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## Terminal Evaluation Report

UNDP-supported, GEF-financed Project

### IMPROVEMENT OF DDT-BASED PRODUCTION OF DICOFOL AND INTRODUCTION OF ALTERNATIVE TECHNOLOGIES INCLUDING IPM FOR LEAF MITES CONTROL IN CHINA

Project Title	Improvement of DDT-based Production of Dicofol and Introduction of Alternative Technologies including IPM for Leaf Mites Control in China
GEF Project ID	2629
UNDP PIMS ID	3345
UNDP Award ID	00050191
UNDP Project ID	00061862
Region	Asia and the Pacific
Country	People's Republic of China
GEF Focal Area	Persistent Organic Pollutants (POPs)
Operational Programme	Strategic Program 1 – Strengthening Capacity for NIP Implementation
GEF Agency	United Nations Development Programme (UNDP)
Executing Agency	Ministry of Environmental Protection (MEP), People's Republic of China

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The evaluators also like to extend special appreciation to personnel of Project Management Division V of the Foreign Economic Cooperation Office, Ministry of Environmental Protection (FECO/MEP), the United Nations Development Programme (UNDP) in particular its China Country Office, and the Local Project Management Offices of the three IPM demonstration locations for their cooperation and assistance in finalizing a well-organized itinerary and meeting schedules for the evaluation mission, arranging a full spectrum and fully-represented project partners, project participants and beneficiaries for interviews and discussions, all these actions facilitated an efficient and thorough evaluation mission.

## ACRONYMS AND ABBREVIATIONS

APR	Annual Project Report
AWP	Annual Work Plan
CIO	Convention Implementation Office
CO	Country Office
CSG	County Steering Group
DDT	<i>Dichloro-diphenyl-trichloroethane</i>
EA	Executing Agency (also referred to as Implementing Partner)
FECO	Foreign Economic Cooperation Office
GEF	Global Environment Facility
GoC	Government of China
IA	Implementing Agency
IPM	Integrated Pest Management
IR	Inception Report
IW	Inception Workshop
Logframe	Logical Framework
M&E	Monitoring and Evaluation
MEP	Ministry of Environmental Protection
MIS	Management Information System
MT	Metric Ton
NATESC	National Agro-Technical Extension and Service Center, Ministry of Agriculture
NIP	National Implementation Plan
NEX	National Execution
NGO	Non-governmental Organization
NSG	National Steering Group
OP	Operational Program
PIR	Project Implementation Report
PMO	Project Management Office
POP	Persistent Organic Pollutant
PRC	People's Republic of China
ProDoc	Project Document
PT	National Dicofol Project Team
RCEES	Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences
SC	Stockholm Convention
SEPA	State Environmental Protection Administration (former of Ministry of Environmental Protection)
TE	Terminal Evaluation
TOR	Terms of Reference
TPP	Tripartite Review
TTP	Terminal Tripartite Review
UN	United Nations
UNDP	United Nations Development Programme
UNDP-CO	United Nations Development Programme Country Office
UNDP-GEF	Global Environment Facility Office of the United Nations Development Programme
USD	United States dollars

## EXECUTIVE SUMMARY

### Project Summary Table

Project Title:	Improvement of DDT-based Production of Dicofol and Introduction of Alternative Technologies including IPM for Leaf Mites Control in China			
GEF Project ID	2629		<i>At endorsement (Million USD)</i>	<i>At completion (Million USD)</i>
UNDP PIMS ID	3345	GEF financing:	6.00	6.00
UNDP Project ID	00061862			
Country	People's Republic of China	Government:	3.00	4.48
Region	Asia and the Pacific	Private Sector:	0.50	0.60
Focal Area	Persistent Organic Pollutants (POPs)	Farmers:	0.90	1.00
FA Objectives (OP/SP)		In-kind (Government, Private Sector and Farmers):	7.25	9.59
Executing Agency	Foreign Economic Cooperation Office, Ministry of Environmental Protection	Total Project Cost:	17.65	21.67
Other Partners Involved	Ministry of Agriculture	Project Document Signature (Date Project Began)		15 December 2008
		(Operational) Closing Date:	Proposed: 30 September 2012	Actual: 30 June 2013

### Brief Description of the Project

The project goal is to protect human health and the environment from the release of DDT occurring in dicofol production and consumption; and assist China to fulfill the obligations under the Stockholm Convention (SC) and benefiting global environment.

The objectives of the project are: 1) to strengthen current institutional capacity, establish an effective coordination and management mechanism and reinforce policy framework to facilitate the elimination of DDT-based dicofol, and promote alternatives; 2) to motivate the improvement of alternatives production and promote their usages, in particular, to assess and demonstrate a suite of IPM-based interventions in pilot areas covering the major crops and ecological conditions; 3) to close down all non-closed system dicofol production facilities to eliminate the use of about 2,800 MT/a of DDT as intermediate in the production of dicofol, clean-up of waste facilities, wastes and contaminated sites as appropriate; 4) to enforce the optimization, supervision and monitoring on the closed-system dicofol production plant to minimize DDT residue and control the release of POPs wastes and other pollutants

during dicofol production; and 5) to develop national program for disseminating and replicating the project achievements to achieve total elimination of the production and use of DDT-based dicofol.

To ensure sustainability of the achievements of the project, related policy framework will be reinforced by establishing or revising pertinent regulations, policies and guidance, and the capacities of policy enforcement, wastes and pesticide management, crop planting, mite monitoring and residues monitoring will be greatly strengthened. In addition, a systematic M&E plan will be carried out to monitor and evaluate the overall performance of the project and to track the prospective global environmental benefits.

### **Context and Purpose of the Evaluation**

In accordance with the United Nations Development Programme (UNDP) and the Global Environment Facility (GEF) Monitoring and Evaluation policies and procedures, a terminal evaluation (TE) is required upon completion of implementation for this full-sized UNDP support GEF-financed project. Project evaluation assesses the efficiency and effectiveness of a project in achieving its intended results. They also assess the relevance and sustainability of outputs as contributions to medium-term and long-term outcomes. The UNDP Programme and Operations Policies and Procedures (POPP): "Project evaluation assesses the performance of a project in achieving its intended results. It yields useful information on project implementation arrangements and the achievement of outputs. Project evaluation provides a basis for the evaluation of outcomes and programmes." GEF M&E Policy aims to "promote accountability for achievement of GEF objectives through the assessment of results, effectiveness, processes, and performance of the partners involved in GEF activities." It further states that "GEF results will be monitored and evaluated for their contribution to global environmental benefits." The policy enunciates that the GEF partners, in addition to conducting various other evaluations, also evaluate projects "at the end of the intervention (terminal evaluation).

The objective of this TE is to analyse the implementation of the project, to assess the effectiveness and efficiency of project achievements to deliver the stated objectives and outcomes, as well as evaluation of the project's contribution towards the implementation of China's National Implementation Plan (NIP) to the Stockholm Convention. It establishes the relevance, performance and success of the project, including sustainability of results. The evaluation also brings together and analyses best practices, specific lessons learned, and recommendations regarding strategies employed and the implementation arrangements, that may be relevant to or replicable by other projects in the country and/or countries in other parts of the world.

### **Evaluation Approach and Methods**

An overall approach and method for conducting terminal evaluation of UNDP-supported GEF-financed projects has developed overtime, the terminal evaluation involved using the following tools:

- documentation reviews
- field visits
- stakeholders interviews
- focus groups and other participatory techniques for information gathering

The terminal evaluation is to provide evidence-based information that is credible, reliable and useful. The evaluation followed a participatory and consultative approach ensuring close engagement with government counterparts, in particular the GEF operational focal point, UNDP Country Office, project team, UNDP GEF Technical Adviser based in the region and key stakeholders at national and local level, especially key stakeholders at the three Integrated Pest Management (IPM) technologies demonstration sites. The terminal evaluation conducted July – September 2013 included three stages:

**A. Evaluation Preparation.** The evaluators:

- carried out an extensive review and analysis of all relevant sources of information.
- conducted identification of sources of data and decided on data collection procedures.
- developed evaluation matrix, established an implementation plan, and prepared a detailed plan for the evaluation mission and site visits.
- prepared an Inception Report with detailed mission programme including the evaluation approach and methodology to be used.

**B. Evaluation Mission.**

- As per TORs, an evaluation mission in China took place 8-26 July 2013. An inception meeting to brief on the purpose and methodology of the TE, to obtain latest update on the project, and to finalize the mission schedules and arrangements, was held with the participation of key project stakeholders at the beginning of the mission. Participants in the inception meeting included:
  - Foreign Economic Cooperation Office (FECO) of the Ministry of Environmental Protection (MEP), Executing Agency of the project;
  - UNDP China Country Office, International Implementing Agency;
  - National Agro-Technical Extension and Service Center (NATESC) of the Ministry of Agriculture (MOA), the institute responsible for the design, overall implementation, management and evaluation of IPM technologies demonstration;
  - Technical experts from Research Center for Eco-Environmental Sciences (RCEES) of the Chinese Academy of Sciences, contracted to carry out overall monitoring of the closed-system and non-closed system production facilities.
- A meeting was held with technical experts from NATESC of MOA and the Institute of Plant Protection of the Chinese Academy of Agricultural Sciences, to discuss and access progress and achievement on the demonstration, management, and evaluation of IPM Technologies on cotton, citrus and apple, in particular, on the development and initial implementation of the national replication program on IMP technologies, and long term sustainability of IPM demonstration results.
- Field visits were made to the three demonstration sites for IPM technologies for cotton (Zhanhua County, Shandong Province), citrus (Yidu City, Hubei Province), and apple (Luochuan County, Shaanxi Province); closed-system production facility (Jiangsu Yangnong Chemical Group Co. Ltd.) and the contaminated site at one of the two non-closed system production facilities that were closed down (Great Wall Pesticide and Chemical Group in Zhangjiakou, Hebei Province). During the field visits, interviews, discussions, and focused group meetings were held with all key stakeholders involved in different capacities in the implementation and management of IPM demonstration project activities. Report on latest progress updates and additional materials received during the field visits were reviewed and analysed as an important additional data source to verify on project outputs and outcomes.
- At the conclusion of the mission, the initial findings were presented by the evaluators at a wrap-up meeting to key stakeholders including FECO/MEP, Division of Evaluation and International Consultancy of FECO/MEP, UNDP China Country Office, NATESC, representatives from the Agriculture Bureau of the three IPM demonstration sites, Vegetation Protection Central Station of the three provinces where the demonstration sites located, representative from the closed-system dicofol production facility, and Yangzhou EPB. Fruitful discussions followed the presentation with useful comments and inputs from the participants that contributed significantly to the drafting of the evaluation report.
- The evaluation team met with the GEF Operational Focal Point of China at the Ministry of Finance. OFP concluded that the project was successful noting its achievements exceeded what were planned, and pointed out that through implementation of project activities, the project

had changed consumption behaviour of pesticides consumers, raised awareness of farmers and general public on the health and safety issues of agricultural products, and generated excellent promotion in the market with only limited investment. The project has produced excellent results regardless whether it is judged from the aspect of project evaluation indicators, or from the view point of established coordination mechanism.

### C. Report Preparation

- Initial findings were discussed with FECO/MEP and UNDP.
- All updates and materials received during the mission and field visits were carefully reviewed and analysed.
- Missing information and clarifications were sought through telephone calls and email exchanges.
- All data was consolidated and a draft report prepared by the evaluators and forwarded to UNDP China Country Office to check for inaccuracies, and subsequently circulated to all project partners and key project stakeholders to go through the review process.
- Consolidated comments on the draft report received from UNDP China Country Officer were reviewed by the evaluators, and a final terminal evaluation report was finalized. An “audit trail” was included in the final report to indicate how the comments received were (or were not) addressed in the final terminal evaluation report.

As defined in the TOR, a scoring was required for the following performance criteria and sub-categories:

- **Monitoring and Evaluation:** M&E design at entry; M&E Plan Implementation; and Overall quality of M&E;
- **IA & EA Execution:** Quality of UNDP Implementation; Quality of Execution-Executing Agency; and Overall quality of implementation/Execution;
- **Assessment of Outcomes:** Relevance; Effectiveness; Efficiency; Overall Project Outcome Rating;
- **Sustainability:** Financial resources; Socio-political; Institutional framework and governance; Environmental; Overall likelihood of sustainability.

Ratings are expressed as Highly Satisfactory (HS), Satisfactory (S), Moderately Satisfactory (MS), Moderately Unsatisfactory (MU), Unsatisfactory (U) Highly Unsatisfactory (HU) for *Outcomes, Effectiveness, Efficiency, M&E and I&E Execution*; Likely (L), Moderately Likely (ML), Moderately Unlikely (MU) Unlikely (U) for *Sustainability*; and Relevant (R), Not Relevant (NR) for *Relevance*. Rating by the evaluators is reflected in the Evaluation Rating Table below.

Evaluation Rating Table			
Evaluation Ratings:			
1. Monitoring and Evaluation	Rating	2. IA& EA Execution	Rating
M&E design at entry	S	Quality of UNDP Implementation	HS
M&E Plan Implementation	HS	Quality of Execution - Executing Agency	HS
Overall quality of M&E	HS	Overall quality of Implementation / Execution	HS
3. Assessment of Outcomes	Rating	4. Sustainability	Rating
Relevance	R	Financial resources:	L
Effectiveness	HS	Socio-political:	L
Efficiency	HS	Institutional framework and governance:	L
Overall Project Outcome Rating	HS	Environmental :	L
		Overall likelihood of sustainability:	L

Note: A full explanation of the rating scale is provided in Annex VIII of the Report

## Summary of Conclusions, Recommendations and Lessons Learned

### *Main Conclusions*

The project was well-designed, with carefully thought-out strategies to address DDT-based dicofol issues. Specific project activities were formulated to achieve stated outcomes and objectives. All project activities were implemented effectively to achieve project outcomes and objectives. The activities continued to remain relevant to the project, as well as to the national priority in the elimination of DDT usage and DDT-based dicofol, which was identified in China's National Implementation Plan as high priority action.

The project's most significant achievements can be summarized as:

- Ban jointly imposed by ten ministries on production, distribution, use and import of POPs pesticides, including DDT, that became effective 17 May 2009; the closure of two non-closed system dicofol production plants and the clean-up of 1,600 tons of high-risk DDT waste that was disposed in an environmentally sound manner; and optimization of the closed-system production plant, all contributed to elimination of DDT usage, DDT release and DDT residues, and stopped DDT-based dicofol production;
- As no dicofol was produced, consumption of DDT-based dicofol consumption was also eliminated. In additions, regulations were promulgated in the three demonstration sites to prohibit the production, sale and use of dicofol, and no dicofol consumption was recorded since 2011;
- The successful introduction, demonstration and promotion of IPM technologies to substitute dicofol usage provided a viable alternative to pesticide use, resulted in significant benefits to the farmers in terms of reduced quantity and frequency of pesticide use, increased quantity and improved quality of crops, expanded market and export potential, generated increased profit. Furthermore, the elimination of dicofol use contributed to food safety, human health and the local and global environment;
- The preparation of a National Replication Program to disseminate project experience and project results, to replicate and promote IPM technologies nationwide, as well as to large varieties of crops will ensure long term sustainability of the IPM demonstration results. The project experience and results can also be shared with the few countries that still use dicofol;
- An institutional infrastructure was established, with strengthened technical and management capacity that facilitated efficient and effective project implementation. Together with the project personnel trained, knowledge and experience gained, it will form a very solid driving force and foundation to provide strong technical and management support in the implementation of the National Replication Program;
- Strong partnership of key stakeholders, in particular, the unusual cross ministerial cooperation between MEP and MOA, had fostered close cooperation, coordination and appropriate delegation that delivered efficient project management to achieving project results. The excellent performance and efforts of the Local Project Management Offices and local project team would be particularly instrumental to help promote the National Replication Program;
- Public awareness activities had generated increased awareness of farmers and general public on the risk of dicofol and pesticide on human health and the environment, it will create catalytic effect and driving force to facilitate promotion of the National Replication Program.

## Recommendations

The main recommendations of the terminal evaluation are:

Recommendation 1: Full utilization of the institutional infrastructure established and the strengthened technical and management capacity in the implementation of the National Replication Program. The valuable experience gained and know-how in effective project and financial management that have contributed to successful project implementation should be taken full advantage of by the National Replication Program.

Recommendation 2: Experience gained and the effective working mechanism in the successful implementation of the demonstration activities that contributed to efficient management and coordination efforts should be captured and properly documented, to serve as good model for other projects in China, in particular in the process of project design and implementation.

Recommendation 3: Identify effective mechanism to promote acceptance of IPM technologies by farmers. To attract wider acceptance of the National Replication Program, special efforts should be made to identify effective advocacy and public awareness programme to promote the efficacy and benefits of IPM applications.

## Lessons Learned

A summary of lessons learned is outlined below. Lessons learned are concluded based on the review of project documents, interviews with key stakeholders, and analysis of data/information collected in the course of the terminal evaluation.

- IPM technology is a viable and environmentally sustainable substitute for dicofol usage and should be effectively promoted in China.
- Careful review, thorough evaluation and analysis in economic, social, and capacity areas, and extensive consultations with the proposed demonstration sites during project formulation increase potential for successful project design and implementation.
- Appropriate infrastructure and strong project management capacity are required to ensure successful achievement of project outcomes and objectives.
- Suitable delegation of authority can contribute to efficient work and appropriate division of roles and responsibilities.
- Strong policy, management and financial support and involvement from high level government and relevant department officials and key stakeholders are contributing factors to successful project implementation.
- Proper training, strong public awareness efforts are necessary to ensure effective promotion and sustainability of demonstration results.
- Timely adaptive management measures are necessary to address issues identified, to improve efficiency and effectiveness.

# 1 INTRODUCTION

## 1.1 CONTEXT AND PURPOSE OF EVALUATION

United Nations Development Programme (UNDP) Evaluation Policy states that “Project evaluations assess the efficiency and effectiveness of a project in achieving its intended results. They also assess the relevance and sustainability of outputs as contributions to medium-term and long-term outcomes. Projects can be evaluated during the time of implementation, at the end of implementation (terminal evaluation), or after a period of time after the project has ended (ex-post evaluation). Project evaluation can be invaluable for managing for results, and serves to reinforce the accountability of project managers, Country Offices, Principal Technical Advisors, etc. Additionally, project evaluation provides a basis for the evaluation of outcomes and programmes, as well as for strategic and programmatic evaluations and Assessment of Development Results (ADRs), and for distilling lessons from experience for learning and sharing knowledge. In UNDP, project evaluations are mandatory when required by a partnership protocol, such as with the Global Environment Facility (GEF). The UNDP Programme and Operations Policies and Procedures (POPP): “Project evaluation assesses the performance of a project in achieving its intended results. It yields useful information on project implementation arrangements and the achievement of outputs. Project evaluation provides a basis for the evaluation of outcomes and programmes.”

A revised Policy on Monitoring and Evaluation was approved by the Global Environment Facility Council in November 2010. GEF M&E Policy aims to “promote accountability for achievement of GEF objectives through the assessment of results, effectiveness, processes, and performance of the partners involved in GEF activities.” It further states that “GEF results will be monitored and evaluated for their contribution to global environmental benefits.” The policy enunciates that the GEF partners, in addition to conducting various other evaluations, also evaluate projects “at the end of the intervention (terminal evaluation).”

A Mid-Term Evaluation (MTE) for this project was conducted May - July 2011, and a Mid-Term Evaluation Report was finalized in October 2011. During July to September 2013, a Terminal Evaluation (TE) was conducted in accordance with the monitoring and evaluation policies and procedures of the United Nations Development Programme and the Global Environment Facility. The TE is required for this full-sized UNDP-support GEF-financed project upon completion of implementation on 30 June 2013. The TE was commissioned by the UNDP China Country Office in June 2013 and was conducted July-September 2013 according to the guidance, rules and procedures for such evaluation as established by UNDP and GEF, as reflected in the *UNDP Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF-financed Projects*, the revised *GEF Monitoring and Evaluation Policy* approved by the GEF Council in November 2010, including the *GEF Operational Guidance for GEF Agencies in Conducting Terminal Evaluations* (GEF Evaluation Office, Evaluation Document No. 3, 2008).

The objective of the TE was to analyse the implementation of the project, to assess the effectiveness and efficiency of project achievements to deliver the stated objective and outcomes, as well as evaluation of the project’s contribution towards the implementation of China’s National Implementation Plan (NIP) to the Stockholm Convention (SC). It established the relevance, performance and success of the project, including sustainability of results. The evaluation also brought together and analysed best practices, specific lessons learned, and recommendations regarding strategies employed and the implementation arrangements, that may be relevant to or replicable by other projects in the country and/or countries in other parts of the world.

The TE provided a comprehensive and systematic account of the performance of the completed project by assessing its project design, process of implementation, achievements vis-à-vis project objectives endorsed by the GEF including any agreed changes in the objectives during project implementation, and any other results. It drew lessons that can both improve the sustainability of benefits from this project, and aids in the overall enhancement of UNDP programming. The TE built on the outcome of the MTE that was conducted May - July 2011 by the same team of evaluators, consists of one international and one national consultant. As the MTE report included lessons learned and recommendations for the remaining implementation period of the project, the TE reviewed the project's progress from Mid-Term Evaluation to operational closure of the project, and concluded whether the project as a whole have addressed and duly responded to the concerns and acted on the recommendations of the MTE by the project management team(s). The TE had four complementary purposes:

- To promote accountability and transparency, and to assess and disclose the extent of project implementation;
- To synthesize lessons that can help to improve the selection, design and implementation of future GEF financed UNDP activities;
- To provide feedback on issues that are recurrent across the portfolio and need attention, and on improvements regarding previously identified issues;
- To contribute to the overall assessment of results in achieving GEF strategic objectives aimed at global environmental benefits.

## 1.2 SCOPE AND METHODOLOGY

An overall approach and method for conducting terminal evaluation of UNDP-supported GEF-financed projects has developed overtime, as reflected in a revised UNDP Handbook on Planning, Monitoring and Evaluation for Development Results. The Handbook provides practical guidance and tools to strengthen results-oriented planning, monitoring and evaluation in UNDP. The terminal evaluation for this project involved using the following tools:

- documentation reviews
- field visits
- stakeholders interviews
- focus groups and other participatory techniques for information gathering

The terminal evaluation was to provide evidence-based information that is credible, reliable and useful. The evaluation followed a participatory and consultative approach ensuring close engagement with government counterparts, in particular the GEF operational focal point, UNDP Country Office, project team, UNDP GEF Technical Adviser based in the region and key stakeholders at national and local level, especially key stakeholders at the three Integrated Pest Management (IPM) technologies demonstration sites. The TE included three stages:

### A. **Evaluation Preparation.** The evaluators:

- carried out an extensive review and analysis of all relevant sources of information, including GEF Project Identification Form (PIF), UNDP project document, narrative or financial project reports, technical reports, Annual Project Reports (APR), Project Implementation Reports (PIR), GEF focal area tracking tools, Mid-Term Evaluation Report and other materials that could facilitate evidence-based assessment.
- conducted identification of sources of data and decided on data collection procedures.
- developed evaluation matrix, established an implementation plan, and prepared a detailed plan for the evaluation mission and site visits.

- prepared an Inception Report with detailed mission programme including the evaluation approach and methodology to be used.

