shillong); 2. North Central (Lucknow); 3. North (Chandigarh); 4. South (Bangalore); 5. East (Bhubaneshwar)	☐	☐	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐	
A3.1.12 Develop and demonstrate agro forestry models to make neem plantation economically viable for the farmers and general public	☐	☐	☐	☐	☒	☒	☒	☒	☐	☐	☐	☐	
A3.1.13 Neem nutrient analysis	☐	☐	☐	☐	☒	☒	☐	☐	☐	☐	☐	☐	
A3.1.14 Evaluate degree of adaptation of different cultivars in 5 different agro-climatic zones.	☐	☐	☐	☒	☒	☒	☒	☐	☐	☐	☐	☐	
Component 4 - **Development and Promotion of Integrated Vector Pest Management (UNEP)**													
Output 4.1: IVPM developed, promoted and pilot tested in selected sites	☐	☐	☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	
A4.1.1: Prepare specific training modules for promoting IVPM at local level													

A4.1.2*:* Develop practical training courses for promoting IVPM in a train the trainers course													
A4.1.3: Carry out pilot training (test the training materials and adapt where necessary)	☐	☐	☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	
Component 5 - **Monitoring of project interventions and evaluation of results (UNIDO/UNEP)**													
Output 5.1: Technical reporting prepared and made available at each stage of the project	☐	☐	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐	139,813.57 (UNIDO)
Output 5.2:Project implementation management and M& E mechanism in place	☐	☐	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐	158,679.60 (UNIDO)
Output 5.3:Project Evaluation	☐	☒	☐	☒	☐	☐	☒	☐	☐	☐	☐	☐	100,984.13 (UNIDO)

X. Synergies

1. **Synergies** achieved.

The project is aimed to develop and promote non-POPs alternatives especially botanical pesticides and bio-pesticides which are biodegradable and environmentally friendly.

The project has achieved synergies with the following projects at country, regional and global level:

1. Capacity Strengthening and Technical Assistance to Least Developed Countries (LDCs) and Small Island Developing States (SIDS) in Africa for the Implementation of the Stockholm Convention National Implementation Plans (NIPs) in COMESA and SADC sub-regions -
2. Development of Production Capacity and Promotion of Neem derived Biopesticides as a Low cost and Environmentally Alternatives to Chemical Pesticides in West Africa –
3. Promotion of Neem derived Biopesticides in West Africa – , South-South Cooperation funded by the Government of India
4. Technical Support for Development and Production of Neem products as Environment Friendly Pesticides
5. Regional Network on Pesticides for Asia and the Pacific (RENPAP)
6. Production and Promotion of Neem based Pesticides as Environment Friendly Biodegradable Alternatives to Chemical Pesticides

This project will also enhance synergies between the regional WHO/UNEP DDT projects under the Demonstrating and Scaling-up of Sustainable Alternatives to DDT in Vector Management Global Programme (Global DSSA Program) to facilitate sustainable reduction and ultimately elimination of global reliance on DDT.

Stories to be shared (Optional)
Provide a brief summary of any especially interesting and impactful project results that are worth sharing with a larger audience, and/or investing communications time in, if any.

n/a at this stage

EXPLANATORY NOTE

1. **Timing & duration:** Each report covers a twelve-month period, i.e. 1 July 2020 – 30 June 2021.

2. **Responsibility:** The responsibility for preparing the report lies with the project manager in consultation with the Division Chief and Director.

3. **Evaluation:** For the report to be used effectively as a tool for annual self-evaluation, project counterparts need to be fully involved. The (main) counterpart can provide any additional information considered essential, including a simple rating of project progress.

4. **Results-based management**: The annual project/programme progress reports are required by the RBM programme component focal points to obtain information on outcomes observed.

Global Environmental Objectives (GEOs) / Development Objectives (DOs) ratings	
Highly Satisfactory (HS)	Project is expected to achieve or exceed all its major global environmental objectives, and yield substantial global environmental benefits, without major shortcomings. The project can be presented as "good practice".
Satisfactory (S)	Project is expected to achieve most of its major global environmental objectives, and yields satisfactory global environmental benefits, with only minor shortcomings.
Moderately Satisfactory (MS)	Project is expected to achieve most of its major relevant objectives but with either significant shortcomings or modes overall relevance. Project is expected not to achieve some of its major global environmental objectives or yield some of the expected global environmental benefits.
Moderately Unsatisfactory (MU)	Project is expected to achieve some of its major global environmental objectives with major shortcomings or is expected to achieve only some of its major global environmental objectives.
Unsatisfactory (U)	Project is expected not to achieve most of its major global environmental objectives or to yield any satisfactory global environmental benefits.
Highly Unsatisfactory (HU)	The project has failed to achieve, and is not expected to achieve, any of its major global environmental objectives with no worthwhile benefits.

Implementation Progress (IP)	
Highly Satisfactory (HS)	Implementation of all components is in substantial compliance with the original/formally revised implementation plan for the project. The project can be presented as "good practice".
Satisfactory (S)	Implementation of most components is in substantial compliance with the original/formally revised plan except for only few that are subject to remedial action.
Moderately Satisfactory (MS)	Implementation of some components is in substantial compliance with the original/formally revised plan with some components requiring remedial action.
Moderately Unsatisfactory (MU)	Implementation of some components is not in substantial compliance with the original/formally revised plan with most components requiring remedial action.
Unsatisfactory (U)	Implementation of most components in not in substantial compliance with the original/formally revised plan.
Highly Unsatisfactory (HU)	Implementation of none of the components is in substantial compliance with the original/formally revised plan.

Risk ratings	
Risk ratings will access the overall risk of factors internal or external to the project which may affect implementation or prospects for achieving project objectives. Risk of projects should be rated on the following scale:	
High Risk (H)	There is a probability of greater than **75%** that assumptions may fail to hold or materialize, and/or the project may face high risks.
Substantial Risk (S)	There is a probability of between **51%** and **75%** that assumptions may fail to hold or materialize, and/or the project may face substantial risks.
Moderate Risk (M)	There is a probability of between **26%** and **50%** that assumptions may fail to hold or materialize, and/or the project may face only moderate risk.
Low Risk (L)	There is a probability of up to **25%** that assumptions may fail to hold or materialize, and/or the project may face only low risks.