#### B. Evaluation Mission.

- As per TORs, an evaluation mission in China took place 8-26 July 2013. An inception meeting to brief on the purpose and methodology of the TE, to obtain latest update on the project, and to finalize the mission schedules and arrangements was held with the participation of key project stakeholders at the beginning of the mission. Participants in the inception meeting included:
  - Foreign Economic Cooperation Office (FECO) of the Ministry of Environmental Protection (MEP), Executing Agency of the project;
  - UNDP China Country Office, International Implementing Agency;
  - National Agro-Technical Extension and Service Center (NATESC) of the Ministry of Agriculture (MOA), the institute responsible for the design, overall implementation, management and evaluation of IPM technologies demonstration;
  - Technical experts from Research Center for Eco-Environmental Sciences (RCEES) of the Chinese Academy of Sciences, contracted to carry out overall monitoring of the closed-system and non-closed system production facilities.
- A meeting was held with technical experts from NATESC of MOA and the Institute of Plant Protection of the Chinese Academy of Agricultural Sciences, to discuss and access progress and achievement on the demonstration, management, and evaluation of IPM Technologies on cotton, citrus and apple, in particular, on the development and initial implementation of the national replication program on IMP technologies, and long term sustainability of IPM demonstration results.
- Field visits were made to the three demonstration sites for IPM technologies for cotton (Zhanhua County, Shandong Province), citrus (Yidu City, Hubei Province), and apple (Luochuan County, Shaanxi Province); closed-system production facility (Jiangsu Yangnong Chemical Group Co. Ltd.) and the contaminated site at one of the two non-closed system production facilities that were closed down (Great Wall Pesticide and Chemical Group in Zhangjiakou, Hebei Province). During the field visits, interviews, discussions, and focused group meetings were held with all key stakeholders involved in different capacities in the implementation and management of IPM demonstration project activities. Report on latest progress updates and additional materials received during the field visits were reviewed and analysed as an important additional data source to verify on project outputs and outcomes.
- At the conclusion of the mission, the initial findings were presented by the evaluators at a wrap-up meeting to key stakeholders including FECO/MEP, Division of Evaluation and International Consultancy of FECO/MEP, UNDP China Country Office, NATESC, representatives from the Agriculture Bureau of the three IPM demonstration sites, Vegetation Protection Central Station of the three provinces where the demonstration sites located, representative from the closed-system dicofol production facility, and Yangzhou EPB. Fruitful discussions followed the presentation with useful comments and inputs from the participants that contributed significantly to the drafting of the evaluation report.
- The evaluation team met with the GEF Operational Focal Point of China at the Ministry of Finance. OFP concluded that the project was successful noting its achievements exceeded what were planned, and pointed out that through implementation of project activities, the project had changed consumption behaviour of pesticides consumers, raised awareness of farmers and general public on the health and safety issues of agricultural products, and generated excellent promotion in the market with only limited investment. The project has produced excellent results regardless whether it is judged from the aspect of project evaluation indicators, or from the view point of established coordination mechanism. OFP further pointed out a number of

achievements that included: a) the excellent cooperation and coordination between MOA and MEP and indication that the cooperation potential can be further enriched; b) the environmentally sound application of IPM and its further national replication with continuous financial support by MOA to ensure sustainability; and c) the global environmental benefits generated through elimination of DDT for dicofol production and ecological benefits through promotion of IPM that reduces use of highly toxic pesticides. OFP also remarked on the required high co-financing ratio at PPG stage, and the lengthy project formulation, review and approval process.

#### **D. Report Preparation**

- The initial findings were discussed with the Executing Agency, FECO/MEP and the Implementing Agency, UNDP.
- All updates and materials received during the mission and field visits were carefully reviewed and analysed.
- Missing information and clarifications were sought through telephone calls and email exchanges.
- All data was consolidated and a draft report prepared by the evaluators and forwarded to UNDP China Country Office to check for inaccuracies, and subsequently circulated to all project partners and key project stakeholders to go through the review process.
- Consolidated comments on the draft report received from UNDP China Country Officer were reviewed by the evaluators, and a final terminal evaluation report was finalized. An “audit trail” was included in the final report to indicate how the comments received were (or were not) addressed in the final terminal evaluation report.

As defined in the TOR, a scoring was required for the following performance criteria and sub-categories:

- **Monitoring and Evaluation:** M&E design at entry; M&E Plan Implementation; and Overall quality of M&E;
- **IA & EA Execution:** Quality of UNDP Implementation; Quality of Execution-Executing Agency; and Overall quality of implementation/Execution;
- **Assessment of Outcomes:** Relevance; Effectiveness; Efficiency; Overall Project Outcome Rating;
- **Sustainability:** Financial resources; Socio-political; Institutional framework and governance; Environmental; Overall likelihood of sustainability.

Ratings are expressed as Highly Satisfactory (HS), Satisfactory (S), Moderately Satisfactory (MS), Moderately Unsatisfactory (MU), Unsatisfactory (U) Highly Unsatisfactory (HU) for *Outcomes, Effectiveness, Efficiency, M&E and I&E Execution*; Likely (L), Moderately Likely (ML), Moderately Unlikely (MU) Unlikely (U) for *Sustainability*; and Relevant (R), Not Relevant (NR) for *Relevance*. Rating by the evaluators is reflected in the Evaluation Rating Table below. A Rating Scales table is included as Annex VIII.

## Evaluation Rating Table

Evaluation Ratings:			
1. Monitoring and Evaluation	Rating	2. IA& EA Execution	Rating
M&E design at entry	S	Quality of UNDP Implementation	HS
M&E Plan Implementation	HS	Quality of Execution - Executing Agency	HS
Overall quality of M&E	HS	Overall quality of Implementation / Execution	HS
3. Assessment of Outcomes	Rating	4. Sustainability	Rating
Relevance	R	Financial resources:	L
Effectiveness	HS	Socio-political:	L
Efficiency	HS	Institutional framework and governance:	L
Overall Project Outcome Rating	HS	Environmental :	L
		Overall likelihood of sustainability:	L

Note: A full explanation of the rating scale is provided in Annex VIII of the Report

### 1.3 STRUCTURE AND PROCEDURE OF EVALUATION

The structure of the evaluation is designed to engage an evaluation team consists of an international consultant and team leader (Mr. William Kwan) and a national consultant (Dr. Yang Chen), the same evaluation team members that were contracted to conduct the Mid-Term Evaluation in 2011. TE was conducted from July to September 2013 and included an evaluation mission in China for the period of 8-26 July 2013. The TE followed the Terms of Reference provided by UNDP China Country Office and approved by the Regional Technical Adviser (RTA) based in Bangkok. The evaluation team followed the UNDP *Guidance for Conducting Terminal Evaluations of UNDP-Supported, GEF-Financed Projects*, and the revised *GEF Monitoring and Evaluation Policy, 2010* in conducting evaluation. The TE involved three stages: Evaluation Preparation, Evaluation Mission, and Report Preparation, as indicated in Section 1.2 Scope and Methodology.

### 1.4 KEY ISSUES ADDRESSED

The Terminal Evaluation conducted an assessment of project performance, based against expectation set out in the Monitoring and Evaluation Indicators stipulated in the project document, which contains the Performance and Impact Indicators on project implementation along with corresponding Means of Verification. The TE analyzed the following five main criteria:

- **Relevance.** The extent to which the activities are suited to local and national development priorities and policies and to global environmental benefits to which the GEF is dedicated; the analysis includes an assessment of changes over time.
- **Effectiveness.** The extent to which the results have been achieved or how likely they are to be achieved.
- **Efficiency.** The extent to which results have been delivered with the least costly resources possible; also called cost-effectiveness or efficacy.
- **Sustainability.** The likely ability of an intervention to continue to deliver benefits for an extended period of time after completion. Projects need to be environmentally as well as financially and socially sustainable.
- **Impact:** Verifiable long-term effects produced by the intervention, intended or unintended, direct or indirect.

### 1.5 STRUCTURE OF THE EVALUATION REPORT

The structure of the evaluation report follows the Evaluation Report Outline in the Terms of Reference

as provided by UNDP China Country Office. The evaluation report contains an “Opening” page and an “Introduction” section that provide general information about the project and the terminal evaluation; a “Project Description and Development Context” section that outlines detailed information on the project; the “Findings” section analyses and assesses the project’s design and implementation, including the project’s M&E activities, as well as the levels of achievement of project results, and evaluates on the sustainability of project outcomes; conclusions, best and worse practices, lessons learned as well as actions to follow up on the project are included in the “Conclusions, Recommendations and Lessons Learned” section at the end of the report. An Executive Summary at the beginning of the terminal evaluation report summarizes all pertinent information on the terminal evaluation activities, findings, conclusions, recommendations and lessons learned.

As required by its M&E Policy, GEF stipulates that rating should be used to assess project outcomes, relevance, effectiveness and efficiency, M&E, IA and EA execution, and sustainability, an Evaluation Ratings Table, containing the evaluators’ rating applying rating scales stipulated by the TE Evaluation Guidance, is included in the Terminal Evaluation Report.

## 2 PROJECT DESCRIPTION AND DEVELOPMENT CONTEXT

### 2.1 BASIC PROJECT DATES, START AND DURATION

In the Request for CEO Endorsement/Approval document, the four-year project starting date was set at September 2008, the expected starting date for the Mid-Term Evaluation was scheduled on September 2010, and the expected completion date was September 2012. GEF CEO Endorsement was actually issued on 7 October 2008 with a stipulated grant agreement signature date not later than November 2008. The UNDP project document was fully signed on 15 December 2008 and project implementation did not start until April 2009 after an inter-ministerial implementation agreement was concluded between the Ministry of Environmental Protection (MEP) and the Ministry of Agriculture (MOA) and an Inception Workshop and first stakeholder consultation was held in April 2009. Mid-Term Evaluation was actually conducted in July 2011 and a MTE Report was finalized in October 2011. Following the recommendations of the MTE, a project extension of nine months was requested and approved, with project operational closure date extended to 30 June 2013. The Terminal Evaluation was conducted in July-September 2013. Table 1 below gives an overview of the milestone dates.

Table 1 Project Milestone Dates

Milestone	Expected Date	Actual Date
CEO Endorsement/Approval	May 2008	7 October 2008
Agency Approval Date	August 2008 / November 2008	15 December 2008
Implementation Start	September 2008 / November 2008	April 2009
Mid-Term Evaluation	September 2010	May - July 2011
Project Completion	September 2012	30 June 2013
Terminal Evaluation/Project Completion Report	March 2013	September 2013
Operational Project Closure	September 2012	30 June 2013
Financial Project Closure	September 2013	30 June 2014

At GEF CEO Endorsement, the total GEF grant approved was USD6.00 million, with USD11.65 million committed as co-financing. Co-financing committed consisted of \$4.40 million in grant (\$3 million from government, \$0.5 million from private sector, and \$0.9 million from farmers) and \$7.25 million in-kind contribution (\$3.3 million from government, \$0.8 million from private sector, \$0.45 million from NGO and \$2.7 million from farmers.)

## 2.2 PROBLEMS THAT THE PROJECT SEEKS TO ADDRESS

China started producing DDT in the 1950's, there used to be 11 producing enterprises with highest annual output reaching 21,164 tons. Large scale production and agricultural application of DDT was stopped by the State Council in 1983. Since then only two enterprises remained producing technical grade DDT and one enterprise producing DDT preparation. Since 1995, the output of technical grade DDT has been maintained at the level of 5,000 – 6,000 tons/year. The output in 2004 was 3,945 tons.

In 2004, more than 73% of total DDT production was used as intermediate for the production of dicofol. 23% was exported to Africa and Southeast Asia for malaria prevention and control, and the remaining 4% was used as additives in the manufacturing of antifouling paint.

Dicofol is a cheap acaricide with broad spectrum, excellent efficacy and is widely used for mites control on a wide variety of fruits and crops in agriculture. Dicofol has been produced in China since 1976, and there were three dicofol technical product producers registered. Production capability of dicofol was once up to 10,400 MT/a and the production output was about 3,500 MT/a in average. The two enterprises producing technical grade dicofol with non-closed system consumed about 2,800 MT/a DDT and caused the discharge of about 1,000 MT/a of DDT containing wastes. There was one enterprise basically produced with closed-system. While this enterprise did not use DDT as raw material to produce dicofol, however there was still discharge of DDT containing waste and residuals of DDT in dicofol products due to formation of DDT as intermediate during the production process, the discharge of DDT containing wastes was around 350 MT/a in the case of the production with maximum capacity. Moreover, the 10% by weight of DDT "impurity" in the dicofol products produced by these three enterprises released 350 MT/a of DDT impurity to the environment during the spraying of dicofol in 23 provinces in China. Table 2 below summarized the technical grade dicofol production in 2004:

Table 2 Technical Grade Dicofol Production in 2004

Technical grade dicofol producers	Annual Production Capacity (tons)	DDT used as intermediate in dicofol production (tons)	DDT discharge with waste (tons)	DDT residues in dicofol consumption (tons)
Plant produced with closed system	2,000	n/a	350	180
Plant No. 1 produced with non-closed system	1,600	2,000	730	120
Plant No. 2 produced with non-closed system	600	800	270	50
Total	4,200	2,800	1,350	350

In the two plants that produced with non-closed system production lines, the large volume of liquid wastes produced and accumulated in the dicofol production were not properly treated due to lack of

management control and suitable technology. In one plant, more than 400 m<sup>3</sup> (500 tons) of waste liquid with a DDT concentration higher than 0.16 g/L was collected in a glass fiber reinforced plastic pool and about 50 tons of contaminated materials containing DDT was dumped in the plant. The distance from the dumping site to the nearest farmland is less than 1,000 meters away. Moreover, the scatter, leakage and evaporation of DDT during dicofol production were not negligible. The DDT content on the ground surface in the storage warehouse was as high as 0.36 g/g, which preliminarily revealed that the storage house, workshop and waste sites were highly polluted. Similar situation was found in the other plant.

At the only enterprise that produced with closed-system, the plant spent around RMB 70 million to improve its production technology and the plant met the requirements of closed-system production process as listed in the Stock Convention. As a result, DDT was only present in the tube and kettle during dicofol production. The transmission efficiency of DDT to dicofol increased greatly. Wastes from the production were well managed and treated with special measures. Samples taken and analyzed of dicofol product, waste acid and waste water showed that DDT in all batches of dicofol products were below 0.1%, the domestic and international dicofol product standard. DDT was only present in the reaction kettle and its level in dicofol product, waste water and waste acid was below the standard, and met the requirements of closed system dicofol production process.

Although the improved production technology met the requirement of closed system production, there were still the release of DDT and other pollutants in the waste water and waste acid. The dicofol product and the workshop need to be put under strict control in order to minimize environmental risks of DDT pollution that may occur due to accident in dicofol production or due to poor operation.

### 2.3 IMMEDIATE AND DEVELOPMENT OBJECTIVES OF THE PROJECT

The project goal is to protect human health and the environment from the release of DDT occurring in dicofol production and consumption; and assist China to fulfill the obligations under the Stockholm Convention and benefiting global environment.

The objectives of the project are: 1) to strengthen current institutional capacity, establish an effective coordination and management mechanism and reinforce policy framework to facilitate the elimination of DDT-based dicofol, and promote alternatives; 2) to motivate the improvement of alternatives production and promote their usages, in particular, to assess and demonstrate a suite of IPM-based interventions in pilot areas covering the major crops and ecological conditions; 3) to close down all non-closed system dicofol production facilities to eliminate the use of about 2,800 MT/a of DDT as intermediate in the production of dicofol, clean-up of waste facilities, wastes and contaminated sites as appropriate; 4) to enforce the optimization, supervision and monitoring on the closed-system dicofol production plant to minimize DDT residue and control the release of POPs wastes and other pollutants during dicofol production; and 5) to develop national program for disseminating and replicating the project achievements to achieve total elimination of the production and use of DDT-based dicofol.

To ensure sustainability of the achievements of the project, related policy framework will be reinforced by establishing or revising pertinent regulations, policies and guidance, and the capacities of policy enforcement, wastes and pesticide management, crop planting, mite monitoring and pesticides residues monitoring will be greatly strengthened. In addition, a systematic M&E plan will be carried out to monitor and evaluate the overall performance of the project and to track the prospective global environmental benefits.

Through the implementation of the project, the production and consumption of 2,800 tons of DDT as intermediate in dicofol production will be phased out, the potential risks of 350 tons of DDT release due to residues in dicofol products and 1,350 tons released as DDT containing wastes during dicofol

production will be minimized. The demonstration of alternative technologies, especially IPM-based technology will provide China with suitable techniques and experiences for nationwide duplication and will ensure food safety. In addition, the promotion of IPM technologies and its increased awareness and acceptance among farmers will help to reduce the use of pesticides and sustain the development of the relevant crops production.

The project, together with another previously approved UNDP-supported GEF-financed project, *Alternative in DDT Usage in the Production of Anti-fouling Paints in China*, formed a comprehensive plan for China to address the total elimination of DDT used as intermediate in dicofol production and as additive in anti-fouling paints production.

#### 2.4 BASELINE INDICATORS ESTABLISHED

The project document described the baseline values of dicofol production in the two non-closed system production facilities and the one closed-system production facility. The annexes to the project document also provided details on the baseline values for IPM technologies demonstration for cotton, citrus and apple in the three demonstration sites.

#### 2.5 MAIN STAKEHOLDERS

Main stakeholders of the project were identified at project formulation stage and their respective roles in project implementation were adequately defined in the Management Arrangements section of the project document. The key stakeholders included:

- Ministry of Environmental Protection (MEP, formerly the State Environmental Protection Administration, SEPA) is the core agency for coordination of all POPs related activities in China and the national implementing agency for this project.
- Convention Implementation Office (CIO) is an inter-departmental coordination unit of MEP and is responsible for the day-to-day compliance with the Stockholm Convention in China.
- National Steering Group (NSG) is an inter-ministerial Steering Group comprises of MEP and MOA to provide overall guidance and coordination for the implementation of relevant activities and to ensure the committed inputs and contributions are available as needed.
- National Dicofol Project Team (PT), established within CIO comprises of staff from MEP and MOA, is responsible for the day-to-day management, coordination and implementation of the project activities with support of recruited consultants.
- County-level Steering Group (CSG) comprises of local Agriculture Bureau, Environmental Protection Bureau and other relevant agencies as needed. CSG is chaired by county leader and is responsible for the coordination and guidance for the implementation of demonstration activities locally, to ensure the committed inputs and contributions are available as needed, and the policies proposed in the project could be developed, promulgated and enforced effectively.
- Local Project Management Office (PMO) at the three demonstration sites is established in affiliation with CSG, the staff comes from member bureaus and is responsible for the implementation and management of IPM demonstration activities at the respective demonstration site.
- Expert Team, consultants recruited to provide technical support for the implementation of project activities
- Subcontractors are qualified subcontractors selected competitively to provide various consulting and engineering services needed for project implementation.

## 2.6 EXPECTED RESULTS

The four-year project would help China to fulfil the requirements of the Stockholm Convention. Project activities address the immediate objectives of improving closed-system dicofol production technology to meet SC standards, closing down the non-closed dicofol production facilities to eliminate the use of DDT for such production, reducing and preventing pollution of DDT around the production facilities to be closed down. Closure of the non-closed system dicofol would eliminate 2,800 MT/a of DDT used as intermediate, 170 MT/a of DDT release due to residues in dicofol products, and reduction of 1,000 MT/a DDT containing wastes released during dicofol production. Optimization of the closed-system dicofol production would minimize and control 350 MT/a of DDT containing wastes released during dicofol production and 180 MT/a DDT released to environment via the use of dicofol products with DDT impurity minimized. Effective IPM-based interventions in three income generating crops, cotton, citrus, apple, would serve as alternatives to replace dicofol usage for leaf mites control. Effective IPM technologies demonstrated and the experience gained would be disseminated and replicated nationwide.

The Project Results and Resources Framework in the project document identified the intended outcomes for each of the seven major project components: 1) Capacity and infrastructure strengthened and policy promulgated/revised, 2) IPM demonstration program implemented, 3) Non-closed system dicofol production plants closed, 4) Existing closed-system dicofol production optimized, 5) Effective monitoring and evaluation plan implemented, 6) IPM demonstration results and experience disseminated and national replication program prepared, and 7) Effective project management implemented.

China was keen on the phase-out of DDT production and use and the sound disposal of its waste so as to minimize its release to the environment and potential health risks which would not only benefit the environment of China, to help China to comply with the requirements of the Stockholm Convention on POPs, but also contributed to global environment as well as human health. Through implementation of project activities, it would reduce DDT and dicofol level in air, water, soil and agricultural products, in addition to improving local environment, it would extend significant contribution to global environment benefits in reducing the potential harm to the global ecosystem and human health. Phasing out of high toxicity and persistent pesticides, including DDT, has been identified as one of the priority actions in China's NIP, to improve food safety and the environment in China.

The experience on IPM application and replication in China could be extended to other developing countries, which is conducive to global sustainable management of POPs pesticides avoiding the environmental pollution and health risk by excessive or improper use of pesticides in the developing countries.

By eliminating production and consumption of DDT and DDT-based dicofol, the project would address the priority concerns of vulnerable groups that include female farmers and workers, reducing female farmers and their off-springs' exposure to POPs and leading to ameliorated health condition.

## 3 FINDINGS

### 3.1 PROJECT DESIGN/FORMULATION

The Project Identification Form (PIF) and the project document (ProDoc) are used as the main reference for the Terminal Evaluation. Both the PIF and ProDoc are of good quality and contain detailed, concise, and relevant baseline information and clearly define the problems to be addressed. The overall project design is considered relevant and contains sound strategies for China to address the issue of DDT used

as intermediate in the production and consumption of dicofol. The objectives of the project are well defined and elaborated. The project document outlines a very carefully thought-out and extensive array of indicative activities to achieve the intended outcomes and project objectives, with responsible parties assigned to each activity, target dates of activities clearly identified, and financial inputs earmarked.

The encompassing activities formed a comprehensive action to address DDT issues through multiple channels: capacity building, policy and enforcement intervention, production, consumption, change of pesticide usage through introduction of alternative technologies including IPM, promotion, awareness raising, a carefully defined monitoring and evaluation plan, as well as a national replication program to ensure sustainability. The strategies to address DDT used as intermediate in dicofol production were especially well formulated and well organized in that planned project activities addressed the issues from both upstream and downstream, i.e. addressing production through policy framework, closure of non-closed system dicofol production plants and optimization of the closed-system dicofol production plant; and tackling reduction and elimination of dicofol consumption through demonstrating and promoting alternatives including IPM technology to substitute dicofol usage.

### 3.1.1 Analysis of LFA/Results Framework (Project Logic/Strategy; Indicators)

The logical framework section in the project document, Project Results and Resources Framework, was not presented in the customary GEF format, it did not include elements of baseline values, project indicators, means of verification, and the risks and assumptions. Nonetheless, the logframe does outline 7 main project components. Each component is structured with its intended outputs, indicative activities that will be carried out to achieve the intended outputs, with target date and responsible parties responsible to deliver such activities, as well as financial inputs required to achieve the intended outputs. However, under Monitoring and Evaluation section in the project document, the Monitoring and Evaluation Indicators table does include the Performance and Impact Indicators and Means of Verification for each of the project components and project outputs. Therefore the Project Results and Resources Framework table when combined with the Monitoring and Evaluation Indicators table, presented a full picture on project logical framework, identified the following 7 main project outcomes that followed logically from the project objectives, despite the absence of the baseline values:

- 1) Capacity and infrastructure strengthened and policy promulgated/revised;
- 2) IPM demonstration program implemented;
- 3) Non-closed system dicofol production plants closed;
- 4) Existing closed-system dicofol production optimized;
- 5) Effective monitoring and evaluation plan implemented;
- 6) IPM demonstration results and experience disseminated and National replication program prepared; and
- 7) Effective Project management implemented.

An analysis of the intended project outcomes was performed to see whether they were “SMART” (Specific, Measureable, Achievable, Relevant, Time-bound), the results of the analysis are summarized below:

**Specific** (*outcomes must use change language, describing a specific future condition*): All 7 project outcomes are clearly identified. Each outcome contains a number of intended outputs and a series of indicative activities to achieve the outputs during project implementation or at project completion. While the description of the outcomes is general, most of the intended outputs indicated are highly specific, many of them are quantitatively or qualitatively described, which served as useful indicators for the evaluators to verify project performance and achievement of results during terminal evaluation. While Outcomes 1, 5 and 7 are less specific and more qualitative in nature, it nonetheless offers

sufficient description for the evaluators to assess whether the outputs had been achieved or the degree to which the outputs were achieved.

**Measurable** (*Results, whether quantitative or qualitative, must have measurable indicators, making it possible to assess whether they were achieved or not*): The project establishes very specific quantitative values as achievement of project objectives on the reduction of DDT used as intermediate in the production of dicofol (Outcomes 3 and 4). Through the closure of two non-closed-system dicofol production plants, and the optimization of the only one closed-system dicofol production plant, a total of 2,800 MT/a DDT usage, as well as 1,350 MT/a of DDT discharged with waste during production would be eliminated. In addition, 350 MT/a DDT residues as a result of dicofol consumption would be reduced. On the consumption side (Outcome 2), while the IPM demonstration acreage for each crop in each demonstration site was defined and was measurable, the baseline value and the amount of dicofol usage that would be reduced were however not established nor estimated, it was therefore not measurable. However, the evaluators were able to verify during evaluation field visits that consumption of dicofol at all three demonstration sites was totally eliminated.

While no quantitative value was established for Outcomes 1, 5, 6 and 7, the description of project activities and the resultant intended outputs was clear enough for the evaluators to conduct analysis and assessment, to determine the extent that project results were achieved.

**Achievable** (*Results must be within the capacity of the partners to achieve*): During project formulation, all project activities were fully discussed and consulted among key stakeholders, technical and financial resources were negotiated and committed, capacity of key project partners was properly assessed, activities to establish and strengthen infrastructure and capacity, as well as enabling policy environment were included in project components to ensure that project outcomes were practicable and achievable. It was worthwhile to note that during both project formulation and implementation, high level support from county government and relevant departments was considered to be a major contributing factor in the successful achievement of project outcomes and objectives. It is also noted that potential risk existed for the achievement of both Outcomes 4 (IPM technologies demonstration) and 6 (Preparation of national replication program). The success of demonstration and promotion of IPM technologies was subject to favourable acceptance by farmers, as it required changing their pesticides consumption behaviour, which involved critical determining factors such as low price and high efficacy in mites control. While preparation of the national replication program based on demonstration experience and results was straight forward, whether it could be favourably accepted nationwide when the replication is implemented, could not be guaranteed.

**Relevant** (*Results must make a contribution to selected priorities of the national development framework*): All project components are considered relevant to the project objectives of eliminating DDT-based dicofol usage and potential risks to human health, to improve food safety, and the larger objective of undertaking priority actions as identified in the NIP and fulfilling China's obligations under the Stockholm Convention, and remain relevant throughout the four year implementation. Outcome 3 (Closure of non-closed system dicofol production plants) and Outcome 4 (Optimization of existing closed-system dicofol production) addressing dicofol production have direct impact in achieving elimination of DDT-based dicofol production, and consequently on eliminating dicofol consumption. Outcome 2 (IPM demonstration program implemented) addresses consumption of dicofol and is therefore directly relevant to achieving elimination of DDT-based dicofol by providing alternatives when dicofol was no longer available. Outcome 6 (IPM demonstration results and experience disseminated and National Replication Program prepared) is highly relevant as it ensured the sustainability of project results, to make the substitution of DDT-based dicofol permanent and as a longer-term objective.

Outcomes 1 (Capacity and infrastructure strengthened and policy promulgated/revised), 5 (Effective monitoring and evaluation plan implemented), and 7 (Effective project management implemented) are related and essential efforts in contributing to the successful achievement project results.

**Time-bound** (*Results are never open-ended. There should be an expected date of accomplishment*): All indicative project activities required to produce the intended outputs/outcomes have been assigned a practicable implementation time schedule within the four-year project duration. The time schedules for the different outcomes are logically arranged and take into consideration the sequence each outcome needs to take place.

The Performance and Impact Indicators contained in the Monitoring and Evaluation Indicators table in the project document were used by the evaluators to assess achievement of project results. The Performance and impact indicators are also SMART based as it contained quantitative and qualitative indicators that are both relevant and achievable.

### 3.1.2 Assumptions and Risks

Assumptions and risks were not identified in the project document, however, In the PIF, while no assumptions were mentioned, it identified two areas that were subject to risk: a) unexpected outbreak of mite or other insect pests and diseases might occur when weather conditions favoured such outbreak, it was deemed necessary to develop emergence response plan, and b) closure of dicofol production would cause unemployment of workers that would necessitate retraining, corresponding compensation or resettlement when the production facilities were closed down, otherwise the activities risk being viewed as unfavourable or unacceptable outcomes, creating only negative social impact.

The risks identified in the PIF were found to be logical and practical, as IPM technologies are subject to externalities such as weather, soil conditions etc., diseases outbreak is a major influencing factor and frequent occurrence, the development of an emergence response plan would mitigate the negative impact of such incident. During project implementation, no such incident occurred.

Unemployment of workers is considered a natural risk of plant closure, it was logical at the project design stage to plan ahead to ameliorate such impact through retraining, compensation or resettlement. Such event did not arise during project implementation. One of the two non-closed system production facilities switched its dicofol production line to produce other pesticides, and subsequently ceased all operations due to local and global economic situation. The other production facility was closed down and the facility was abandoned due to local and global economic situation. The issues of workers reemployment or compensation were settled through normal employment channel and did not require intervention by the project.

### 3.1.3 Lessons from other relevant projects Incorporated into Project Design

Prior to the approval of this project, another UNDP-supported, GEF-financed project entitled *Alternatives to DDT Usage in the Production of Antifouling Paint* was approved in July 2007 with a GEF grant of USD10.365 million and co-financing of USD12.250 million from government and private sectors to eliminate the use of DDT as additive in the production of antifouling paints used mainly on fishing boats, with technically feasible, economically viable and environmentally friendly alternatives, and to establish a long-term mechanism to protect marine environment and human health from pollution of harmful antifouling systems.

The Antifouling project, together with this Dicofol project, formed a complimentary and comprehensive action to totally eliminate the remaining use of DDT in China. While implementation of the Antifouling Paint project did not start until November 2007 and there were few lessons yet at its initial

implementation stage for this Dicofol project to take into consideration, nonetheless, there were common factors included in the project design of both projects to ensure sustainability, namely, the establishment of appropriate infrastructure, the promulgation or revision of related regulations and standards to create an enabling policy and enforcement environment, and capacity strengthening. Furthermore, both projects address the DDT issues from both the production and consumption aspects.

#### 3.1.4 Planned Stakeholder Participation

Key stakeholders at the national and local level have participated actively starting with the PIF stage back in 2006. It included FECO/MEP, MOA, UNDP, technical experts at the national level, EPBs, Agriculture Bureaus, Vegetation Protection Central Stations at the provincial and county/city/village level, and farmers at the three demonstration counties. Frequent consultations with and feedbacks from key stakeholders during project formulation provided valuable inputs to identify and analyse the issues and develop strategies to address the problems. Relevant stakeholders were properly consulted to develop appropriate institutional arrangement for project implementation. Counterpart co-financing resources (funding, staff and facilities) were identified during the project formulation stage. In the project document, the roles and responsibilities of these key stakeholders were clearly defined. The participation and contributions of these key stakeholders during project formulation was strongly emphasized by many interviewees in numerous occasions during field visits. Contribution and cooperation by the key stakeholders continued during project implementation, a major factor that led to efficient implementation and effective achievement of excellent results at project completion.

#### 3.1.5 Replication Approach

During project design/formulation it was already recognized that the demonstration of alternative technologies, especially IPM based technology, would provide China with suitable techniques and experience for the duplication of the IPM applications nationwide that will ensure food safety. In addition, promotion of IPM and its increased awareness and acceptance among farmers would help to reduce the use of pesticides and sustain the development of the relevant crop production. The project document therefore clearly spelt out how it intended to promote replication by including a specific component, Component 6 Preparation of the National Replication Program, to a) verify effectiveness of sustainable alternatives, b) summarize demonstration experience for dissemination, c) develop a National Replication Program (NPR), and d) convene an international workshop to present achievements of the project, to promote the NPR, and to mobilize donor support for the implementation of the NPR.

#### 3.1.6 UNDP Comparative Advantage

Starting in 2001, UNDP had supported China to conduct investigation of the production, distribution, use, import/export and obsolete/stockpile situation of 9 POPs pesticides through a bilateral contribution by the Government of Italy. Based on the investigation and assessment, a "Strategy for Phase out of POPs Pesticides in China" was developed with valuable inputs from related ministries, national and international stakeholders and experts. The Strategy was incorporated as a part of the NIP for China to implement activities to comply with its obligations under the Stockholm Convention.

In addition, UNDP also cooperated with China to formulate and obtained approval of \$10.365 million GEF grant (and co-financing of \$12.25 million by the Government of China and the private sectors) for a project entitled "*Alternatives to DDT Usage in the Production of Antifouling Paint*" to eliminate the other significant use of DDT as additive in the production of antifouling paint by conversion to non-toxic and environmentally friendly alternatives. In addition, UNDP had participated actively and coordinated closely with all other GEF IAs and EAs and contributed significantly to the development of China's NIP

and had worked with all key national and international partners in China's efforts to reduce and eliminate the production and consumption of DDT. This project, together with the Antifouling Paint project, formed a complimentary and comprehensive action to totally eliminate the production and consumption of DDT in China.

### 3.1.7 Linkages between Project and Other Interventions within the Sector

As indicated in Section 3.1.6 UNDP Comparative Advantage above, this was the second project approved with GEF funding for China to address the issue of DDT production and usage. These were the only two remaining uses of DDT in China. While the previously approved Antifouling Paint project would address the use of DDT as additive in the production of antifouling paints, this Dicofol project would address the other use of DDT as intermediate in dicofol production. Therefore, implementation of these two projects would totally eliminate the production and usage of DDT in China.

### 3.1.8 Management Arrangements

The project document identified appropriate management arrangements and provided a detailed description of the wide range of stakeholders involved in the implementation of the project, and defined their respective roles and responsibilities. The project was implemented under the UNDP National Execution (NEX) modality with MEP assuming the Executing Agency role. Capacity of the EA and other project partners were properly assessed before finalizing the management arrangements. Management structure and Key project partners included are listed below:

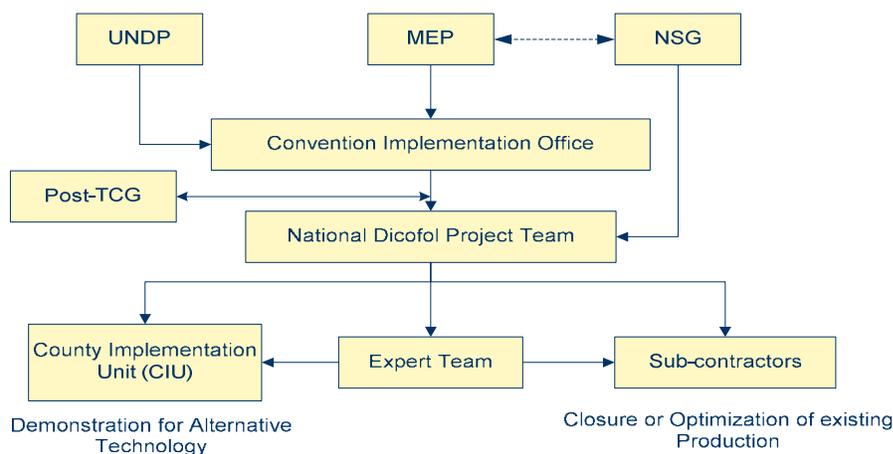


Figure 1 Project Institutional Arrangement

- Ministry of Environmental Protection (MEP, formerly the State Environmental Protection Administration, SEPA) is the core agency for coordination of all POPs related activities in China and the national implementing agency for this project.
- Convention Implementation Office (CIO) is an inter-departmental coordination unit of MEP and is responsible for the day-to-day compliance with the Stockholm Convention in China.
- National Steering Group (NSG), an inter-ministerial Steering Group comprises of MEP and MOA to provide overall guidance and coordination for the implementation of relevant activities and to ensure the committed inputs and contribution are available as needed.
- National Dicofol Project Team (PT) was established within CIO, it comprises of staff from MEP and MOA and is responsible for the day-to-day management, coordination and implementation of the project with support of recruited consultants.

- County-level Steering Group (CSG) comprises of local Agriculture Bureau, Environmental Protection Bureau and other relevant agencies as needed. CSG is chaired by county leader and is responsible for the coordination and guidance for the implementation of project activities locally, to ensure the committed inputs and contributions are available as needed, and the policies proposed in the project could be developed, promulgated and enforced effectively.
- County Implementation Unit (CIU), referred in the terminal evaluation report as Local Project Management Office (LPMO) in the three demonstration sites, was established in affiliation with CSG, the staff comes from member bureaus and is responsible for the implementation and management of IPM demonstration activities at the respective demonstration site.
- Expert Team consists of consultants recruited to provide technical support for the implementation of project activities.
- Subcontractors are qualified contractors selected competitively to provide various consulting and engineering services needed for project implementation.

UNDP as the IA, exercised overall management oversight of project implementation, as well as reviewing and approving annual work plans and budget in cooperation and coordination with the EA, FECO/MEP. UNDP bears the responsibility for project monitoring, evaluation, timely reporting by FEDO/MEP and ensuring conduct of annual financial audit and submission of audit reports to UNDP headquarters. UNDP China Country Office would be responsible for directly managing the GEF funds and would make quarterly advances to FECO/MEP and record disbursement upon receipt of quarterly expenditures reports. UNDP is ultimately financially accountable to GEF. The Regional Technical Adviser in Bangkok would provide management backstopping, trouble shooting and advisory services as necessary.

### 3.2 PROJECT IMPLEMENTATION

In the project document, the Project Results and Resources Framework table, when combined with the Monitoring and Evaluation Indicators table, outlined the indicative activities, target dates and identified financial resources from the GEF grants and co-financing required to achieve the project outcomes and objectives. The Performance and Impacts Indicators, with corresponding Means of Verification, and Responsible Parties described in the Monitoring and Evaluation Indicators table served as very useful management and M&E tools that had eventually facilitated efficient and effective project implementation, leading to successful achievement of excellent project results. Effective management arrangement at the Local Management Offices (LPMOs) level at all three demonstration sites, coupled with close coordination between national PMO and LPMOs, and strong support from high level local government and related departments, were other factors that contributed to the successful implementation of the project. Overall, all project activities had been fully and efficiently implemented, and all stated project outputs, outcomes, as well as the project objectives were successfully achieved.

#### 3.2.1 Adaptive Management

Throughout project implementation, there was minor change in project design or project outputs that required adaptive management. During annual Tripartite Review meetings, based on review of Annual Project Report (APR) of the current year and Annual Work Plan for the coming year, IA and EA employed minor adaptive management on project activities and budget to realize best management effort for the project.

In two other occasions, adaptive management was deployed. When project implementation was initiated in April 2009, there were two changed circumstances. First being that the two non-closed system dicofol production facilities had both ceased production of dicofol. One had completely ceased operation and the production facility was abandoned and was under the custody of the local EPB. While

this situation actually contributed to the aims of closing the two non-closed system production plants, the original project activities were subsequently changed to concentrate on the effective management of contaminated sites and equipment clean up, with project budget slightly adjusted to accommodate the changed project activities. The second non-closed dicofol production facility had first switched from dicofol production to production of other pesticides, and then ceased production completely. Project activities focus was also changed to address the contaminated site through conducting risk assessment and guidance on environmentally sound contaminated site clean-up.

The second situation was the imposition jointly by ten ministries of the ban on production, distribution, use and import of POPs pesticides including DDT that took effect on May 17, 2009. While the environmental situation change guaranteed that DDT would no longer be available for production and consumption and thus achieved the project objectives of eliminating DDT-based dicofol usage, it actually presented a new and different challenge. Adaptive management was made to redirect project activities to accelerate the availability of alternatives to replace dicofol usage. Therefore the success of the demonstration of IPM technologies was paramount to the sustainability of total elimination in dicofol usage, so as not to induce illegal dicofol production. The adaptive management deployed was instrumental in facilitating the successful substitution through IPM applications.

One more important adaptive management employed was the project team's response to recommendations contained in the MTE report. The recommendations in the MTE report on improving project management, making adjustments to improve financial management, and to expedite disbursements, were based on the evaluators' observation and conclusion resulting from interviews and discussions with relevant stakeholders. Concerns were expressed by LPMOs on the complicated and slow disbursement process leading to the late arrival of project funds for the PMO to undertake timely project activities, and the late procurement and delivery of alternatives needed for demonstration activities that arrived at the demonstration sites after the growing season had already started, making it a less effective application of the alternatives. Acting on the MTE recommendations, the project team at the national and local level took action and arranged to move the Annual Review Meeting from beginning of a future year to the end of the current year, so that the progress of the project on the current year could be reviewed earlier and at the same time, the Annual Work Plan and budget for the future year could already be reviewed, discussed and agreed on, to enable the ability to initiate project activities of the future year at the beginning of that year, rather than having the Annual Review Meeting held only during the first quarter of the future year, and that project activities and budget allocation could not be finalized and approved until it was well into the first quarter of the future year. The new arrangement moved project activities up by some three to four months, gaining significant head start.

Furthermore, acting on the MTE recommendations, the project team improved coordination mechanism between the national PMO and LPMOs, and amongst the LPMOs, thus facilitating better communication, encouraging technology and experience sharing. The national PMO also took proactive action to streamline its financial disbursement procedures, an integrated payment mechanism including both advance and performance-based payments was adopted, making sure that project funds were transferred to the LPMOs at the beginning of each year to make it possible to initiate demonstration activities in a timely manner.

The most significant adaptive management affecting achievement of project results was the request and approval of a nine-month extension of project completion date, from September 2012 to June 2013, as recommended in the MTE report. The main reason for the extension was to account for the fact that harvest season at the three demonstration sites for all three demonstration crops occur in December. Therefore, ending project operation in September 2012 before crop harvest season would mean that the effort and results of the third year's demonstration would not yet be available for proper analysis

and evaluation. The extension would thus allow sufficient time to gather the last year's demonstration results and training efforts, to have a more complete database for proper analysis, that would yield a more meaningful and reliable analysis of demonstration results.

The adaptive management measures undertaken catalyzed efficient project management, particularly by the Local Project Management Offices, which led to full achievement of excellent project results.

### 3.2.2 Effective Partnership Arrangements

The evaluators concluded that excellent project results achieved under the project was due largely to an efficient and effective project management arrangement. Project management was successful not just in being able to identify and bring together a number of key stakeholders (national and local government, research institutes, private sector and farmers who were both project partner and beneficiary) including the unusual cooperation between two major ministries, MEP and MOA, but that these project partners were able to foster effective cooperation and efficient coordination, and secured strong management and financial support from high level officials.

On the production side, the project worked with the private sector. The project benefited from close cooperation from the only closed-system dicofol producer, Jiangsu Yangnong Chemical Group Co. Ltd. (Yangnong) since project formulation, which continued throughout project implementation. Yangnong not only made improvements to optimize its production line at its own costs, but also committed at project completion, to strongly consider phasing out entirely its closed-system dicofol production in 2014. As the two non-closed system had ceased operation, through cooperation and coordination with local EPBs, the issue of contaminated sites and equipment were being addressed, with technical support rendered by experts from research institutes.

In terms of institutional structure, in addition to the national level infrastructure for efficient project management, the project was able to establish a strong, motivated, dedicated, technically skilled and experienced local project team, as well as a competent and well-functioning Local Project Management Office at each of the three demonstration sites. During field visits to the demonstration sites, the enthusiasm and country ownership expressed during meetings and interviews by the project teams, LPMO personnel, local Agriculture Bureau officials, local or provincial Vegetation Protection Central Stations technical experts, and county government officials, all attested to the principal factors that contributed to the excellent project management efforts, leading to successful achievement of all project results.

At both project design and project implementation, NATESC of the MOA and Institute of Plant Protection at the Chinese Academy of Agricultural Sciences had provided excellent technical guidance and support on IPM technologies demonstration. The foundation for success of IPM demonstration was the formulation of a comprehensive and practical IPM Demonstration Implementation Plan, preparation of the IPM Monitoring and Evaluation Plan and a Manual to strengthen capacity for the implementation and promotion of IPM technologies. Operating manuals were also prepared for the three different crops (cotton, citrus and apple) by technical experts at the respective provincial Vegetation Protection Central Station with intimate knowledge and experience of the local conditions. All these actions formed the basis of a well-designed plan that was prompted to successful achievement.

Most important would be the active participation of the farmers at each demonstration county/city. The farmers not only participated actively in IPM demonstration activities, attended energetically in the Field School Training on application of IPM technologies, but made both grant and in-kind co-financing contributions to the project. These farmers would be the linchpin in ensuring the sustainability of elimination of dicofol usage.

Key stakeholders had generated closed cooperation and collaboration relationship throughout project formulation and implementation. Together with the effort of holding frequent stakeholder coordination meetings that took place twice each year and rotated among the three demonstration sites, these were the most significant elements that contributed to smooth project implementation and successfully achievement of the stated project outcomes and objectives. The implementation of this project could be characterized as having an effective partnership, combined with efficient coordination and close cooperation between the EA, IA and all key project partners, all of them demonstrated strong ownership of the project.

### 3.2.3 Feedback from M&E Activities Used for Adaptive Management

Observations and feedbacks from M&E activities conducted by the project teams, EA and IA were used as basis for adaptive management. As the project did not deviate significant from its original project design and strategies, most adaptive management measures were limited to minor reallocation of project budgets, adjustment of activities timeframe, slight change of activities focus. These minor changes occurred most often as a result of the Annual Review Meeting, when the past year's progress was reviewed and future year's Annual Work Plan was discussed and approved, or following field missions conducted by the EA or IA.

Recommendations contained in the MTE report were seriously considered by the project team. All issues had been accepted and fully responded to, actions taken to address the concerns expressed. The adaptive management measures implemented had in fact improved coordination and efficiency of project management for the remaining duration of demonstration activities, contributed to successful achievement of all project outcomes and objectives.

### 3.2.4 Project Finance

The total project budget at CEO Endorsement/Approval was USD17.65 million of which \$6 million was GEF grant and \$11.65 million co-financing from the Government of China and private sector.

The project was implemented under the UNDP National Execution (NEX) modality, UNDP as the Implementing Agency transferred funds to the EA, Foreign Economic Cooperation Office of the Ministry of Environmental Protection (FECO/MEP), as quarterly advance based on estimated quarterly expenditures requirement submitted by FECO/MEP. Quarterly expenditure reports were prepared by FECO/MEP and submitted to UNDP after each quarter. Funds would be replenished for the next quarter upon submission of expenditure report for the previous quarter and estimated fund requirement for the following quarter. For every quarter, there is specific deadline for submission of quarterly expenditure report and replenishment request. The evaluators verified that in general this funding arrangement was working efficiently for both FECO/MEP and UNDP, even though deadlines for submission might not be observed at the beginning of project implementation, leading to minor delay in fund transfer, but not to the extent to delay project progress. This situation was subsequently improved and fund transferred and financial reporting was on track. The project used the UN Atlas system as its accounting and financial system, managed and monitored at UNDP China Country Office. Expenditures were recorded by project outcome (called Activity in the Atlas system), each Activity was sub-divided by individual budget line such as national consultants, contractual services, travel, subcontracts, communications etc. to distinguish the different categories of expenditures within an Activity. The Atlas system provided current information on budget and expenditures and was programmed to produce various types of reporting. At the EA side, FECO/MEP used its own financial system with established rules and regulations to keep track of project budget and expenditures. Financial management was conducted under strict supervision and monitoring. At the demonstration sites, each PMO had established dedicated bank account to

manage project funds, and used its own financial system with established financial rules and regulations to ensure appropriate financial management.

Financial management at project level was conducted based on GOC financial rules and regulations and subject to the auditing rules and procedures of the Government of China, as most project disbursements were conducted at FECO/MEP, while UNDP undertakes overall financial oversight as UNDP is financially accountable to the GEF. Annual expenditure reports (Combined Delivery Reports) prepared by UNDP were submitted to and certified by both FECO/MEP and UNDP. The project was subject to UNDP annual external audit process as and when the annual project expenditures amounted to USD300,000 or more. The CDR was one of the documents that would be audited and subsequently certified by the external auditor.

The project employed the subcontracting arrangement to implement majority of the project activities. This arrangement simplified financial management responsibilities for FECO/MEP. With the subcontracting arrangement, advance payment representing only a small percentage of the contract value would be effected to the individual or institutional subcontractors upon signature of the subcontract. Subsequent progress payments were made based on pre-defined payment schedules against certification of satisfactory completion of stipulated tasks and deliverables. This mechanism ensured timely delivery of high quality of intended outputs and that expenditures would be incurred only after satisfactory completion of an assignment. A review of the subcontracts issued were largely as originally planned in the project document and were issued to qualified individual or institutions, generally following established procurement procedures of competitive bidding. Waiver of competitive bidding only took place after review. Both waiver of competitive bidding and subcontracts exceeding an established threshold were subject to approval by an internal Contracts Committee.

Implementation of IPM demonstration activities at the three demonstration counties were delegated to the LPMOs under subcontracting arrangements with the respective Agriculture Bureau. A general review by the evaluators concluded that financial management at the three demonstration counties had been conducted in a satisfactory manner, with submission of periodic financial reporting to FECO/MEP as a precondition for effecting progress payment against the subcontract. Financial reporting was submitted separately for their management role as local PMO or for implementation of demonstration activities. Discussions during the field visits also revealed that financial management of FECO/MEP on these subcontracts had not been efficiently managed at the beginning of project implementation but had been regularized during the second half of implementation. Table 3 below outlines the financial resources and allocation for different components of the project, as well as disbursements made up to 30 June 2013, the date of project operational closure. It is noted that while the project was operationally closed as of 30 June 2013, financial commitments made up to project completion would continue to be disbursed as and when invoices were submitted. Financial closure is scheduled for 30 June 2014.

Table 3 Project Financial Framework

Project component	Activity type	GEF financing (USD)		Co-financing (USD)	
		Approved	Disbursed (30 June 2013)	Promised	Disbursed (30 June 2013)
1. Capacity building and policy making	Technical Assistance	300,000	244,898	600,000	650,002
2. Implementation of IPM demonstration program	Investment, Technical Assistance	3,500,000	3,021,354	8,300,000	1,1968,380

3. Non-closed system dicofol production facilities closed down	Technical Assistance	930,000	1,176,485	1,000,000	427,000
4. Optimization of existing closed-system dicofol production	Technical Assistance	270,000	36,000	300,000	1,200,000
5. Monitoring and evaluation plan	Technical Assistance	250,000	287,199	250,000	220,000
6. Preparation of the national replication program	Technical Assistance	300,000	216,072	300,000	380,000
7. Project management	Technical Assistance	450,000	269,337	900,000	820,000
<b>Total</b>		<b>6,000,000</b>	<b>5,251,345</b>	<b>11,650,000</b>	<b>15,665,382</b>

A review of UNDP's financial records, in particular the Combined Delivery Reports (CDRs) for the years 2009 up to 30 June 2013, indicated that total disbursement recorded for GEF grant amounted to \$5,251,345, representing disbursement rate of 88% of the total project budget. However, it is noted that as expenditure reports were submitted by FECO/MEP after a quarter was completed, the expenditures recorded in the CDR is at least one quarter behind the actual disbursement records of FECO/MEP, therefore actual disbursement made by FECO/MEP in the second quarter of 2013 had not yet be reflected in total disbursement shown in Table 3 above. It is further noted that as there were still subcontracting commitments that were pending final disbursement in view of the progressive payment procedures described in the preceding paragraphs, the remaining GEF grant would then be disbursed and all GEF grant of the USD6 million would be fully disbursed upon project financial closure.

The project has been successful in completing all planned project activities and achieving excellent project results within the allocated budget. Financial resources were used prudently and followed strictly the financial rules and regulations of both the IA (UNDP) and EA (MEP). Based on expenditure records of June 2013, the project budgets were expended more or less as planned, with slightly over-expenditure on Component 3 (Non-closed system dicofol production facilities closed down) and Component 5 (Monitoring and Evaluation Plan), and under expenditure on Component 4 (Optimization of existing closed-system production) and Component 7 (Project management). The project budget had been adjusted with reallocation to accommodate these variances. Table 4 presents the GEF grant approved and disbursed up to 30 June 2013, by project components.

The project was considered cost-effective taking into account that DDT-based dicofol was totally eliminated as a result of the ban on DDT and the closure of non-closed system production plants and optimization of closed-system dicofol production; feasible alternatives of IPM application were introduced to substitute dicofol usage, and national replication program was introduced and in fact implementation of replication was already initiated in some provinces even before the completion of this project. Through IPM promotion at the demonstration sites, the project had catalyzed interest of farmers in all three counties to attend FFS training and initiated IPM application at their own expenses. Noticeably, Yidu City Agriculture Bureau also conducted additional IPM demonstration on other crops, and with other partners. Yidu developed brand label "The Greenest" to promote green fruit produces. These additional in-kind resources leveraged by the IPM demonstration activities were another good examples of the excellent results achieved by this project.

For this project, co-financing of \$11.65 million was committed either as grant or as in-kind contributions:

- Government: \$3 million as grant and \$3.3 million as in-kind contribution;
- Private sector: \$0.5 million as grant and \$0.8 million as in-kind contribution;
- Farmers: \$0.9 million as grant and \$2.7 million as in-kind contribution; and
- NGO: \$0.45 million as in-kind contribution.

Actual co-financing received up to project completion amounted to \$15.67 million, approximately 35% more than originally committed. The cash and in-kind contributions from different project partners exceeded original commitment except the in-kind contribution from the private sector was the same amount as committed (\$0.8 million). The in-kind contribution of \$0.45 million pledged by NGO did not materialized, however the amount was amply covered by in-kind contributions from the farmers.

The project was able to attract significant cash and in-kind co-financing from national and local government (county government and Agriculture Bureau) for their strong policy, management and financial support, and from farmers largely due to the appeal and efficacy of IPM application, which proved to generate significant benefits to the livelihood of the farmers in terms of reduced quantity and frequency of pesticides use, improved quantity and quality of produces, expanded marketing potentials and export markets, resulting in increased net profit. All co-financing contributions were fully disbursed or committed for project activities implemented as of operational closure of the project, 30 June 2013. A detailed breakdown of the co-financing contributions by Government, Private Sector and Farmers are presented in Tables 5a), 5b) and 5c).

Table 4 UNDP/GEF Fund Approval and Annual Disbursement by Outcomes

Project Component	Activity Type	GEF financing (USD)						
		Approved (ProDoc)	Disbursed (2009)	Disbursed (2010)	Disbursed (2011)	Disbursed (2012)	Disbursed (Jun 2013)	Total
1. Capacity building and policy making	Technical Assistance	300,000	34,980	15,923	91,131	37,764	65,100	244,898
2. Implementation of IPM demonstration program	Investment, Technical Assistance	3,500,000	76,891	639,420	1,003,119	921,982	379,942	3,021,354
3. Non-closed system dicofol production facilities closed down	Technical Assistance	930,000	18,036	100,721	41,220	1,012,352	4,156	1,176,485
4. Optimization of existing closed-system dicofol production	Technical Assistance	270,000	-	-	7,800	24,200	4,000	36,000
5. Monitoring and evaluation plan	Technical Assistance	250,000	29,901	21,921	75,583	70,394	89,400	287,199
6. Preparation of the national replication program	Technical Assistance	300,000	-	-	-	151,512	64,560	216,072
7. Project management	Technical Assistance	450,000	73,735	42,989	8,515	111,890	32,208	269,337
<b>Total</b>		<b>6,000,000</b>	<b>233,543</b>	<b>820,974</b>	<b>1,227,368</b>	<b>2,330,094</b>	<b>639,366</b>	<b>5,251,345</b>
<b>% of total approval disbursed</b>			4%	14%	20%	39%	11%	<b>88%</b>

Table 5a) Overall Co-Financing Contributions and Disbursement:

Co-financing (Type/Sources)	IA own Financing (million US\$)		Government (million US\$)		Other Sources* (million US\$)		Total Financing (million US\$)		Total Disbursement** (million US\$)	
	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual
Grant			3.00	4.48	1.40	1.60	4.40	6.08	4.40	6.08
Credits										
Equity										
In-kind			3.30	4.89	3.95	4.70	7.25	9.59	7.25	7.26
Non-grant Instruments										
Other Types										
<b>Total</b>			<b>6.30</b>	<b>9.37</b>	<b>5.35</b>	<b>6.30</b>	<b>11.65</b>	<b>15.67</b>	<b>11.65</b>	<b>15.67</b>

\*Other Sources include contributions from Private Sector and Farmers. Please see breakdown in tables below

Table 5b) Co-financing from Other Sources: **Private Sector**

Co-financing (Type/Sources)	IA own Financing (million US\$)		Government (million US\$)		Other Sources * (million US\$)		Total Financing (million US\$)		Total Disbursement (million US\$)	
	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual
Grant					0.5	0.6	0.5	0.6	0.5	0.6
Credits										
Equity										
In-kind					0.8	0.8	0.8	0.8	0.8	0.8
Non-grant Instruments										
Other Types										
<b>Total</b>					<b>1.3</b>	<b>1.4</b>	<b>1.3</b>	<b>1.4</b>	<b>1.3</b>	<b>1.4</b>

\*Other Sources include contributions from Private Sector and Farmers.

Table 5c) Co-financing from Other Sources: *Farmers*

Co-financing (Type/Sources)	IA own Financing (million US\$)		Government (million US\$)		Other Sources * (million US\$)		Total Financing (million US\$)		Total Disbursement (million US\$)	
	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual
Grant					0.9	1.0	0.9	1.0	0.9	1.0
Credits										
Equity										
In-kind					2.7	3.9	2.7	3.9	2.7	3.9
Non-grant Instruments										
Other Types										
<b>Total</b>					<b>3.6</b>	<b>4.9</b>	<b>3.6</b>	<b>4.9</b>	<b>3.6</b>	<b>4.9</b>

\*Other Sources include contributions from Private Sector and Farmers.

### 3.2.5 Monitoring and Evaluation Design at entry and implementation (\*)

The project document stipulated that the National Dicofol Project Team was designed by the EA as the responsible party to organize M&E activities. The ProDoc contained a Monitoring and Evaluation Indicators table of six pages that outlined in detail the Performance and Impact Indicators with quantitative and qualitative values, and corresponding Means of Verification, time frame and the responsibility parties for each of the intended output under all 7 project components. It also contained a well-conceived Indicative Monitoring and Evaluation Work Plan and Corresponding Budget that listed all M&E activities for the duration of the project, with responsibility parties, budget and time frame clearly defined. Despite lacking information on baseline values, and risks and assumptions, the other detailed values (including for example, annual targets for IPM demonstration acreages) contained in these two M&E tables had served as excellent reference for the project team and other project partners to manage, monitor, and track project progress towards achieving project objectives. The monitoring indicators also served as useful checklist to aid the Mid-Term Evaluation and Terminal Evaluation to assess performance and verify achievement of project results. Oversight on financial management was managed through the quarterly advance payment and expenditure reporting process. Financial data were reviewed, verified and inputted into the UN Atlas system.

All M&E activities stipulated in the project document were effectively implemented as articulated in the Indicative Monitoring and Evaluation Work Plan, starting with the Project Inception Report. Preparation and submission of reports necessary for monitoring project progress (quarterly progress report, APR, annual PIR etc.) were duly prepared by respective responsible parties and submitted in a timely manner, after initial periods of delay at the start of project implementation due to unfamiliar with procedures. In fact, the submission of progress report by the three LPMOs was a prerequisite for effecting further payment against their subcontract for project management functions as PMO, or for implementation of IPM demonstration activities.

Annual Review Meetings were held in addition to periodic coordination meetings that took place at rotating locations among the three IPM demonstration sites with participation of all key stakeholders. Annual UNDP financial audit was conducted by qualified independent external auditing entities subcontracted by UNDP. Mid-Term Evaluation was conducted in June – July 2011 by an evaluation team consisted of one international and one national consultants who had extensive experience with GEF-financed projects. The MTE report concluded good project progress and very likely achievement of project outcomes and objectives. It noted in particular the excellent project management skills exercised by the three LPMOs. A Project Completion Report was prepared summarizing activities of the project, achievement of project results and impacts. Terminal Evaluation was initiated immediately upon completion of project. The terminal evaluation team consisted of the same international and national consultants that conducted the MTE.

The carefully executed M&E activities contributed to the timely and quality completion of all project activities, successfully achieving excellent project results. The budget for M&E activities were carefully allocated during project formulation to ensure sufficient funds to undertake all M&E activities, however, due to the many project components and project partners, and the increased frequency on coordination with the three IPM demonstration sites, the final amount incurred for M&E activities was estimated at \$287,199 at project operational completion of 30 June 2013, about 15% over the original budget amount of \$250,000. The final total amount for M&E activities would still increase a bit, as there were still disbursement pending, e.g. final payment for evaluators of TE, disbursement for international workshop to disseminate project experience, promote IPM applications and national replication etc. Final M&E expenditures exceeding the original budget would be covered by reallocation of project budgets within the different project components.

The terminal evaluation is required to compare if APR/PIR self-evaluation ratings were consistent with MTE and TE findings. In this respect, the APRs/PIRs ratings varied between Satisfactory (S) and Highly Satisfactory (HS) for different implementation year. The MTE report rated the Monitoring and Evaluation implementation Satisfactory (S). It noted that “Monitoring and evaluation was effectively carried out through periodic technical and substantial progress reports and field visits, and concluded that the detailed “monitoring and evaluation work plan served to facilitate evaluation and verification on implementation progress and achievement of anticipated outputs at various stage of project implementation.” The MTE also noted that “Timing for preparation, review and approval of progress review and progress reporting will need to be better managed and coordinated to avoid potential delay that may have negative impact on timely implementation of project activities.” The observations and recommendations of the MTE report were taken seriously by the project team and actions were immediately taken to address the issues. The result of the adaptive management could be evidenced with the much more efficient project implementation during the second half of project implementation. The evaluators determined that the variation of Satisfactory to Highly Satisfactory ratings between the APR/PIR self-evaluation ratings is generally consistent with ratings in the MTE and TE reports.

The MTE report also concluded that “M&E activities were strictly implemented by stakeholders in accordance to the Monitoring and Evaluation Plan,” and that the subcontracts signed with the LPMOs for management functions and for implementing IPM demonstration activities all included the Performance and Impact Indicators as conditions for performance of subcontracts. APR/PIRs also reported on M&E activities and at meetings and interviews during field visits of MTE and TE, stakeholders also reported on M&E activities, and in their progress reporting. Evaluators concluded that during the periodic coordination meetings and Annual Review meetings, M&E activities were discussed and shared among stakeholders. Evaluators also confirmed that recommendations contained in the MTE report were considered and actions taken that led to much more effective project implementation and towards very likely achievement of project objectives during the second half of project implementation.

The overall quality of Monitoring and Evaluation is rated **Highly Satisfactory (HS)** despite its shortcoming of not having provided information on baseline values and risk and assumptions in the project document at project design. However there were sufficient details on indicators that could be used to manage, monitor and assess project progress toward successful achievement of project results. M&E design at project entry is rated **Satisfactory (S)** for M&E design. The Satisfactory rating does not relate to the quality of the M&E plan but just for lacking explicit information on baseline values, and missing information on risk and assumptions. Otherwise a Highly Satisfactory rating would have been assigned. Rating for M&E plan implementation is rated **Highly Satisfactory** for all M&E activities that were carried out diligently and in a timely manner by all key stakeholders, in particular, the IA and EA.

### 3.2.6 UNDP and Implementing Partner Implementation/Execution (\*) Coordination and Operational Issues

UNDP as IA and FECO/MEP as EA exercised prudent and quality management actions to ensure achievement of project outcomes and objectives in a timely manner.

#### *UNDP as the International Implementing Agency (Highly Satisfactory)*

UNDP’s performance as the IA is rated **Highly Satisfactory (HS)**. UNDP China Country Office built close coordination and cooperation relationship with the EA and all key project partners, participated actively in project management, monitoring and field visits to ensure timely project implementation progress to achieving project objectives, helped to address operational and implementation issues as and when they arose and when UNDP-CO intervention was required. UNDP exercised prudent financial management and utilizing the UN Atlas system to ensure effective use of project resources. UNDP-CO organized

training sessions on project implementation, in particular on GEF and UNDP rules, regulations and procedures to facilitate efficient project implementation, project and financial management. Together with EA, UNDP-CO organized timely convening of Annual Review Meeting and other coordination meetings and assisted the EA and project team in the preparation of the Annual Project Reports and the Annual Work Plans. During both MTE and TE, UNDP-CO efficiently identified candidates and managed the recruitment of international and national consultants as evaluators, provided all relevant documents and assisted in the planning, organization and administrative arrangements of the field visits, including making all travel arrangements for the international and national consultants. UNDP-CO also participated in the field visits of the MTE, to provide supplementary information and/or clarification as and when requested by the evaluators. UNDP-CO had been regarded by key stakeholders to be an effective partner in the design and implementation of the project.

*MEP as the Executing Agency (Highly Satisfactory)*

The project was implemented under UNDP National Execution (NEX) modality and involved a wide range of stakeholder. In its role as Executing Agency, MEP was responsible for the project in general and ensured its successful implementation and quality. A National Dicofol Project team (Project Team, PT) composed of staff from MEP and MOA was established and administratively managed by FECO/MEP which is a professional office with more than 15 years' experience for the implementation of international environmental cooperation programs and for the follow-up implementation of international environmental conventions. The Project Team was responsible for the day-to-day management, coordination and implementation of the project, with support of recruited consultants.

The execution of this project by FECO/MEP is rated **Highly Satisfactory (HS)**. The project was effectively implemented by the Project Team, serving as the national Project Management Office (PMO). The project was managed by one Project Officer and a Project Associate. FECO/MEP's decision to employ the subcontracting arrangement to implement project activities had proven to be beneficial and improved project implementation efficiency, and streamlined the operational and financial management responsibilities. With the subcontracting arrangement of qualified individuals or institutions, FECO/MEP supervised and managed fewer numbers of contractors instead of large contingencies of subcontractors that were required for each and every small task. Under the subcontracting arrangement, a small percentage of the contract value was effected upon signature of a subcontract, subsequent and final payments were made based on pre-defined payment schedules against certification of satisfactory completion of tasks or stipulated deliverables. This arrangement ensured timely delivery of high quality intended outputs, large portion of expenditures were incurred only after completion and satisfactory performance of an assignment. Efficient use of project resources was thus ensured. It is noted that the project suffered a bit in terms of implementation efficiency due to the several turn-overs of the Project Officer post, as a new learning curve must be overcome before efficient implementation could resume. However, this did not impact significantly the progress of the project as a result of very efficient LPMOs that were able to keep project progress on track (see below for more detail on this comment).

Additionally, the project also engaged competent national capacity to provide technical support to project implementation. National technical experts from research and technical institutions were contracted to conduct highly specialized and technical research, studies, risk assessments, social and economic assessment, and technical supervision tasks. The national experts had delivered quality support and technical reports.

All the subcontractors and national experts were selected utilizing established procurement procedures through a competitive bidding process. While all of the subcontractors and national experts delivered excellent performance that contributed to efficient project implementation and the successful achievement of project results, two areas were worthy of special mention. First was the subcontracts

that delivered the design of a comprehensive, well thought-out overall IPM Demonstration Plan for the three crops (cotton, citrus and apple) at the three demonstration sites, an IPM Monitoring and Evaluation Plan, a Manual to establish IPM Capacity Strengthening Centres, complemented by the preparation of IPM Operating Manual for each crop by provincial technical expert at the respective demonstration sites. All these works contributed to the formulation of an excellent plan for IPM demonstration and was the necessary foundation to facilitate the successful implementation of the demonstration and promotion of IPM technologies. Second, the three LPMOs at the IPM demonstration sites were highly motivated and with strong project ownership. They were able to mobilize strong policy, management and financial support from local government and relevant departments. They also benefited from subtle competitive atmosphere to excel in performance amongst the three demonstration sites. The excellent efforts of the LPMOs were recognized as the strength of project implementation leading to delivery of excellent results on IPM demonstration. Furthermore, effective and timely communication and coordination efforts between national PMO and LPMOs also facilitated efficient project implementation.

The Highly Satisfactory rating attributed to the unusual but excellent cooperation between MEP and MOA in the design and implementation of the project, and FECO/MEP's ability to source competent subcontractors and national experts, in particular the LPMOs, to provide excellent support. The support and performance of LPMOs greatly strengthened the effectiveness of FECO/MEP's project implementation efforts. The evaluators also recognized FECO/MEP's effort to employ adaptive management to improve on project procurement after taking corrective actions on MTE recommendations, and its efforts to conduct prudent financial management.

Taking into account of the efficient performance of both the IA and the EA on implementation and execution, the rating for Overall Quality of Implementation/Execution is rated **Highly Satisfactory (HS)**.

### 3.3 PROJECT RESULTS

#### 3.3.1 Overall Results (Achievement of Objectives) (\*): Outputs and Outcomes

Through interviews and focus group discussions with project teams, project partners, key stakeholders and beneficiaries, the evaluators reached the following observation and conclusion on the timely and successful achievement of project outcomes and objectives:

The project goal is to protect human health and the environment from the release of DDT occurring in dicofol production and consumption, and assist China to fulfill the obligations under the Stockholm Convention and benefiting global environment.

The objectives of the project are: 1) to motivate the improvement of alternatives production and promote their usages, in particular, assess and demonstrate a suite of IPM-based interventions in three pilot areas covering the major crops (cotton, citrus and apple) and ecological conditions; 2) to close down all non-closed system dicofol production to eliminate the use of about 2,800 MT/a of DDT used as intermediate in the production of dicofol, 1,000 MT/a of DDT discharge with waste, and 170 MT/a of DDT residues in dicofol consumption, clean-up of waste facilities, wastes and contaminated sites as appropriate; 3) to enforce the optimization, supervision and monitoring on the closed-system dicofol production plant to reduce 350 MT/a of DDT discharge with waste, to minimize 180 MT/a of DDT residues in dicofol consumption and control the release of POPs wastes and other pollutants during dicofol production; and 4) to develop a national replication program for disseminating the project achievements, and to promote the replication of IPM technologies nationwide.

The four-year project was designed to address the DDT issues on priority basis through 7 project components, targeting on production and consumption of DDT-based dicofol, introducing alternatives

technologies, including IPM, to substitute the consumption of dicofol, and preparing a national replication program to ensure sustainability of phase-out of dicofol. The evaluators assessed project activities planned and implemented to achieve project outcomes, the level of achievement of each project outcome is outlined below.

***Outcome 1: Capacity and infrastructure strengthened and policy promulgated/ revised (Highly Satisfactory)***

Upon initiation of project activities in April 2009, an efficient infrastructure was established with a National Steering Group (NSG) at the central national level and a County Level Steering Group (CSG) at each of the three demonstration counties. Capacity for project management and coordination were strengthened through more for technical and and with provision of Relevant responsibilities and implementation of IPM were assigned to the three Offices (PMOs) through a corresponding budget project management and demonstration activities. conducted for more than 60 Environmental Monitoring Environmentally Sound



**Picture 1:** Training of technical and managerial project personnel

than 40 training sessions management personnel necessary equipment. obligations for the demonstration and training Local Project Management subcontract with allocations separately for implementation of IPM Trainings were also EPBs staff and personnel on Management of POPs

stockpiles and waste, and on policy enforcement. Throughout project implementation, regular meetings were held, including Annual Review Meetings, to coordinate, review progress, analyze barriers, develop and approve annual work plans, exchange experience, and verify sources and allocation of co-financing resources.

Experts for technical support were contracted to prepare overall implementation manuals on IPM promotion, mites monitoring, pesticide residues monitoring and to guide and provide overall supervision on IPM demonstration, mites control and pesticide residues at the three demonstration counties. Training courses were carried out in the three demonstration counties to improve institutional capacity on IPM promotion, mites control and pesticide residue detection. Summary reports on international and national experience on IPM promotion, mites control and pesticide residue monitoring and capacity development were also compiled by national experts. The reports served as useful reference for implementing and promoting IPM demonstration activities.

A ban on the production, distribution, use and import of POPs pesticides, including DDT, was issued jointly by 10 ministries that became effect 17 May 2009. Environmentally friendly alternatives for POPs were included in the list of activities encouraged by national policy. Dicofol was included as restricted materials in the 2011 Industrial Restructuring Catalogue. In addition to a series of dicofol related regulations issued during the project duration, most noticeably, new pesticide regulations to banning production, sale and use of dicofol were also promulgated in all three demonstration counties, prohibiting the production, sale and use of dicofol at the county level effective on 2008, 2010 and 2011. All project activities under this component had been effectively implemented. The established infrastructure and strengthened capacity formed the foundation for efficient project management that led to successful achievement of project outcomes and objectives.

*Outcome 2: IPM demonstration program implemented (Highly Satisfactory)*

Overall IPM Demonstration Program and Operating Manual covering three income-generating crops: cotton, citrus and apple, was developed by a qualified institution, the National Agro-Technical Extension and Service Center (NATESC) of the Ministry of Agriculture (MOA). An IPM Demonstration Project Monitoring and Evaluation Plan and a manual on establishing IPM Capacity Strengthening Centers were also prepared. These manuals were distributed to the three demonstration counties, Zhanhua County in Shandong Province for demonstration cotton, Yidu City in Hubei Province for demonstrating citrus, and Luochuan County in Shaanxi Province for demonstrating apple. The manuals were used as excellent reference to guide IPM demonstration and promotion activities, and to strengthen capacity. The manuals also served as useful tool to monitor the progress and achievement of key activities on IPM demonstration.

At the demonstration counties, specific IPM Operating Manual for each crop was prepared by technical expert from the region with intimate knowledge of the specific county and specific crop. These operating manuals were prepared with extensive consultations and through a peer review process before they were finalized, printed and distributed. Two versions of the Operating Manuals were prepared, a basic version for distribution to and use by farmers at Farmers Field School (FFS), and a technical version containing technical information on pesticides and IPM technology for distribution to technical project personnel and Trainers. During project implementation, the national experts also provided technical support and consultation on IPM demonstration on the specific crop. In each demonstration location, in addition to the establishment of Local Project Management Office (LPMO), a Mite Monitoring Center and a Pesticide Residues Monitoring Center were established.

Technicians and farmers at the demonstration counties were trained. A total of 1,600 technicians and project personnel from the Mite Monitoring Centers and Pesticide Residues Monitoring Centers were trained. Through the Training of Trainers course, a total of 854 were trained as Trainers for the Farmers Field Schools. 95,174 farmers participated in the FFS training and gained knowledge on pesticides usage and IPM technology. IPM demonstration took place at a total of 465,447.6 mu area in the three counties/city. No dicofol use was recorded in any of these demonstration counties since 2011. Visits to pesticides suppliers in the three counties by the evaluators during field missions also confirmed that there was no supply of dicofol for sale, nor was there any inquiry to buy dicofol. Therefore it was concluded that dicofol use was totally eliminated in the demonstration counties

Public awareness activities to introduce and promote IPM application were carried out, targeting farmers, suppliers of pesticides and general public, with favourable reception. Level of awareness on the harm of dicofol to human health and the environment was raised among farmers, creating a catalytic effect to attract other farmers to apply IPM application at their own costs.

Comprehensive assessment (use-efficacy, safety, economic feasibility) and evaluation of dicofol substitutes were undertaken by the Institute of Plant Protection, Chinese Academy of Agricultural Sciences.

The implementation of IPM demonstration activities at each demonstration county is provided below:



Figure 2 Location Map of Dicofol Production Plants and IPM Demonstration Counties

*Zhanhua County, Shandong Province*



Zhanhua County in Shandong Province was selected as the location for IPM demonstration for cotton. IPM demonstration was very well supported by County Government, Agriculture Bureau, EPB and relevant departments in policy, management and financial support. A Leading Group from these departments was established to provide general guidance and supervision of the IPM demonstration activities. An expert team was organized to provide technical support to implementing IPM technology

and training. Subcontract was signed between FECO/MEP and the County Government for demonstrating and promoting IPM technology, including project management functions by establishing a Local Project Management Office (LPMO) to ensure efficient project management and implementation. With the strengthening of technical, coordination and project management capacities through trainings, effective project management skills were exercised by the LPMO and project team, achieving excellent results. Frequent promotion through regular TV and radio programmes had effectively raised public awareness on dicofol phase out, and harms of dicofol to human health and the environment, and generated knowledge and acceptance of IPM technology.



Picture 2: Zhanhua County, Farmers Field School training

Demonstration activities included demonstration of various IPM applications, the establishment of a Pesticide Residues Monitoring Center, and Mite Monitoring Center at 11 locations. Through the active involvement at the national, provincial, city and county levels on the Training of Trainers (TOT) and Farmers Field School (FFS) training programme, a total of 230 Trainers and 30,365 farmers had been trained, generated knowledge and awareness on IPM applications, marketing skills and capacity strengthening.

A total of 154,406 mu of cotton fields participated in the IPM technology demonstration. Average net profit of RMB 1,765.27/mu was reported vs. RMB 1,662.36/mu for the non-demonstration plots. For the total 154,406 mu area, the three-year profit increased by RMB15.43 million for the farmers who participated in the IPM demonstration. The success of IPM demonstration also created catalytic effect



**Picture 3:** Zhanhua County, IPM demonstration for cotton

that attracted additional 250,000 mu to apply IPM application at its own costs, and generated RMB 25.72 million profit for those farmers. Total net profit for the three years (2010-2012) amounted to RMB 41.15 million. The demonstration areas covered 11 towns, 200 villages, with participation of over 1,800 families. Through demonstration, 8 types of alternatives were identified as economically viable substitute of dicofol for mites control for cotton.

In addition to issuing a series of related policies, one most important regulation was issued on 5 November 2011.

Zhanhua County Government issued the legislation to prohibit the production, sale and use of dicofol in the county that took effect 1 December 2011. While 1,250 kg. of dicofol consumption was recorded in 2010, no dicofol consumption was recorded since 2011.

In the 2011 annual financial audit by UNDP external auditors, an audit observation was reflected in the audit report on the PMO's handling of project resources, i.e. disbursements in cash which exceeded threshold that presented potential financial risk to the efficient use of project resources. The observation was acknowledged by both the Zhanhua PMO and FECO/MEP, adaptive management measure was implemented and correct procedures were followed since then.

Overall, despite this audit observation, the LPMO performed effectively with strong policy, management and financial support from Municipal Government, Agriculture Bureau, Provincial Vegetation Protection Central Station, and related departments. Throughout project formulation to project implementation, technical support was extended by the Provincial Vegetation Protection Central Station on IPM demonstration and training activities. All demonstration activities had been effectively implemented and on schedule, yielding excellent results. The excellent results were particularly evidenced with the economic benefits generated for farmers in the demonstration areas, in addition to the benefits in environment, human health and food safety areas.

To ensure sustainability, Shandong Provincial Vegetation Protection Central Station had finalized a provincial replication plan and had initialled promotion of IPM technology since 2012. Training was conducted for more than 200 participants from 130 counties, with the aim to train 30,000 person-times in 5 years.

#### *Yidu City, Hubei Province*



Yidu City in Hubei Province was selected as the demonstration city for its agriculture products for export and was famous for its citrus plantation with abundant rainfall and seasons that are most favourable for citrus plantation. Under subcontracting arrangement, Yidu City was assigned the responsibilities for demonstrating IPM technology for citrus, including the establishment of a LPMO to undertake project management function to implement day-to-day project activities. A Leading Group of high level officials from relevant departments was

organized to provide overall guidance on project implementation. An IPM Promotion Capacity Strengthening Center, a Pesticide Residue Monitoring Center and Mite Damage Monitoring Stations in 10 locations were also established to undertake respective responsibilities in connection with IPM demonstration. Through training of project personnel, the management and coordination capacities were strengthened.

IPM demonstration was established in a total area of 158,400 mu, covering 10 towns, in 127 villages, with 11,739 families participated. Field experiment was conducted to evaluate the effectiveness and efficacy of new alternative miticides and releasing predatory mites. Excellent results were achieved through efficient project management skills carried out by the LPMO, with strong policy, management and financial support from the Municipal Government, Agriculture Bureau, EPB and other relevant departments. The application of IPM had resulted in reducing the frequency and quantity of pesticide spraying. Effectiveness of diseases prevention reaches 90%, about 15-20% more effective than areas not participating in IPM demonstration. Quality of citrus had improved, the size was more even with shiny surface and had a more attractive look. Product cost was also reduced due to reduced frequency of spraying and quantity of pesticide use. The three years demonstration activities yielded an average net profit of RMB 2,223.30/mu vs. RMB 1,232.67 for non-demonstration plots. For the 158,400 mu demonstration area, total net profit for the three year (2010–2012) amounted to RMB 453 million.

In addition to demonstrating IPM technology for citrus under this project, Yidu City also applied IPM technology for tea, vegetable, peanut, corn and rice crops with its own resources, and achieved similar good results.

The Training of Trainers and the FFS training were proven effective in Yidu City. 350 trainers received training and materials to act as facilitators in the FFSs. A total of 34,649 farmers attended the FFS training, gained knowledge on mites detection and identification, pesticides use and IPM applications. Trainings were also carried out for personnel involved in selling pesticides, they were trained to introduce and promote environmentally friendly and effective alternatives to farmers. The trainings resulted in increased awareness of the harms of dicofol to environment and human health, improved knowledge on pesticides use, and better understanding and knowledge on IPM application.



Picture 5: Yidu City, Farmers Field School training

Throughout project formulation and implementation, Hubei Provincial Vegetation Protection Central Station had provided technical support to IPM demonstration and training activities and participated in effective public awareness and promotional activities

In terms of legislative measures, one particular important directive issued by Yidu City on 1 June 2010 was to prohibit the production, sale and use of dicofol that took effect 1 January 2010. Other policies included actions to promote IPM application. While only 1,000–2,000 kg. of dicofol consumption was recorded in 2010, no consumption was detected since 2011. Dicofol is no longer available in the market.



Picture 4: Yidu City, IPM demonstration for citrus

Through effective project implementation by the LPMO, all demonstration activities were full implemented and on schedule, achieving fully the project outcomes and objectives. To ensure sustainability of the excellent project results, a provincial replication plan was established. A Notice on “Investigation and application of alternative technology for citrus” was issued in January 2013. A provincial wide survey on dicofol use, and a technical training on selection of alternatives and promotion of IPM demonstration and application was launched. The provincial replication program has been initiated. The action will certainly contribute to sustainability.

#### *Luochuan County, Shaanxi Province*



Luochuan County in Shaanxi Province is known for its apple plantations, of the 640,000 mu of agricultural land in the county, 500,000 mu is apple grove. Apple produced from 20,000 mu was dedicated specially to export market. The county has set up 118 apple cooperatives to market its products, and established 48 Special Apple Sales Outlets nationwide. There is even an Apple Bureau established within the Agriculture Bureau to handle all matters relating to apple growing. It was for these

special reasons that Luochuan was selected as the demonstration county for apple. As apple is its main income-generating crop, including a major export market, the IPM demonstration project received strong support from the County Government, Agriculture Bureau, EPB and relevant departments in policy, management and financial support. Under subcontracting arrangement, Luochuan County Government was assigned the responsibilities of implementing the project activities for demonstrating IPM technology for apple, including the project management responsibilities through establishing a Local Project Management Office. To effectively perform the functions, a Leading Group was organized to provide overall guidance. An IPM Capacity Strengthening Center, a Pesticide Residue Monitoring Center and Mite Damage Monitoring Center in 15 locations were established.

Demonstration sites were established in 5 towns of Luochuan County, covering 85 administrative villages, with participation of 6,757 families for a total area of 152,641.60 mu. Field experiments were conducted to evaluate the efficacy of new alternative miticides and releasing predatory mites, including demonstration of key IPM techniques of agricultural control, mechanical control, ecological control and alternative miticides.



Picture 6: Luochuan County, IPM demonstration for apple

Excellent results were observed by the evaluators during field visits, it was reported that the three year (2010-2012) average net profit was RMB 9,161.95/mu vs. RMB 7,312.6/mu for non-demonstration plots. For the total demonstration area of 152,641.6 mu, the three year net profit amounted to RMB 1,018 million. The benefits in economical term were clearly demonstrated. The demonstration also created catalytic effect, attracting other farmers to apply IPM technologies at their own costs. An additional 60,000 mu in 2010, 150,000 mu in 2011, and 200,000 mu in 2012 were attracted to apply IPM technology. In social aspect, results reported by the PMO also supported the increase in farmer’s awareness on POPs and the harms of POPs, 95% of farmers were aware of the harms of DDT and were made aware of IPM demonstration taking place in the county. In fact, the level of decision-making of farmers in respect of pesticide was raised, close to 100% of farmers voluntarily stopped the use of dicofol. About 400-500 kg. of dicofol consumption was recorded in Luochuan in 2010, no consumption was detected since 2011.

Through effective TOT and FFS trainings, a total of 274 received technical trainings to act as Trainers in the Farmers Field Schools, a total of 30,160 successfully completed the FFS training with increased awareness on pesticide use and risks of dicofol to human health and the environment, and gained experience and knowledge in IPM application.

In February 2008, Luochuan County issued Notice to prohibit the production, sale and use of dicofol. It had since promulgated a series of related policies on pesticides and dicofol use and to promote alternative technologies including IPM application.

The PMO has demonstrated excellent project management skills in implementing all project activities on schedule, leading to achievement of outstanding project results. The excellent performance was further complemented by the strong policy, management and financial support by the County Government and relevant departments. During MTE, the PMO had outlined seven economic, social and environmental benefits from the IPM demonstration that were fully recognized by the evaluation team and were still fully relevant at project completion:

- IPM demonstration activity further enhanced the status of Luochuan County in apple products both in national and international market, with quality yield reaching above 85%;
- The introduction of new training methodologies, in the form of Training of Trainers and FFS training;
- The standards of apple growers had been raised, including their knowledge on IPM technology;
- Environmental awareness of the general public was raised;
- The quality of apple was clearly improved, all products from the demonstration sites were approved for green products for export market;
- The eco-environmental aspect of the apple orchards was clearly improved; and
- As a result of IPM demonstration and the resultant quality improvement, apple from the demonstration sites were approved for export by seven additional countries including United Kingdom, and was exempted from export inspection by UK and Canada. Export market for Luochuan apples now expands to some 20 countries in Southeast Asia and Europe.



**Picture 7:** Mr. Dang benefited from IPM application with better yield and quality apple harvested for export to markets in Europe. Source: UNDP, Photo: Luo Yi

A project article entitled “Chinese Farmers Plant a Seed for A Chemical Free Future” submitted by UNDP China Country Office for a competition in UNDP won third prize among 120 project articles submitted from 66 of its Country Offices. The article featured the successful IPM demonstration activities for apple in Luochuan County and the impacts of reduced use of dicofol and pesticides, and the benefits to the farmers and the environment.

Overall, the IPM demonstration in the three demonstration sites covered a total area of 465,447.6 mu, as compared to 450,000 mu planned. 1,600 technicians were trained to strengthen their technical and managerial capacity as compared to the indicative number of 240 in each demonstration site. 854 were successfully trained as Trainer for the Farmers Field School. 95,174 farmers successfully completed the FFS training as compared to the original plan of 90,000 farmers, and more than 30% of the FFS attendees were female. A total 2,069 Farmers Field Schools were established in the three demonstration counties. Total 3 years (2010-2012) economic benefits generated to the farmers in the three demonstration sites amounted to RMB 1,512 million. All these project results far exceeded the Performance and Impact Indicators stipulated in the project document, and fully testifies to the excellent project results achieved under this project component.

### *Outcome 3: Non-closed system dicofol production plants closed (Satisfactory)*

There were two non-closed system dicofol production plants, the Dacheng Pesticides Co. Ltd. at Zibo, Shandong Province and the Great Wall Pesticide and Chemical Group Co. Ltd. at Zhangjiakou, Hebei Province. Dacheng Pesticides Co. Ltd. stopped dicofol production and switched to production of other pesticides in March 2008. It ceased operation completely in 2010 due to market condition. The production line and equipment had undergone a general cleaning process with surface treatment, repainting and general protective work, and modified for production of other pesticides. As the facility was located in a residential area within the city, Dacheng was required to move from its location by end of 2011. Under the project, risk assessment was conducted for Dacheng, completed with recommendations on environmentally sound management of contaminated sites clean up, including addressing the waste residues and protecting underground aquifer. However, Dacheng had



**Picture 8:** Contaminated dicofol production equipment at Great Wall, Zhangjiakou, Hebei Province

not taken any concrete action for the clean-up in view of financial support that it sought from local government and local EPB. To address the clean-up of Dacheng's contaminated site, Shandong Province EPB and Zibo City EPB have conducted training and organized study tour to Chongqing City to gain experience on contaminated site management and remedial actions. As the site is sitting idle at time of project completion, it is important that closed monitoring is undertaken by local EPB and FECO/MEP to coordinate and monitor the status of action that will be taken to make sure the environmentally sound management of the contaminated materials.

DDT-based dicofol was produced by the Great Wall Pesticide and Chemical Group. Great Wall had completely stopped all production. The plant and the production equipment were abandoned and were under the custody of the local EPB, pending action for contaminated site clean-up. Expert from the Research Center for Eco-Environmental Sciences (RCEES), Chinese Academy of Sciences were contracted to conduct risk assessment and to develop measures needed to control the environmental risk of the



**Picture 9:** Environmentally sound clean-up of contaminated equipment at Great Wall



**Picture 10:** Contaminated equipment after clean-up at Great Wall Pesticide and Chemical Group

contaminated sites, including guidelines for clean-up of DDT contaminated equipment, workshop, wastes and environmentally sound management of contaminated sites. Measures for preventing and mitigating the potential environmental and health risks that arised from such clean-up and disposal operation were also developed. Through a competitive bidding, a contract was signed in 2011 with a Tianjin based waste management enterprise to undertake environmentally sound clean-up of Great Wall's contaminated site and equipment under the strict coordination, supervision and monitoring of the local EPB. Clean-up actions started in December 2011 and lasted until November 2012. In the clean-up process, the waste

management enterprise conducted training and risk assessment, researched control measures exercised by the County, identified secondary pollution prevention safety measures and emergency measures. There was no safety incident occurred throughout the clean-up process. A total of 54 truckloads containing 1,600 tons of high risk DDT waste were hauled away to Tianjin City for environmentally sound disposal. The clean-up was completed in November 2012. The entire clean-up process was supervised by the Beijing Normal University and implemented in compliance with environmental regulations. Inspection and completion reports were issued by the Tianjin City Environmental Inspection Center certifying safe disposal of contaminated materials and meeting indicators stipulated in the contract. Throughout the entire clean-up process, effective coordination was carried out by FECO/MEP with the two EPBs, Zhangjiakou City and Huailai County EPBs, in undertaking all county, city and provincial administrative procedures.

With both plants closed down, elimination of the consumption of 2,800 MT/a of DDT use as intermediate in dicofol production, 1,000 MT/a DDT discharge with waste and 170 MT/a DDT residues in dicofol consumption were fully achieved. As supply of DDT for use as intermediate was no longer available after the May 17, 2009 national ban on the production, distribution, use and import of pesticide POPs including DDT, the sustainability of the elimination is assured.

*Outcome 4: Existing closed-system dicofol production optimized (Highly Satisfactory)*

Jiangsu Yangnong Chemical Group Co. Ltd., formerly Yangzhou Pesticide Factory, located at Yangzhou, Jiangsu Province, started dicofol production in 1976 with a capacity of 800 MT/a and had subsequently increased to 2,000 MT/a capacity. In 1996, Yangnong improved its production technology to bring the purity of the production from 80% to 95%, and thus reduced the pp'-DDT content in the dicofol product from 15% down to below 0.1%, meeting FAO standard. In 2000, working with MEP and dicofol producers overseas, Yangnong changed its production line to closed-system dicofol production. While Yangnong does not use DDT as raw material to produce dicofol, there was still discharge of DDT containing waste and residues of DDT in dicofol products due to formation of DDT as intermediate during the production process.

As the only enterprise that produces with closed-system, the plant spent around RMB 70 million in 2008 to optimize its production technology and the plant met the requirements of close system production process as listed in the Stockholm Convention. As a result, DDT is only present in the tube and reaction kettle during dicofol production. The transmission efficiency of DDT to dicofol increased greatly. Wastes from the production were well managed and treated with special measures. Samples taken and analyzed of dicofol product, waste acid and waste water showed that DDT in all batches of dicofol products were below 0.1%, the domestic and international dicofol product standards, and could meet the requirements of in-situ closed-system dicofol production process. Internal and external monitoring reports in the dicofol production verified that DDT contents in the final products after the optimization process met the project requirements. The discharge of DDT-contained waste and DDT residue from the closed-system production had been continuously monitored for the last three years by independent inspection and monitoring institutes contracted by FECO/MEP to ensure the minimum DDT waste release.

During project implementation, Yangnong instituted a three-system standardized management mechanism, QEO, which combined Quality management, Environmental management and Occupational management to effectively



**Picture 11:** Trainings conducted at Yangnong closed-system production facility at Yangzhou, Jiangsu Province

monitor the waste disposal and emission of DDT in the dicofol production process. During project implementation, Yangnong had been able to comply with the requirements of the Stockholm Convention, continued to strengthen its production control, reinforced environmental management, conducted regular monitoring to ensure its DDT emission is within limit, and cooperated with inspection, monitoring and evaluation by independent entity, MEP or EPB.

As Yangnong's current production location will be subject to relocation, it has already established its relocation plan, and has already started to gradually reduce the quantity of its dicofol production since November 2012. To comply with the Stockholm Convention, Yangnong will not seek application for exemption when the current exemption expires 17 May 2014, and will close down its closed-system dicofol production line. It is recommended to coordinate with Yangnong on its final action to stop dicofol production. With Yangnong's closed-system dicofol production closed down, the long term sustainability of total elimination of dicofol will be ensured.

FECO/MEP had contracted Yangzhou City Environmental Protection Bureau where Yangnong's closed-system dicofol production plant is located to undertake supervision and monitoring of DDT release and DDT waste disposal relating to Yangnong's dicofol production activities to ensure environmentally sound chemical management. Through training on management and technical capacity, and taking into consideration the characteristic of Yangnong's dicofol production line, Yangzhou EPB had developed environmentally sound management techniques that will be used to effectively monitor the DDT emission during Yangnong's dicofol production process on a regular basis. Yangzhou EPB would also initiate public awareness campaign to increase awareness on the risks of dicofol and POPs to human health and the environment.

*Outcome 5: Effective monitoring and evaluation plan implemented (Highly Satisfactory)*

All project monitoring and evaluation activities were effectively carried out in accordance with the M&E plan and schedules contained in the project document. Required progress and annual reports (Inception, quarterly, APR, PIR etc.) were prepared and submitted on schedule. Semi-annual progress review and coordination meetings and were timely and effectively coordination among key coordination and project partners were carried coordination mechanism on between and among national substantial improved after measures were taken in recommendations in the MTE organized for supervision and activities and to provide on-resolution of issues. A review 2012 financial reports was that issue raised in the 2011 audit has not reoccurred. Report was prepared and economic and environmental results, and a pre-assessment was conducted by the EA on all 2013 project activities and all kinds of reports to make sure that they were in compliance with monitoring and evaluation requirements.



Picture 12: Monitoring and evaluation mission on inspection of pesticides suppliers

Annual Review Meetings convened, with excellent stakeholders. Frequent consultation among out, in particular, the IPM demonstration and local PMOs were adaptive management response to report. Field visits were monitoring of project site consultation and of Zhanhua County's undertaken to ensure UNDP annual financial Final Project Completion included social, impact of the project

Throughout project implementation, M&E activities were organized and participated by the EA and IA. International and national consultants were recruited by the IA to conduct MTE and TE.

*Outcome 6: IPM demonstration results and experience disseminated and National replication program prepared (Highly Satisfactory)*

The National Replication Program for IPM technology was prepared under a subcontract with NATESC, summarizing the project's excellent achievements, experience gained and the results of a survey on national situation. An inception workshop was conducted in May 2013 to kick start and promote nationwide replication of IPM technologies, with large attendance by the media. The workshop was followed by a question and answer session. Aligned with the national environmental situation, the publication of a series of articles promoting IPM technologies had been arranged with the media. Feasibility assessment was also conducted. The plan was to utilize experience gained from IPM demonstration to adopt IPM applications nationwide in all the cotton, citrus and apple producing areas through technology demonstration, training, promotion, evaluation and related supervision and inspection activities. The aim was to have IPM applications completely substituted dicofol consumption in all parts of China within a 3-5 year timeframe.



**Picture 13:** Launch of National Replication Program of IPM Technology

In the three demonstration sites, Notice had been issued in 2012 and 2013 on the Survey of dicofol use and the Demonstration and Promotion of IPM Applications as Alternative Technologies, and requested the Provincial Vegetation Protection Central Station to adopt the excellent achievements and experience of the project, and the experience gained on IPM demonstration, to promote the alternative technologies to substitute dicofol usage. Replication activities had already been initiated in the three provinces where the IPM demonstration activities took place.

An international workshop is being organized to disseminate project experience, and promote the replication plan with possibility of soliciting domestic, bilateral and multilateral financial support for its nationwide implementation.

*Outcome 7: Effective Project management implemented. (Highly Satisfactory)*

Institutional infrastructure for effective project management was established. Management, supervision and coordination capacity of project teams were strengthened through trainings and introduction of advanced management ideas and technical skills, especially for project personnel at the three Local Project Management Offices. Enabling policy environment was created through promulgation of national and local policies and regulations that prohibit the production, sale and use of dicofol. All these were key factors contributing to effective project management. FECO/MEP efficiently exercised supervision of day-to-day project implementation, effectively coordinated with the LPMOs which performed in an exceptional manner. UNDP as IA efficiently carried out overall oversight of project implementation. The combined efficient efforts of all key partners contributed to smooth and on-time implementation of all project activities, successfully achieved all project outcomes and project objectives.

Taking into consideration of the excellent achievements in all project components, rating for Overall Project Outcomes is **Highly Satisfactory (HS)**.

### 3.3.2 Relevance and Global Environmental Benefits (\*)

Rating for relevance is **Relevant (R)**. The project was deemed relevant by all the stakeholders interviewed during field visits. All the project activities were relevant to national development priorities, to the high priority actions in the NIP to reduce and eliminate DDT used as intermediate for dicofol production to improve food safety, and to the GEF-4 POPs focal area objectives to protect human health and the environment by reducing and eliminating production, use and release of POPs, and consequently contribute generally to capacity development for the sound management of chemicals. Specifically, the project was fully consistent with Strategic Program 1, Strengthening Capacity for NIP Implementation, as it would build the capacity to implement the Stockholm Convention, while building upon and contributing to strengthening the country's foundational capacities for sound management of chemicals.

The project was formulated to eliminate and reduce DDT usage, discharge and waste released due to dicofol production and DDT residues in dicofol consumption through a series of well-defined project activities to a) optimize closed-system dicofol production technology to meet Convention standards, b) close down non-closed system dicofol production to eliminate the use of DDT as intermediate in such production, and c) to encourage and reduce the usage of DDT-based dicofol, the effectiveness of alternatives including IPM-based interventions to replace dicofol for leaf mites control would be demonstrated and verified in three representative counties. This project, together with another project approved with GEF funding, *Alternatives to DDT Usage in the Production of Antifouling Paint*, collectively form China's comprehensive action to achieve total reduction of DDT usage in dicofol and antifouling paint production, to minimize the release and potential risk of DDT that cause harm to the local and global ecosystem and human health, and to comply with the requirements of the Stockholm Convention on POPs. The elimination and reduction of DDT usage is identified as the long-term strategy and priority action in China's NIP.

This project, especially taking into account the combined action with the Antifouling Paint project, was found to be of continuous relevant to China's strategy to address DDT issues, in particular taking into account action already taken by China to ban the production, distribution, use and import of pesticide POPs, including DDT, imposed as of May 17, 2009. In fact, the early ban on DDT would prohibit the continued production and the availability of DDT-based dicofol in the market, making this project more relevant in taking expeditious actions to introduce, demonstrate, and promote alternative technologies, in particular IPM technology, to substitute dicofol usage. With the ban on DDT and non-availability of dicofol, alternatives to dicofol needed to be introduced, acceptance by the farmers must be secured and the benefits of applying IPM technology needed to be communicated to the farmers at an early stage.

Field visits to the demonstration counties during MTE and TE confirmed excellent achievements resulting from the promotion of IPM applications, the Training of Trainers (TOT) programme and the Farmers Field School (FFS) trainings. The benefits of reduced quantity and frequency of pesticides usage, increased quantity and improved quality of produces, increased market and export potential, and increased net profit all were major factors leading to the project's successful achievement of project objectives. The project design also included a component to prepare a national replication program of IPM applications as a following up action, this project component will ensure sustainability of project results, and is significantly relevance to China's NIP strategy.

The project strategies, planned activities and expected outcomes contained in the original project design all remain valid despite slight change in economic and environmental circumstances after 4 years of project implementation. In fact they were particularly relevant following the ban on DDT imposed earlier than was anticipated in the ProDoc. The various types of planned project activities were relevant to the country's plan to promote IPM nationwide to many areas and for many crops, and would

generate significant benefits to the agriculture sector in the country, and the local and global environment. In fact, replication actions were already initiated in different locations in the country even before project activities was completed in June 2013.

### 3.3.3 Effectiveness and Efficiency (\*)

#### *Effectiveness*

Effectiveness of the project is rated **Highly Satisfactory (HS)**. The project goal was to eliminate and reduce consumption of DDT-based dicofol that causes harms to the environment and human health as a result of release and discharge as waste in the production process, and as residue in dicofol consumption. To achieve the project goal, the project design encompassed project activities to address production and consumption, supplemented with capacity strengthening, policy and legislative actions. To encourage reduction in consumption of dicofol, alternative technologies, in particular IPM applications were demonstrated in three selected counties for three income-generating crops: cotton, apple and citrus. The evaluators concluded, based on results of the Mid-Term Evaluation and Terminal Evaluation, that the early imposition of ban on the production, distribution, use and import of DDT, together with the closure of two non-closed system dicofol production plants and the optimization of the closed-system production plant, had in effect stopped the supply of DDT for the production of DDT-based dicofol, and its availability in the market, thus achieving the project objectives to eliminate DDT-based dicofol consumption.

To address the non-availability of dicofol for leaf mites control, the project included major effort to introduce and demonstrate IPM technology in three selected counties for three income-generating crops: cotton, apple and citrus. Field visits conducted for the MTE and TE confirmed that all demonstration activities were efficiently implemented with excellent achievements in all three counties, and indication of very positive outcomes for the participating farmers in terms of reduced quantity and frequency of pesticides usage, increased quantity and improved quality of produces, better market and export opportunities, and increased profit, and had catalysed more farmers to apply IPM application at their own initiative and at their own costs. The success also led the way to a positive reception of the national replication program based on the excellent results and experience of the IPM demonstration. In fact, the replication program was already initiated in different locations of the country even prior to completion of the project.

The project has also built up an excellent national and local institutional infrastructure, with strengthened capacity for effective project management, coordination, promotion of IPM application, mites and residues monitoring, sound chemical management of POPs stockpiles and wastes, and policy and enforcement framework. All project outcomes and the project objectives have been fully and successfully achieved.

#### *Efficiency*

The rating for project efficiency is **Highly Satisfactory (HS)**. The subcontracting arrangement with qualified individuals and institutions to undertake project activities has proven to be efficient and effective, facilitating on-schedule implementation of project activities with quality inputs from stakeholders resulting in high efficiency project implementation. Review of reports and outputs produced by individuals and institutions subcontractors during MTE and TE confirmed the high quality of their deliverables. The subcontracting arrangement released FECO/MEP of the responsibilities in managing the day-to-day implementation activities of a large number of contracts. Instead, day-to-day management would be performed by the subcontractors and FECO/MEP only needed to review, evaluate and accept periodic deliverables with minimum supervision. The phased payment mechanism also facilitated efficient financial management. Efficiency also resulted from the exceptional

performance of the three LPMOs at the demonstration sites in delivering on-time implementation of project activities with quality inputs from stakeholders. FECO/MEP was able to mobilize national experts from reputable and qualified institutions to provide strong technical support that also contributed to high efficiency.

Efficiency was also evidenced from the extensive policy, management and financial support extended by national and county governments, Agriculture Bureau, EPBs, relevant departments and local PMOs as reflected in the amount of co-financing actually received at project completion. Actual co-financing received was 35% more than amount committed at CEO Endorsement/Approval. In addition, the project was able to complete all project activities within the approved GEF grant.

#### 3.3.4 Country Ownership

As already mentioned in sections above, the project design and objectives were relevant to national development priorities and was identified as high priority actions in the China NIP to reduce and eliminate DDT usage to improve food safety and the environment, and to comply with China's obligations under the Stockholm Convention. Strong country ownership could be first evidenced by the strong policy, management and financial support and involvement by high level officials of the national and county governments, MOA, Agriculture Bureaus, EPBs and related departments. The high level support and involvement was extended throughout project identification, formulation, design and implementation. The combined amount of co-financing was well exceeded the original amount committed. Furthermore, in addition to national policies, policies and regulations were promulgated at the three demonstration counties, Zhanhua County in Shandong Province (effective December 2011), Yidu City in Hubei Province (effective January 2010) and Luochuan County in Shaanxi Province (effective February 2008), to prohibit the production, sale, and use of dicofol. While the policies covered only limited geographical locations, the national replication program will no doubt utilize the valuable experience from the demonstration program to promote legislative measures nationwide to generate positive effort to ensure sustainability of project results.

In addition, the project also received strong involvement and support from private enterprises and farmers, who are both project partners as well as project beneficiaries. The extent of their financial and participative support was evidenced by their sharing of co-financing exceeding the original commitment. Besides early involvement starting from project formulation, the private sector was very supportive and cooperative during project implementation and committed to the objectives of the project and contributed to the successful achievement of the project results. In fact, the closed-system production plant, in addition to optimizing its dicofol production facility at its own financing, had also committed to cease production of dicofol as of 2014. Without dicofol produced for the market, the long-term sustainability of dicofol phase out is ensured.

#### 3.3.5 Mainstreaming

##### *Gender and Development*

The project contributed to the mainstreaming of UNDP priorities in areas of gender equity and sustainable livelihoods. While it is noted that the project design did not include explicit activities on gender issues, however, gender issues were taken into account in project implementation especially in the IPM demonstration activities. With large majority of farmers of the demonstration crops (cotton, citrus and apple) being female, and large percentage of them were eager participants of the FFS training, the demonstration and training activities greatly benefited and impacted on female farmers. Furthermore, as IPM technologies reduced the quantity and frequency of pesticides usage, thus contributing to reducing the negative health impact on the human health of females farmers and their off-springs, in addition to benefitting the environment.

### *Poverty Eradication*

As the IPM demonstration activities targeted farmers of cotton, citrus, and apple, the major income-generating crops in the three demonstrating sites, it promoted sustainable livelihoods through reduced quantity and frequency of pesticides usage, improved quantity and quality of produces, expanded market possibility and export potential, thus generated increased net profit that positively benefited the farmers' sustainable livelihoods. The benefits will eventually expand nationwide to positively impact the livelihood of farmers in other parts of China through the National IPM Replication Program.

Finally, with promulgation of local regulations to prohibit the production, sale, and use of dicofol, improvement in policy framework will also be replicated in other parts of China through national replication, creating a better environment for sustainable livelihood.

#### 3.3.6 Sustainability (\*)

The overall likelihood of sustainability is rated **Likely (L)**, consistent with ratings given in the sub-categories below.

With the national ban on production, distribution, uses and import of pesticides POPs, including DDT, the closure of the two non-closed system dicofol production plants and the optimization of the only closed-system dicofol production plant, the supply of DDT for dicofol production had stopped and reports from the three demonstration counties confirmed that no dicofol usage was detected since 2011 in these counties. On the production side, DDT was no longer produced in China since the only DDT production plant had been decommissioned. The closure and optimization of dicofol production facilities under this project had limited the supply of dicofol in the market. With the closed-system dicofol producer committed to cease dicofol production in 2014, dicofol phase out would be successfully achieved. Strong national and local action on legislative measures, and strengthened capacity on enforcement to counter potential illegal production and distribution of DDT and DDT-based dicofol had been established, sustainability can thus be assured.

On the consumption side, introduction, demonstration and promotion of IPM technology and FFS training at the three demonstration counties on cotton, citrus and apple had produced excellent results and generated increased profit for the farmers. While the IPM demonstration and training activities provide alternatives to encourage reduced pesticides usage, stronger promotion effort should be undertaken to generate the level of acceptance that will ensure sustainability. IPM demonstration contributed to the successful implementation of project activities as it dealt with income-generating crops that provided benefits directly to the target beneficiaries in terms of reduced quantity and frequency of pesticides usage, increased quantity and better quality of produces, better market and export potential, leading to increased profit for the farmers. The success catalyzed other farmers not participating in the demonstration to apply IPM technologies at their own initiative and at their own costs after attending the FFS training and learning the efficacy of IPM technologies. The situation is a positive sign that general acceptance of IPM application is highly likely in the national replication program, and sustainability of the excellent IPM demonstration results can be assured. The primary factors determining farmer's continued application of IPM are costs and effectiveness of mites control, there is ample evidence that reduced quantity of pesticide use will lead to lower planting costs, and increased quantity and improve quality of crops is evidence of the efficacy of IPM application.

Overall, with dicofol production no longer possible because of the ban on DDT and phase-out of dicofol consumption achieved, sustainability of phase out after project completion is strong in particular with an enabling policy environment that encompasses national and local level legislative measures and strengthened enforcement actions. Effective promotion and public awareness campaign will further positively influence pesticides consumption behaviour. The effectiveness of IPM technology was

evaluated and validated through IPM demonstration activities of the project, and MOA had already initiated replication actions to promote IPM technologies to other areas and other crops in China even before the completion of this GEF funded project.

The project was able to generate strong policy, management and financial support from key stakeholders: national (MEP, MOA) and local (Agriculture Bureau, Vegetation Protection Central Station) government, private sector and farmers of cotton, citrus and apple. Notably, total co-financing contribution exceeded original commitment by more than 35%. Majority of farmers interviewed during field visits expressed acceptance and strong support of IPM application. Some farmers were enticed by the success of the IPM demonstration and went ahead to apply IPM application on their own initiative and at their own costs, which testified to the economic benefits the farmers would generate, and gave a strong signal to indicate positive acceptance of IPM demonstration results and IPM application when the national replication program is implemented and promoted. The larger amount of co-financing from farmers that well exceeded the amount originally committed also reflected their strong support of IPM application. With preparation of IPM National Replication Program, and taking into consideration that MOA and local Agriculture Bureaus had indeed initiated and promote replication activities even before this project was operationally completed. It is also noted that MOA had been able to generate bilateral and other sources of funding, or using its own budget to undertake IPM demonstration for similar and/or other crops before the implementation of this project, and therefore had accumulated significant experience in IPM applications, would ensure that financial resources for the replication program will not be a major issue for implementation. Nonetheless, due to the vast size of the country, and the varieties of crops involved, it is suggested that the excellent project results, the valuable experience of the IPM demonstration, and evidence of success of IPM technology to substitute dicofol use, and in particular, the economic, social and environmental benefits generated, should be fully utilized to leverage further financial support from farmers, private sector, other governmental agencies, bilateral and multilateral funding sources when promoting the replication program. Rating for financial risks is **Likely (L)**.

Rating for socio-political risks is **Likely (L)**. There was strong ownership of the project by all key stakeholders. Through FFS training, exposure to the efficacy of IPM application, and after experiencing first hand economic benefits generated, there was evidence that farmers were prepared to change their consumption behaviour, to generate continued acceptance of IPM technology. This was further demonstrated when other farmers who were not in the demonstration program went ahead to apply IPM technology at their own costs after attending FFS training. As cost and efficacy of alternatives will no doubt be a major determining factor in their pest control action, the positive results of IPM demonstration, and the technical support the farmers received, would strongly influence them to continue embracing IPM technology to ensure sustainability. Furthermore, the replication program already initiated by MOA and several local Agriculture Bureaus, will raise the level of understanding of pesticides usage for those farmers that had not participated in the FFS training, the enlarged population of farmers applying IPM technology as viable and effective ways of mite control will guarantee sustainability of the excellent project results.

Rating for Institutional framework and governance is **Likely (L)**. In the implementation of demonstration activities, the projects had built up an efficient infrastructure on project management, mite and residues monitoring, and rich experience in project implementation and financial management at both the national and local levels, and established a strong monitoring and technical capacity to monitor DDT release. Existing capacity for coordination, policy framework and enforcement were strengthened. In particular, technology know-how on IPM application, promotion, mite and residues monitoring was introduced through training activities carried out under the project. The training also strengthened

farmers' capacities for IPM application. Positive results gained through the project can be successfully expanded in the national replication program to ensure sustainability.

Environmental factors are not believed to post any significant risk to the sustainability of the project results. As ban on pesticide POPs, including DDT, had been imposed by China, non-closed system dicofol production facilities were closed down, and with the commitment of the closed-system production plant to cease production in 2014, and with enforcement efforts strengthened following appropriate legislative measures to address the unlikely incident of illegal production, there is no reason that sustainability will be an issue. Given China's recent years' good records in addressing environmental issues, and priorities identified in China's NIP, there will not be any significant environmental factors that will affect sustainability of project results. Rating for Environmental risks is **Likely (L)**.

### 3.3.7 Impact Assessment, Catalytic Role and Replications

#### *Achievement of Long Term Project Goal and Objectives and Contribution to Global Environmental Benefits*

The project had effectively implemented all project activities and contributed to achievement of all project outcomes and project objectives. The closure of non-closed system dicofol production facilities, and optimization of the closed-system production plan, with commitment to cease production in 2014, together with national legislative measures to ban production, distribution, use and import of DDT and policies promulgated at the three demonstration sites to prohibit the production, sale and use of dicofol, had generated significant and long lasting impact from elimination of DDT-based dicofol, reducing DDT use, DDT discharge with waste, and DDT residues, ensuring food safety, improving local environment, and contributing to global environmental benefits. With production of dicofol stopped, the corresponding dicofol consumption had ceased, thus minimizing DDT residues in dicofol consumption. The positive impact of the project was evident at the three demonstration sites when the evaluators visited local pesticides sales outlets and were able to confirm with the shop owners that no dicofol was available for sale and there had not been inquiry to purchase dicofol for the last few years. It was further confirmed by the local Agriculture Bureaus that no consumption of dicofol was recorded in the demonstration counties/city since 2011. With the effective introduction and promotion of IPM technology, there would be no long a demand for dicofol. The long-term objective of elimination of dicofol is thus successful achieved with excellent potential of sustainability. The project results reduce threat to the environment and human health, contributing to global environmental benefits.

#### *Catalytic Role*

The excellent results achieved through the IPM demonstration activities included reduced quantity and frequency of pesticides use, increased quantity and improved quality of produces, expanded market and export potential, leading to increased profit for the farmers who participated in the demonstration activities. Reports from project teams indicated that strong interest was generated on IPM applications by other farmers. In fact, in all three demonstration locations, catalyst effect was created resulting in farmers being more aware of environmental and economic benefits generated, and promoted IPM application amongst them, to attract other farmers to apply IPM application at their own initiatives and costs, supported by local project team and the Agriculture Bureau. The continued or expanded interest in IPM application by these other farmers will however depend on the extent of efforts to change the traditional pesticides consumption behaviour that taking into consideration cost and efficacy factors.

#### *Replication and Scaling Up*

One project outcome is an IPM National Replication Program which was finalized prior to project completion, and replication activities had actually been initiated at several provincial locations even

before project completion, and will eventually expand nationwide and to include other crops in addition to cotton, citrus and apple. An international workshop is being organized to share project experience and lessons learned. The international workshop will also serve as venue for seeking donor support for the implementation of the National Replication Program. Meanwhile, dicofol is still being used in a few countries in the world, the project experience and results achieved could be shared or duplicated in those countries. Even though there is strong support for MOA and Agriculture Bureaus' efforts to implement the National Replication Program, given the magnitude of the task in terms of geographic locations and varieties of crops, financial resources and technology support will be factors that influence the potential of success.

### 3.3.8 Contribution to Upgrading Skills of National Staff

In the execution of the project, the project was able to utilize national capacity to provide quality technical and management support. In addition, through various training programs, the project had built up and upgraded the capacities of a contingence of both technical and management personnel. The skills and experience gained will no doubt equip them to apply it effectively in other projects or other circumstances, creating an enabling environment for an efficient and high quality work force.

## 4 CONCLUSIONS, RECOMMENDATIONS AND LESSONS LEARNED

### 4.1 CONCLUSIONS

The project has been well-designed, with carefully thought-out strategies to address DDT-based dicofol issues. Specific project activities were formulated to achieve stated outcomes and objectives. All project activities were implemented effectively to achieve project outcomes and objectives. The activities remain relevant to the project, as well as to the national priority in the elimination of DDT usage, which was identified in China's National Implementation Plan as high priority action.

The project's most significant achievements can be summarized as:

- Ban jointly imposed by ten ministries on production, distribution, use and import of POPs pesticides, including DDT, that became effective 17 May 2009; the closure of two non-closed system dicofol production plants and the clean-up of 1,600 tons of high-risk DDT waste that was disposed in an environmentally sound manner; and optimization of the closed-system production plant, all contributed to elimination of DDT usage, DDT release and DDT residues, and stopped DDT-based dicofol production;
- As no dicofol was produced, DDT-based dicofol consumption was also eliminated. In additions, regulations were promulgated in the three demonstration sites to prohibit the production, sale and use of dicofol, and no dicofol consumption was recorded since 2011;
- The successful introduction, demonstration and promotion of IPM technologies to substitute dicofol usage provided a viable alternative to pesticide use, resulted in significant benefits to the farmers in terms of reduced quantity and frequency of pesticide use, increased quantity and improved quality of crops, expanded market and export potential, generated increased profit. Furthermore, the elimination of dicofol use contributed to food safety, human health and the local and global environment;
- The preparation of a National Implementation Program to disseminate project experience and project results, to replicate and promote IPM technologies nationwide, as well as to large varieties of crops will ensure long term sustainability of the IPM demonstration results. The project experience and results can also be shared with the few countries that still use dicofol;

- An institutional infrastructure was established, with strengthened technical and management capacity that facilitated efficient and effective project implementation. Together with the project personnel trained, knowledge and experience gained, it will form a very solid driving force and foundation to provide strong technical and management support in the implementation of the National Replication Program;
- Strong partnership of key stakeholders, in particular, the unusual cross ministerial cooperation between MEP and MOA, had fostered close cooperation, coordination and appropriate delegation that delivered efficient project management to achieving project results. The excellent performance and efforts of the Local Project Management Offices and local project team would be particularly instrumental to help promote the National Replication Program;
- Public awareness activities had generated increased awareness of farmers and general public on the risk of dicofol and pesticide on human health and the environment, it will create catalytic effect and driving force to facilitate promotion of the National Replication Program.

#### 4.2 CORRECTIVE ACTIONS FOR THE DESIGN, IMPLEMENTATION, MONITORING AND EVALUATION OF THE PROJECT

While the project document was considered well formulated and well designed, with carefully thought-out strategies and project activities to address DDT issues, the Project Results and Resources Framework section was not presented in the customary GEF logframe format. When combined with the Monitoring and Evaluation Indicators table under the Monitoring and Evaluation section, it was still missing information on baseline values, end of project target, and risks and assumptions. The missing information would have presented a more comprehensive tool for undertaking monitoring and evaluation activities. While the missing information did not significantly impact on the project's M&E activities, or for the evaluations to assess project performance and achievement of project results, nonetheless, the missing information would have facilitated a more thorough data analysis.

On implementation, the project team was able to consider the recommendations of M&E activities, in particular, recommendations presented by the MTE, to take adaptive management actions that improved efficiency on implementing the IPM demonstration activities during the second half of the project, leading to excellent performance and achievement of project outcomes and objectives.

#### 4.3 ACTIONS TO FOLLOW UP OR REINFORCE INITIAL BENEFITS FROM THE PROJECT

During field visits in July 2013, the only enterprise of the closed-system dicofol production facility, Jiangsu Yangnong Chemical Co. Ltd. had indicated that it would no longer seek exemption for close-system production and would cease dicofol production in 2014. While Yangnong is already producing dicofol with impurity below 0.1% DDT content, and meets domestic and international (including FAO) standards and in compliance with in-situ closed system production requirements of the Stockholm Convention, there still exists the potential of accidental discharge of waste containing DDT residues, follow-up action is recommended to ensure the decision to cease production actually will materialize, so that dicofol supply can be totally eliminated.

Furthermore, while the contaminated sites and equipment at the Great Wall Pesticide and Chemical Group at Zhangjiakou, Hebei Province had been properly cleaned up, follow-up action for the contaminated site clean-up at Dacheng Pesticides Co. Ltd. will be needed. While Dacheng had carried out a general clean-up of its equipment and surface clean-up of its production facilities when it switched from dicofol production to produce other pesticides, ground contamination had not been dealt with. Risk assessment for the Dacheng site had been conducted under the project activities, and recommendations on environmentally sound process for clean-up was presented to Dacheng, no action has yet been taken.

To implement the IPM National Replication Program, scaling up will require additional funds. In convening the international workshop to disseminate project experience and results, potential funding partners, private sector, NGOs, bilateral and multilateral donors should be invited to solicit possible financial support to implement the replication.

#### 4.4 PROPOSALS FOR FUTURE DIRECTIONS UNDERLINING MAIN OBJECTIVES

The fact that there were two projects formulated and approved concurrently, and formed comprehensive and complementary actions to address DDT issues, is considered as a very strategic approach. While the DDT issues may be somewhat limited in scope and can be addressed effectively using this approach, it is nonetheless advantageous to find opportunity to apply this strategy, to tackle issues in a more holistic approach.

#### 4.5 BEST AND WORST PRACTICES IN ADDRESSING ISSUES RELATING TO RELEVANCE, PERFORMANCE AND SUCCESS

The project demonstrated a number of best practices which resulted in the successful implementation of the project that may be adopted for the formulation of other projects. Some of the best practices are:

- *Cross ministerial/department cooperation* has proven to be effective. The project design in building an unusual cooperation relationship between MEP and MOA to address DDT issues is unique and has now proven to be effective and cost-effective. While elimination of DDT-based dicofol is an environmental issue, solution to substitute dicofol usage straddles into agricultural area, with technical skills and capacity vested with MOA. Therefore while MEP deals with the production side, addressing DDT release and waste discharge with waste, and remedial actions for contaminated sites, MOA and the Agriculture Bureaus concentrated on designing and implementing viable demonstration activities to resolve the impact of non-availability of dicofol for mites control. The division of responsibilities and the optimal utilization of respective technical, management expertise and capacity had facilitated efficient implementation and achievement of project outcomes and objectives.
- Subcontracting arrangement is an effective mechanism for project management. The arrangements release the EA of the day-to-day management of the larger number of contractors involved in performing the various categories of services and goods required under the project. Instead, the EA needs to exercise periodic supervision and monitoring to ensure task is on track and quality of performance is assured. The progress payment mechanism ensure effective financial management and efficient use of project resources, as only a small percentage of advance payment would be effected on signature of contracts, and final payment would not be effected until the assignment is completed and performance is satisfactory accepted. The arrangement would guarantee that financial expenditure will not be incurred if a task is not completed or it is not up to standard. The arrangement usually yields timely and high quality completion of an assignment.
- Effective Coordination Mechanism. While the project encountered initial setback due to inefficient coordination and communication channels, the project team was able to undertake adaptive management which subsequently improved coordination and communication between the different layers and levels of project management, leading to timely and successful implementation of all project activities.
- Farmers Field School (FFS) Training. Trainings provided to farmers utilizing the FFS model were highly effective. Training at locations near the field created minimal disturbance on the works and routines of farmers, with practical examples and instant question and answer sessions.

Training at the field also provided a more causal setting to entice learning. FFS can be easily set up in any kind of structures, making it a cost-effective arrangement.

#### 4.6 RECOMMENDATIONS

The main recommendations of the terminal evaluation are:

Recommendation 1: Full utilization of the institutional infrastructure established and the strengthened technical and management capacity in the National Replication Program. The infrastructure and capacity built up through trainings and practical works had gained valuable experience and know-how in effective project and financial management at both the national and local level, the efficiency achieved in interaction and coordination between and amongst the different layers and levels prepared them to be well-suited to contribute to the National Replication Program. The National Replication Program should take full advantage of the skill and experience that will benefit the replication plan.

Recommendation 2: Experience gained and the effective working mechanism in the successful implementation of the demonstration activities that contributed to efficient management and coordination efforts yielding excellent project results should be captured and properly documented. The experience and work mechanism can serve as good model for other projects in China, in particular in the process of project design and implementation.

Recommendation 3: Identify effective mechanism to promote acceptance of IPM technology by farmers and related personnel. While the IPM demonstration activities had generated excellent results and benefits to farmers participated, the general acceptance by other farmers cannot be taken for granted as cost and pesticide efficacy would be major determining factors in the traditional consumption behaviour of farmers. To attract wider acceptance for the National Replication Program, it is recommended to make special efforts to identify effective advocacy and public awareness programme to promote the benefits of IPM applications.

#### 4.7 LESSONS LEARNED

A summary of lessons learned is listed below. Lessons learned are concluded based on the review of project documents, interviews with key stakeholders, and analysis of data/information collected in the course of the terminal evaluation.

- IPM technology is a viable and environmentally sustainable substitute for dicofol usage and should be effectively promoted in China.
- Careful review, thorough evaluation and analysis in economic, social, and capacity areas, and extensive consultation with the proposed demonstration sites during project formulation increase potential for successful project design and implementation.
- Appropriate infrastructure and strong project management capacity are required to ensure successful achievement of project outcomes and objectives.
- Suitable delegation of authority can contribute to efficient work and suitable division of roles and responsibilities.
- Strong policy, management and financial support and involvement from high level government and relevant department officials and key stakeholders are contributing factors for successful project implementation.
- Proper training, strong public awareness efforts are necessary to ensure effective promotion and sustainability of demonstration results
- Timely adaptive management measures are necessary to address issues identified, to improve efficiency and effectiveness.

## 5 RESPONSES TO AND ACTIONS TAKEN ON THE COMMENTS RECEIVED ON THE DRAFT TERMINAL REPORT

Several minor comments were received from FECO/MEP, these comments mainly indicated to have some descriptions in achievements be more explicitly stated, the details were incorporated in this final report.

## 6 ANNEXES

Annex I	Terms of Reference
Annex II	Itineraries of Evaluation Field Visits
Annex III	List of Persons and entities Interviewed
Annex IV	Summary of Field Visits
Annex V	List of Documents Reviewed
Annex VI	Evaluation Question Matrix
Annex VII	Evaluation Consultant Agreement Form
Annex VIII	Rating Scales
Annex IX	Audit Trail on Comments on the Draft Terminal Evaluation Report
Annex X	Pictures of the project

## Annex I – Terms of Reference

### A. Terms of Reference of International Consultant

#### TERMINAL EVALUATION TERMS OF REFERENCE

##### INTRODUCTION

In accordance with UNDP and GEF M&E policies and procedures, all full and medium-sized UNDP support GEF financed projects are required to undergo a terminal evaluation upon completion of implementation. These terms of reference (TOR) sets out the expectations for a Terminal Evaluation (TE) of the project “Improvement of DDT-based Production of Dicofol and Introduction of Alternative Technologies including IPM for Leaf Mites Control in China” (PIMS 3345).

The essentials of the project to be evaluated are as follows:

##### PROJECT SUMMARY TABLE

Project Title	Improvement of DDT-based Production of Dicofol and Introduction of Alternative Technologies including IPM for Leaf Mites Control in China			
GEF Project ID:	PIMS 3345		<u>at endorsement</u> <u>(Million US\$)</u>	<u>at completion</u> <u>(Million US\$)</u>
UNDP Project ID:	00061862	GEF financing:	6	
Country:	China	IA/EA own:	6	
Region:	Asia & Pacific	Government:	6.3	
Focal Area:	Chemicals/POPs	Other:	5.35	
FA Objectives, (OP/SP):		Total co-financing:	11.65	
Executing Agency:	FECO/MEP	Total Project Cost:	17.65	
Other Partners involved:	MOA	ProDoc Signature (date project began):		15 Dec 2008
		(Operational) Closing Date:	Proposed: 30 Sep 2012	Actual: 30 June 2013

##### OBJECTIVE AND SCOPE

The project was designed to protect the human health and environment from the release of DDT occurring in dicofol production and consumption; and assist china to fulfill the obligations under the Stockholm Convention for global environmental benefits. The project objectives are: 1) Strengthening the current institutional capacity, establishing an effective coordination and management mechanism and reinforcing policy framework to facilitate the elimination of dicofol and promotion of alternatives; 2) Improvement of alternatives production and promotion of their usages, in particular, the assessment and demonstration of a set of IPM-based interventions in pilot areas covering the major crops and ecological conditions; 3) Closure of two non-closed dicofol production facilities to eliminate the use of about 2,800 MT/a of DDT as intermediate in the production of dicofol, clean-up of waste facilities and contaminated sites as necessary that will lead to the elimination of 170 MT/a DDT release due to residues in dicofol products, and the reduction of 1,000 MT/a DDT containing wastes released during dicofol production; 4) Enforcement of optimization, supervision and monitoring on the closed-system dicofol production

plant to minimize DDT residue and control the release of POPs wastes and other pollutants during dicofol production that will minimize 180 MT/a DDT release due to residues in dicofol products, to minimize and control 350 MT/a of DDT containing wastes released during dicofol production; 5) Development of a national program for disseminating the project achievements and for achieving total phase out of the production and use of dicofol. In addition, a systematic M&E plan will be carried out to monitor the project objectives and outputs, and to track the prospective global environmental benefits.

The project results and resources framework consists of seven components, with anticipated outputs specified for each component:

- Capacity building and policy making
- Implementation of IPM demonstration programme
- Non-closed system dicofol production facilities closed down
- Optimization of existing closed-system dicofol production
- Monitoring and evaluation plan
- Preparation of the national replication programme
- Project Management

The TE will be conducted according to the guidance, rules and procedures established by UNDP and GEF as reflected in the UNDP Evaluation Guidance for GEF Financed Projects.

The objectives of the evaluation are to assess the achievement of project results, and to draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of UNDP programming.

## **EVALUATION APPROACH AND METHOD**

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An overall approach and method<sup>1</sup> for conducting project terminal evaluations of UNDP supported GEF financed projects has developed over time. The evaluator is expected to frame the evaluation effort using the criteria of relevance, effectiveness, efficiency, sustainability, and impact, as defined and explained in the UNDP Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF-financed Projects. A set of questions covering each of these criteria have been drafted and are included with this TOR (Annex C) The evaluator is expected to amend, complete and submit this matrix as part of an evaluation inception report, and shall include it as an annex to the final report.

The evaluation must provide evidence-based information that is credible, reliable and useful. The evaluator is expected to follow a participatory and consultative approach ensuring close engagement with government counterparts, in particular the GEF operational focal point, UNDP Country Office, project team, UNDP GEF Technical Adviser based in the region and key stakeholders. The evaluator is expected to conduct a field mission to Shandong, Shaanxi and Hubei provinces, including the following project sites: Zhanhua county, Luochuan County and Yidu county. Interviews will be held with the following organizations and individuals at a minimum of Ministry of Agriculture, Yangzhou Pesticide plant, three local PMOs including provincial EPB and Agriculture Bureau etc.

The evaluator will review all relevant sources of information, such as the project document, project reports – including Annual APR/PIR, project budget revisions, midterm review, progress reports, GEF focal area tracking tools, project files, national strategic and legal documents, and any other materials that the evaluator considers useful for this evidence-based assessment. A list of documents that the project team will provide to the evaluator for review is included in [Annex B](#) of this Terms of Reference.

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<sup>1</sup> For additional information on methods, see the [Handbook on Planning, Monitoring and Evaluating for Development Results](#), Chapter 7, pg. 163

## EVALUATION CRITERIA & RATINGS

An assessment of project performance will be carried out, based against expectations set out in the Project Logical Framework/Results Framework (see [Annex A](#)), which provides performance and impact indicators for project implementation along with their corresponding means of verification. The evaluation will at a minimum cover the criteria of: **relevance, effectiveness, efficiency, sustainability and impact**. Ratings must be provided on the following performance criteria. The completed table must be included in the evaluation executive summary. The obligatory rating scales are included in [Annex D](#).

Evaluation Ratings:			
1. Monitoring and Evaluation	rating	2. IA& EA Execution	rating
M&E design at entry		Quality of UNDP Implementation	
M&E Plan Implementation		Quality of Execution - Executing Agency	
Overall quality of M&E		Overall quality of Implementation / Execution	
3. Assessment of Outcomes	rating	4. Sustainability	rating
Relevance		Financial resources:	
Effectiveness		Socio-political:	
Efficiency		Institutional framework and governance:	
Overall Project Outcome Rating		Environmental :	
		Overall likelihood of sustainability:	

## PROJECT FINANCE / COFINANCE

The Evaluation will assess the key financial aspects of the project, including the extent of co-financing planned and realized. Project cost and funding data will be required, including annual expenditures. Variances between planned and actual expenditures will need to be assessed and explained. Results from recent financial audits, as available, should be taken into consideration. The evaluator(s) will receive assistance from the Country Office (CO) and Project Team to obtain financial data in order to complete the co-financing table below, which will be included in the terminal evaluation report.

Co-financing (type/source)	UNDP own financing (mill. US\$)		Government (mill. US\$)		Partner Agency (mill. US\$)		Total (mill. US\$)	
	Planned	Actual	Planned	Actual	Planned	Actual	Actual	Actual
Grants								
Loans / Concessions								
• In-kind support								
• Other								
Totals								

## MAINSTREAMING

UNDP supported GEF financed projects are key components in UNDP country programming, as well as regional and global programmes. The evaluation will assess the extent to which the project was successfully mainstreamed with other UNDP priorities, including poverty alleviation, improved governance, the prevention and recovery from natural disasters, and gender.

## IMPACT

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The evaluators will assess the extent to which the project is achieving impacts or progressing towards the achievement of impacts. Key findings that should be brought out in the evaluations include whether the project has demonstrated: a) verifiable improvements in ecological status, b) verifiable reductions in stress on ecological systems, and/or c) demonstrated progress towards these impact achievements.<sup>2</sup>

## CONCLUSIONS, RECOMMENDATIONS & LESSONS

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The evaluation report must include a chapter providing a set of conclusions, recommendations and lessons.

## IMPLEMENTATION ARRANGEMENTS

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The principal responsibility for managing this evaluation resides with the UNDP CO in China. The UNDP CO will contract the evaluators and ensure the timely provision of per diems and travel arrangements within the country for the evaluation team. The Project Team will be responsible for liaising with the Evaluators team to set up stakeholder interviews, arrange field visits, coordinate with the Government etc.

## EVALUATION TIMEFRAME

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The total duration of the evaluation will be 30 days according to the following plan:

Activity	Timing	Completion Date
<b>Preparation</b>	3 days ( <i>recommended: 2-4</i> )	July 05 2013
<b>Evaluation Mission</b>	15 days ( <i>r: 7-15</i> )	July 26 2013
<b>Draft Evaluation Report</b>	10 days ( <i>r: 5-10</i> )	Aug 16 2013
<b>Final Report</b>	2 days ( <i>r: 1-2</i> )	Aug 30 2013

## EVALUATION DELIVERABLES

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The evaluation team is expected to deliver the following:

Deliverable	Content	Timing	Responsibilities
<b>Inception Report</b>	Evaluator provides clarifications on timing and method	No later than 2 weeks before the evaluation mission.	Evaluator submits to UNDP CO
<b>Presentation</b>	Initial Findings	End of evaluation mission	To project management, UNDP CO
<b>Draft Final Report</b>	Full report, (per annexed template) with annexes	Within 3 weeks of the evaluation mission	Sent to CO, reviewed by RTA, PCU, GEF OFPs
<b>Final Report*</b>	Revised report	Within 1 week of receiving UNDP comments on draft	Sent to CO for uploading to UNDP ERC.

\*When submitting the final evaluation report, the evaluator is required also to provide an 'audit trail', detailing how all received comments have (and have not) been addressed in the final evaluation report.

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<sup>2</sup> A useful tool for gauging progress to impact is the Review of Outcomes to Impacts (Roti) method developed by the GEF Evaluation Office: [ROTI Handbook 2009](#)

## TEAM COMPOSITION

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The evaluation team will be composed of 1 international evaluator and 1 national evaluator. The consultants shall have prior experience in evaluating similar projects. Experience with GEF financed projects is an advantage. The international evaluator will be the team leader and responsible for finalizing the report. The evaluators selected should not have participated in the project preparation and/or implementation and should not have conflict of interest with project related activities.

The Team members must present the following qualifications:

- Minimum 10 years of relevant professional experience
- Knowledge and UNDP and GEF
- Previous experience with results-based monitoring and evaluation methodologies;
- Technical knowledge in the POPs and Chemical areas
- Previous experience of UNDP/GEF programme evaluation is asset

## EVALUATOR ETHICS

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Evaluation consultants will be held to the highest ethical standards and are required to sign a Code of Conduct (Annex E) upon acceptance of the assignment. UNDP evaluations are conducted in accordance with the principles outlined in the [UNEG 'Ethical Guidelines for Evaluations'](#)

## PAYMENT MODALITIES AND SPECIFICATIONS

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The payment will be in a lump sum covering the consulting fee in 30 working days and the travel cost (transportation and DSA) for local sites visiting.

%	Milestone
28.6%	After contract signed (advance of total travel cost)
71.4%	Following submission and approval (UNDP-CO and UNDP RTA) of the final terminal evaluation report (consulting fee for 30 working days)

## APPLICATION PROCESS

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Applicants are requested to apply online (indicate the site, such as <http://jobs.undp.org>, etc.) by June 07 2013. Individual consultants are invited to submit applications together with their CV for these positions. The application should contain a current and complete C.V. in English with indication of the e-mail and phone contact. Shortlisted candidates will be requested to submit a price offer indicating the total cost of the assignment (including daily fee, per diem and travel costs).

UNDP applies a fair and transparent selection process that will take into account the competencies/skills of the applicants as well as their financial proposals. Qualified women and members of social minorities are encouraged to apply.

## **ANNEX A: PROJECT LOGICAL FRAMEWORK**

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*(to be added)*

## **ANNEX B: LIST OF DOCUMENTS TO BE REVIEWED BY THE EVALUATORS**

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### **I. Project Documents**

- UNDP ProDoc signed with China MEP
- GEF Project Information Form (PIF), Project Document and Log Frame Analysis (LFA)
- Project Implementation Plan
- Implementing/executing partner arrangements
- List and contact details for project staff, key project stakeholders, including Project Boards, and other partners to be consulted
- Project sites, highlighting suggested visits
- Midterm evaluation (MTE) and other relevant evaluations and assessments
- Annual Project Implementation Reports (PIR)
- Project budget, broken out by outcomes and outputs
- Project Tracking Tool
- Financial Data
- Sample of project communications materials, i.e. press releases, brochures, documentaries, etc.

### **II. UNDP Documents**

- Development Assistance Framework (UNDAF)
- Country Programme Document (CPD)
- Country Programme Action Plan (CPAP)

### **III. GEF Documents**

- GEF focal area strategic program objectives

## ANNEX C: EVALUATION QUESTIONS

*This is a generic list, to be further detailed with more specific questions by CO and UNDP GEF Technical Adviser based on the particulars of the project.*

Evaluative Criteria Questions	Indicators	Sources	Methodology
<b>Relevance: How does the project relate to the main objectives of the GEF focal area, and to the environment and development priorities at the local, regional and national levels?</b>			
•	•	•	•
•	•	•	•
•	•	•	•
<b>Effectiveness: To what extent have the expected outcomes and objectives of the project been achieved?</b>			
•	•	•	•
•	•	•	•
•		•	•
<b>Efficiency: Was the project implemented efficiently, in-line with international and national norms and standards?</b>			
•	•	•	•
•	•	•	•
•	•	•	•
<b>Sustainability: To what extent are there financial, institutional, social-economic, and/or environmental risks to sustaining long-term project results?</b>			
•	•	•	•
•	•	•	•
•	•	•	•
<b>Impact: Are there indications that the project has contributed to, or enabled progress toward, reduced environmental stress and/or improved ecological status?</b>			
•	•	•	•
•	•	•	•

## ANNEX D: RATING SCALES

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<p><b>Ratings for Outcomes, Effectiveness, Efficiency, M&amp;E, I&amp;E Execution</b></p> <p>6: Highly Satisfactory (HS): no shortcomings          5: Satisfactory (S): minor shortcomings          4: Moderately Satisfactory (MS)          3: Moderately Unsatisfactory (MU): significant shortcomings          2: Unsatisfactory (U): major problems          1: Highly Unsatisfactory (HU): severe problems</p>	<p><b>Sustainability ratings:</b></p> <p>4. Likely (L): negligible risks to sustainability          3. Moderately Likely (ML): moderate risks</p> <p>2. Moderately Unlikely (MU): significant risks          1. Unlikely (U): severe risks</p>	<p><b>Relevance ratings</b></p> <p>2. Relevant (R)          1.. Not relevant (NR)</p> <p><b>Impact Ratings:</b></p> <p>3. Significant (S)          2. Minimal (M)          1. Negligible (N)</p>
<p><i>Additional ratings where relevant:</i>          Not Applicable (N/A)          Unable to Assess (U/A)</p>		

## ANNEX E: EVALUATION CONSULTANT CODE OF CONDUCT AND AGREEMENT FORM

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### Evaluators:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence, and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals, and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study imitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

### Evaluation Consultant Agreement Form<sup>3</sup>

#### Agreement to abide by the Code of Conduct for Evaluation in the UN System

Name of Consultant: \_\_\_\_\_

Name of Consultancy Organization (where relevant): \_\_\_\_\_

**I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.**

Signed at *place* on *date*

Signature: \_\_\_\_\_

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<sup>3</sup> [www.unevaluation.org/unegcodeofconduct](http://www.unevaluation.org/unegcodeofconduct)

## ANNEX F: EVALUATION REPORT OUTLINE<sup>4</sup>

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- i. Opening page:
  - Title of UNDP supported GEF financed project
  - UNDP and GEF project ID#s.
  - Evaluation time frame and date of evaluation report
  - Region and countries included in the project
  - GEF Operational Program/Strategic Program
  - Implementing Partner and other project partners
  - Evaluation team members
  - Acknowledgements
- ii. Executive Summary
  - Project Summary Table
  - Project Description (brief)
  - Evaluation Rating Table
  - Summary of conclusions, recommendations and lessons
- iii. Acronyms and Abbreviations  
(See: UNDP Editorial Manual<sup>5</sup>)
1. Introduction
  - Purpose of the evaluation
  - Scope & Methodology
  - Structure of the evaluation report
2. Project description and development context
  - Project start and duration
  - Problems that the project sought to address
  - Immediate and development objectives of the project
  - Baseline Indicators established
  - Main stakeholders
  - Expected Results
3. Findings  
(In addition to a descriptive assessment, all criteria marked with (\*) must be rated<sup>6</sup>)
- 3.1 Project Design / Formulation
  - Analysis of LFA/Results Framework (Project logic /strategy; Indicators)
  - Assumptions and Risks
  - Lessons from other relevant projects (e.g., same focal area) incorporated into project design
  - Planned stakeholder participation
  - Replication approach
  - UNDP comparative advantage
  - Linkages between project and other interventions within the sector
  - Management arrangements
- 3.2 Project Implementation
  - Adaptive management (changes to the project design and project outputs during implementation)
  - Partnership arrangements (with relevant stakeholders involved in the country/region)
  - Feedback from M&E activities used for adaptive management

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<sup>4</sup>The Report length should not exceed 40 pages in total (not including annexes).

<sup>5</sup> UNDP Style Manual, Office of Communications, Partnerships Bureau, updated November 2008

<sup>6</sup> Using a six-point rating scale: 6: Highly Satisfactory, 5: Satisfactory, 4: Marginally Satisfactory, 3: Marginally Unsatisfactory, 2: Unsatisfactory and 1: Highly Unsatisfactory, see section 3.5, page 37 for ratings explanations.

- Project Finance:
  - Monitoring and evaluation: design at entry and implementation (\*)
  - UNDP and Implementing Partner implementation / execution (\*) coordination, and operational issues
- 3.3** Project Results
- Overall results (attainment of objectives) (\*)
  - Relevance(\*)
  - Effectiveness & Efficiency (\*)
  - Country ownership
  - Mainstreaming
  - Sustainability (\*)
  - Impact
- 4.** Conclusions, Recommendations & Lessons
- Corrective actions for the design, implementation, monitoring and evaluation of the project
  - Actions to follow up or reinforce initial benefits from the project
  - Proposals for future directions underlining main objectives
  - Best and worst practices in addressing issues relating to relevance, performance and success
- 5.** Annexes
- ToR
  - Itinerary
  - List of persons interviewed
  - Summary of field visits
  - List of documents reviewed
  - Evaluation Question Matrix
  - Questionnaire used and summary of results
  - Evaluation Consultant Agreement Form

**ANNEX G: EVALUATION REPORT CLEARANCE FORM**

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*(to be completed by CO and UNDP GEF Technical Adviser based in the region and included in the final document)*

Evaluation Report Reviewed and Cleared by	
UNDP Country Office	
Name: _____	
Signature: _____	Date: _____
UNDP GEF RTA	
Name: _____	
Signature: _____	Date: _____

## B. Terms of Reference of National Consultant

### Terminal Evaluation Terms of Reference

#### INTRODUCTION

In accordance with UNDP and GEF M&E policies and procedures, all full and medium-sized UNDP support GEF financed projects are required to undergo a terminal evaluation upon completion of implementation. These terms of reference (TOR) sets out the expectations for a Terminal Evaluation (TE) of the project “Improvement of DDT-based Production of Dicofol and Introduction of Alternative Technologies including IPM for Leaf Mites Control in China” (PIMS 3345).

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#### OBJECTIVE AND SCOPE

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production that will minimize 180 MT/a DDT release due to residues in dicofol products, to minimize and control 350 MT/a of DDT containing wastes released during dicofol production; 5) Development of a national program for disseminating the project achievements and for achieving total phase out of the production and use of dicofol. In addition, a systematic M&E plan will be carried out to monitor the project objectives and outputs, and to track the prospective global environmental benefits.

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- Preparation of the national replication programme
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The objectives of the evaluation are to assess the achievement of project results, and to draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of UNDP programming.

## EVALUATION APPROACH AND METHOD

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An overall approach and method<sup>7</sup> for conducting project terminal evaluations of UNDP supported GEF financed projects has developed over time. The evaluator is expected to frame the evaluation effort using the criteria of **relevance, effectiveness, efficiency, sustainability, and impact**, as defined and explained in the UNDP Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF-financed Projects. A set of questions covering each of these criteria have been drafted and are included with this TOR (*fill in Annex C*) The evaluator is expected to amend, complete and submit this matrix as part of an evaluation inception report, and shall include it as an annex to the final report.

The evaluation must provide evidence-based information that is credible, reliable and useful. The evaluator is expected to follow a participatory and consultative approach ensuring close engagement with government counterparts, in particular the GEF operational focal point, UNDP Country Office, project team, UNDP GEF Technical Adviser based in the region and key stakeholders. The evaluator is expected to conduct a field mission to Shandong, Shaanxi and Hubei provinces, including the following project sites: Zhanhua county, Luochuan County and Yidu county. Interviews will be held with the following organizations and individuals at a minimum of Ministry of Agriculture, Yangzhou Pesticide plant, three local PMOs including provincial EPB and Agriculture Bureau etc.

The evaluator will review all relevant sources of information, such as the project document, project reports – including Annual APR/PIR, project budget revisions, midterm review, progress reports, GEF focal area tracking tools, project files, national strategic and legal documents, and any other materials that the evaluator considers useful for this evidence-based assessment. A list of documents that the project team will provide to the evaluator for review is included in [Annex B](#) of this Terms of Reference.

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<sup>7</sup> For additional information on methods, see the [Handbook on Planning, Monitoring and Evaluating for Development Results](#), Chapter 7, pg. 163

## EVALUATION CRITERIA & RATINGS

An assessment of project performance will be carried out, based against expectations set out in the Project Logical Framework/Results Framework (see [Annex A](#)), which provides performance and impact indicators for project implementation along with their corresponding means of verification. The evaluation will at a minimum cover the criteria of: **relevance, effectiveness, efficiency, sustainability and impact**. Ratings must be provided on the following performance criteria. The completed table must be included in the evaluation executive summary. The obligatory rating scales are included in [Annex D](#).

Evaluation Ratings:			
1. Monitoring and Evaluation	rating	2. IA& EA Execution	rating
M&E design at entry		Quality of UNDP Implementation	
M&E Plan Implementation		Quality of Execution - Executing Agency	
Overall quality of M&E		Overall quality of Implementation / Execution	
3. Assessment of Outcomes	rating	4. Sustainability	rating
Relevance		Financial resources:	
Effectiveness		Socio-political:	
Efficiency		Institutional framework and governance:	
Overall Project Outcome Rating		Environmental :	
		Overall likelihood of sustainability:	

## PROJECT FINANCE / COFINANCE

The Evaluation will assess the key financial aspects of the project, including the extent of co-financing planned and realized. Project cost and funding data will be required, including annual expenditures. Variances between planned and actual expenditures will need to be assessed and explained. Results from recent financial audits, as available, should be taken into consideration. The evaluator(s) will receive assistance from the Country Office (CO) and Project Team to obtain financial data in order to complete the co-financing table below, which will be included in the terminal evaluation report.

Co-financing (type/source)	UNDP own financing (mill. US\$)		Government (mill. US\$)		Partner Agency (mill. US\$)		Total (mill. US\$)	
	Planned	Actual	Planned	Actual	Planned	Actual	Actual	Actual
Grants								
Loans/Concessions								
<ul style="list-style-type: none"> <li>In-kind support</li> </ul>								
<ul style="list-style-type: none"> <li>Other</li> </ul>								
Totals								

## MAINSTREAMING

UNDP supported GEF financed projects are key components in UNDP country programming, as well as regional and global programmes. The evaluation will assess the extent to which the project was successfully mainstreamed with

other UNDP priorities, including poverty alleviation, improved governance, the prevention and recovery from natural disasters, and gender.

## IMPACT

The evaluators will assess the extent to which the project is achieving impacts or progressing towards the achievement of impacts. Key findings that should be brought out in the evaluations include whether the project has demonstrated: a) verifiable improvements in ecological status, b) verifiable reductions in stress on ecological systems, and/or c) demonstrated progress towards these impact achievements.<sup>8</sup>

## CONCLUSIONS, RECOMMENDATIONS & LESSONS

The evaluation report must include a chapter providing a set of **conclusions, recommendations** and **lessons**.

## IMPLEMENTATION ARRANGEMENTS

The principal responsibility for managing this evaluation resides with the UNDP CO China. The UNDP CO will contract the evaluators and ensure the timely provision of per diems and travel arrangements within the country for the evaluation team. The Project Team will be responsible for liaising with the Evaluators team to set up stakeholder interviews, arrange field visits, coordinate with the Government etc.

## EVALUATION TIMEFRAME

The total duration of the evaluation will be 30 days according to the following plan:

Activity	Timing	Completion Date
<b>Preparation</b>	3 days ( <i>recommended: 2-4</i> )	July 05 2013
<b>Evaluation Mission</b>	15 days ( <i>r: 7-15</i> )	July 26 2013
<b>Draft Evaluation Report</b>	10 days ( <i>r: 5-10</i> )	Aug 16 2013
<b>Final Report</b>	2 days ( <i>r: 1-2</i> )	Aug 30 2013

## EVALUATION DELIVERABLES

The evaluation team is expected to deliver the following:

Deliverable	Content	Timing	Responsibilities
<b>Inception Report</b>	Evaluator provides clarifications on timing and method	No later than 2 weeks before the evaluation mission.	Evaluator submits to UNDP CO
<b>Presentation</b>	Initial Findings	End of evaluation mission	To project management, UNDP CO
<b>Draft Final Report</b>	Full report, (per annexed template) with annexes	Within 3 weeks of the evaluation mission	Sent to CO, reviewed by RTA, PCU, GEF OFPs
<b>Final Report*</b>	Revised report	Within 1 week of receiving UNDP comments on draft	Sent to CO for uploading to UNDP ERC.

<sup>8</sup> A useful tool for gauging progress to impact is the Review of Outcomes to Impacts (ROTI) method developed by the GEF Evaluation Office: [ROTI Handbook 2009](#)

\*When submitting the final evaluation report, the evaluator is required also to provide an 'audit trail', detailing how all received comments have (and have not) been addressed in the final evaluation report.

## TEAM COMPOSITION

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The evaluation team will be composed of 1 international evaluator and 1 national evaluator. The consultants shall have prior experience in evaluating similar projects. Experience with GEF financed projects is an advantage. The international evaluator will be the team leader and responsible for finalizing the report. The evaluators selected should not have participated in the project preparation and/or implementation and should not have conflict of interest with project related activities.

The Team members must present the following qualifications:

- Minimum 10 years of relevant professional experience
- Knowledge and UNDP and GEF
- Previous experience with results-based monitoring and evaluation methodologies;
- Technical knowledge in the POPs and Chemical areas
- Previous experience of UNDP/GEF programme evaluation is asset

## EVALUATOR ETHICS

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Evaluation consultants will be held to the highest ethical standards and are required to sign a Code of Conduct (Annex E) upon acceptance of the assignment. UNDP evaluations are conducted in accordance with the principles outlined in the [UNEG 'Ethical Guidelines for Evaluations'](#)

## PAYMENT MODALITIES AND SPECIFICATIONS

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The payment will be in a lump sum covering the consulting fee in 30 working days and the travel cost (transportation and DSA) for local sites visiting.

%	Milestone
23%	After contract signed (advance of total travel cost)
77%	Following submission and approval (UNDP-CO and UNDP RTA) of the final terminal evaluation report (consulting fee for 30 working days)

## APPLICATION PROCESS

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Applicants are requested to apply online (indicate the site, such as <http://jobs.undp.org>, etc.) by June 07 2013. Individual consultants are invited to submit applications together with their CV for these positions. The application should contain a current and complete C.V. in English with indication of the e-mail and phone contact. Shortlisted candidates will be requested to submit a price offer indicating the total cost of the assignment (including daily fee, per diem and travel costs).

UNDP applies a fair and transparent selection process that will take into account the competencies/skills of the applicants as well as their financial proposals. Qualified women and members of social minorities are encouraged to apply.

## **ANNEX A: PROJECT LOGICAL FRAMEWORK**

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*(to be added)*

## **ANNEX B: LIST OF DOCUMENTS TO BE REVIEWED BY THE EVALUATORS**

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### **I. Project Documents**

- UNDP ProDoc signed with China MEP
- GEF Project Information Form (PIF), Project Document and Log Frame Analysis (LFA)
- Project Implementation Plan
- Implementing/executing partner arrangements
- List and contact details for project staff, key project stakeholders, including Project Boards, and other partners to be consulted
- Project sites, highlighting suggested visits
- Midterm evaluation (MTE) and other relevant evaluations and assessments
- Annual Project Implementation Reports (PIR)
- Project budget, broken out by outcomes and outputs
- Project Tracking Tool
- Financial Data
- Sample of project communications materials, i.e. press releases, brochures, documentaries, etc.

### **II. UNDP Documents**

- Development Assistance Framework (UNDAF)
- Country Programme Document (CPD)
- Country Programme Action Plan (CPAP)

### **III. GEF Documents**

- GEF focal area strategic program objectives

## ANNEX C: EVALUATION QUESTIONS

*This is a generic list, to be further detailed with more specific questions by CO and UNDP GEF Technical Adviser based on the particulars of the project.*

Evaluative Criteria Questions	Indicators	Sources	Methodology
<b>Relevance: How does the project relate to the main objectives of the GEF focal area, and to the environment and development priorities at the local, regional and national levels?</b>			
•	•	•	•
•	•	•	•
•	•	•	•
<b>Effectiveness: To what extent have the expected outcomes and objectives of the project been achieved?</b>			
•	•	•	•
•	•	•	•
•		•	•
<b>Efficiency: Was the project implemented efficiently, in-line with international and national norms and standards?</b>			
•	•	•	•
•	•	•	•
•	•	•	•
<b>Sustainability: To what extent are there financial, institutional, social-economic, and/or environmental risks to sustaining long-term project results?</b>			
•	•	•	•
•	•	•	•
•	•	•	•
<b>Impact: Are there indications that the project has contributed to, or enabled progress toward, reduced environmental stress and/or improved ecological status?</b>			
•	•	•	•
•	•	•	•

## ANNEX D: RATING SCALES

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<p><b>Ratings for Outcomes, Effectiveness, Efficiency, M&amp;E, I&amp;E Execution</b></p> <p>6: Highly Satisfactory (HS): no shortcomings          5: Satisfactory (S): minor shortcomings          4: Moderately Satisfactory (MS)          3: Moderately Unsatisfactory (MU): significant shortcomings          2: Unsatisfactory (U): major problems          1: Highly Unsatisfactory (HU): severe problems</p>	<p><b>Sustainability ratings:</b></p> <p>4. Likely (L): negligible risks to sustainability          3. Moderately Likely (ML): moderate risks          2. Moderately Unlikely (MU): significant risks          1. Unlikely (U): severe risks</p>	<p><b>Relevance ratings</b></p> <p>2. Relevant (R)          1.. Not relevant (NR)</p> <p><b>Impact Ratings:</b></p> <p>3. Significant (S)          2. Minimal (M)          1. Negligible (N)</p>
<p><i>Additional ratings where relevant:</i>          Not Applicable (N/A)          Unable to Assess (U/A)</p>		

## ANNEX E: EVALUATION CONSULTANT CODE OF CONDUCT AND AGREEMENT FORM

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### Evaluators:

8. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
9. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
10. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence, and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals, and must balance an evaluation of management functions with this general principle.
11. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
12. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
13. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study imitations, findings and recommendations.
14. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

### Evaluation Consultant Agreement Form<sup>9</sup>

#### Agreement to abide by the Code of Conduct for Evaluation in the UN System

Name of Consultant: \_\_\_\_\_

Name of Consultancy Organization (where relevant): \_\_\_\_\_

**I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.**

Signed at *place* on *date*

Signature: \_\_\_\_\_

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<sup>9</sup> [www.unevaluation.org/unegcodeofconduct](http://www.unevaluation.org/unegcodeofconduct)

## ANNEX F: EVALUATION REPORT OUTLINE<sup>10</sup>

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- i. Opening page:
  - Title of UNDP supported GEF financed project
  - UNDP and GEF project ID#s.
  - Evaluation time frame and date of evaluation report
  - Region and countries included in the project
  - GEF Operational Program/Strategic Program
  - Implementing Partner and other project partners
  - Evaluation team members
  - Acknowledgements
- ii. Executive Summary
  - Project Summary Table
  - Project Description (brief)
  - Evaluation Rating Table
  - Summary of conclusions, recommendations and lessons
- iii. Acronyms and Abbreviations  
(See: UNDP Editorial Manual<sup>11</sup>)
  1. Introduction
    - Purpose of the evaluation
    - Scope & Methodology
    - Structure of the evaluation report
  2. Project description and development context
    - Project start and duration
    - Problems that the project sought to address
    - Immediate and development objectives of the project
    - Baseline Indicators established
    - Main stakeholders
    - Expected Results
  3. Findings  
(In addition to a descriptive assessment, all criteria marked with (\*) must be rated<sup>12</sup>)
    - 3.1 Project Design / Formulation
      - Analysis of LFA/Results Framework (Project logic /strategy; Indicators)
      - Assumptions and Risks
      - Lessons from other relevant projects (e.g., same focal area) incorporated into project design
      - Planned stakeholder participation
      - Replication approach
      - UNDP comparative advantage
      - Linkages between project and other interventions within the sector
      - Management arrangements
    - 3.2 Project Implementation
      - Adaptive management (changes to the project design and project outputs during implementation)
      - Partnership arrangements (with relevant stakeholders involved in the country/region)
      - Feedback from M&E activities used for adaptive management

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<sup>10</sup>The Report length should not exceed 40 pages in total (not including annexes).

<sup>11</sup> UNDP Style Manual, Office of Communications, Partnerships Bureau, updated November 2008

<sup>12</sup> Using a six-point rating scale: 6: Highly Satisfactory, 5: Satisfactory, 4: Marginally Satisfactory, 3: Marginally Unsatisfactory, 2: Unsatisfactory and 1: Highly Unsatisfactory, see section 3.5, page 37 for ratings explanations.

- Project Finance:
  - Monitoring and evaluation: design at entry and implementation (\*)
  - UNDP and Implementing Partner implementation / execution (\*) coordination, and operational issues
- 3.3** Project Results
- Overall results (attainment of objectives) (\*)
  - Relevance(\*)
  - Effectiveness & Efficiency (\*)
  - Country ownership
  - Mainstreaming
  - Sustainability (\*)
  - Impact
- 4.** Conclusions, Recommendations & Lessons
- Corrective actions for the design, implementation, monitoring and evaluation of the project
  - Actions to follow up or reinforce initial benefits from the project
  - Proposals for future directions underlining main objectives
  - Best and worst practices in addressing issues relating to relevance, performance and success
- 5.** Annexes
- ToR
  - Itinerary
  - List of persons interviewed
  - Summary of field visits
  - List of documents reviewed
  - Evaluation Question Matrix
  - Questionnaire used and summary of results
  - Evaluation Consultant Agreement Form

## ANNEX G: EVALUATION REPORT CLEARANCE FORM

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*(to be completed by CO and UNDP GEF Technical Adviser based in the region and included in the final document)*

Evaluation Report Reviewed and Cleared by

UNDP Country Office

Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

UNDP GEF RTA

Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## Annex II – Itineraries of Evaluation Field Visits

Mission of Terminal Evaluation for UNDP/GEF Project “Improvement of DDT-based Production of Dicofol and Introduction of Alternative Technologies including IPM for Leaf Mites Control in China”

8 - 26 July 2013

Time	Place of Visit	Purpose	Organizations	Relevance to the Project	Participants
Monday 2013-07-08	FECO/MEP, Beijing	<p><b>Inception Meeting:</b></p> <p>Purpose and Requirements for Terminal Evaluation;</p> <p>Report on project progress</p> <p>Report on demonstration projects</p> <p>Reports on contaminated sites</p> <p>Finalization of Terminal Evaluation mission</p>	<p>United Nations Development Programme, China Country Office</p> <p>Foreign Economic Cooperation Office, Ministry of Environmental Protection</p> <p>National Agro-Technical Extension and Service Center, Ministry of Agriculture</p> <p>Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences</p>	<p>International Implementation Agency</p> <p>National Implementing Partner</p> <p>Technical support agency for IPM application and Promotion</p> <p>National Project Coordinator; Technical support agency for non-closed system production plant closure , risk assessment</p>	<p>Cao Qiaohong</p> <p>Ding Qiong Wang Lin Li Ying</p> <p>Yang Puyun</p> <p>Zhu Jianxin</p> <p>William Kwan Chen Yang</p>
Tuesday 2013-07-09	National Agro-Technical Extension and Service Centre, Ministry of Agriculture, Beijing	Overall IPM Implementation Plan, Evaluation, and National Replication Implementation Plan	<p>National Agro-Technical Extension and Service Centre, Ministry of Agriculture</p> <p>Institute of Plant Protection , Academy of Agricultural Sciences</p>	Technical support agency for IPM application, promotion, and national replication	<p>Yang Puyun Cao Aocheng Li Ping Zhu Xiaoming Wang Lin William Kwan Chen Yang</p>

Time	Place of Visit	Purpose	Organizations	Relevance to the Project	Participants
Wednesday-Friday 2013-07-10 – 2013-07-12	Zhanhua County, Shandong Province	Consumption of dicofol; demonstration site for application of IPM technologies for cotton	County Government of Zhanhua County  Zhanhua County Agriculture Bureau  Vegetation Protection Central Station of Shandong Province	Shandong Zhanhua County Local Project Management Office, IPM demonstration site for cotton	Agriculture Bureau of Zhanhua County,  Agriculture Bureau of Binzhou City,  Vegetation Protection Station of Shandong Province,  Zhu Xiaoming Wang Lin William Kwan Chen Yang
Monday – Tuesday 2013-07-15 – 2013-07-16	Yidu City, Hubei Province	Consumption of dicofol; demonstration site for application of IPM technologies for citrus	City Government of Yidu City  Yidu City Agriculture Bureau  Vegetation Central Protection Station of Hubei Province	Hubei Yidu City Local Project Management Office, IPM demonstration site for citrus	Agriculture Bureau of Yidu City  Vegetation Protection Central Station of Hubei Province  Wang Lin William Kwan Chen Yang
Wednesday-Friday 2013-07-17 – 2013-07-19	Luochuan County, Shaanxi Province	Consumption of dicofol; demonstration site for application of IPM technologies for apple	County Government of Luochuan County  Luochuan County Agriculture Bureau Vegetation Central Protection Station of Shaanxi Province	Shaanxi Luochuan County Local Project Management Office, IPM demonstration site for apple	Agriculture Bureau and EPB of Luochuan County  Wang Lin  William Kwan Chen Yang
Friday – Saturday 2013-07-19 – 2013-07-20	Yangzhou, Jiangsu Province	Production of dicofol	Yangzhou Environmental Protection Bureau Jiangsu Yangnong Chemical Group Co., Ltd.	Closed-system dicofol production facility	Yangzhou EPB Ren Shijian Liu Wenbin Wang Lin William Kwan Chen Yang
Monday 2013-07-22	Zhangjiakou, Hebei Province	Contaminated site	Veolia Environmental Services, Tianjin City  Zhangjiakou Environmental		Zhangjiakou EPB, Huailai EPB,  Veolia Environmental Services,

Time	Place of Visit	Purpose	Organizations	Relevance to the Project	Participants
			Protection Bureau  Huailai Environmental Protection Bureau		Zhu Jianxin Wu Guanglong Wang Lin William Kwan Chen Yang
Tuesday- Thursday 2013-07-23 – 2013-07-25	Beijing	Review of missing information; Preparation of preliminary briefing report	FECO/MEP, UNDP	National Implementing Partner and International Implementation Agency	William Kwan Chen Yang
Friday 2013-07-26	FECO/MEP, Beijing	Debriefing and presentation of draft MTE report to FECO and UNDP	FECO/MEP, UNDP, Agriculture Bureaus of Zhanhua County, Yidu City, Luochuan County Vegetation Central Protection Station of Shandong, Hubei and Shaanxi Provinces Yangzhou EPB Jiangsu Yangnong Chemical Group Co. Ltd. National Agro- Technical Extension and Service Center Division of Evaluation and International Consultancy, FECO/MEP	National Implementing Partner, International Implementation Agency, Local Project Management Office of Demonstration sites	Ding Qiong Wang Lin Li Ying Cao Qiaohong Zhu Jianxin  Agriculture Bureaus of Zhanhua, Yidu and Luochuan  Vegetation Protection Central Station of Shandong, Hubei and Shaanxi  NATESC  Institute of Plant Protection, China Academy of Agricultural Sciences  William Kwan Chen Yang

### **Annex III - List of Individuals and Entities Interviewed**

During the course of Terminal Evaluation Mission and Site Visits, 8 – 26 July 2013, 30 September 2013, and 30 - 31 October 2013

#### **Convention Implementation Office (CIO) (Project Management Division V), Foreign Economic Cooperation Office, Ministry of Environmental Protection (FECO/MEP), Beijing**

Ms. DING Qiong, Division Chief  
Mr. WANG Lin, Program Officer  
Ms. LI Ying, Program Associate  
Mr. WU Guanglong, Program Associate

#### **Division of Evaluation and International Consultancy, Foreign Economic Cooperation Office, Ministry of Environmental Protection, Beijing**

Ms. ZHANG Jianzhi, Research Professor

#### **Ministry of Finance**

Mr. YE Jiandi, GEF Operational Focal Point, China; Director, International Financial Institution, Division III, International Department

#### **United Nations Development Programme (UNDP), China Country Office, Beijing**

Ms. CAO Qiaohong, Programme Manager, Energy and Environment Team  
Ms. MENG Qi, Programme Assistant, Energy and Environment Team

#### **National Agro-Technical Extension and Service Centre (NATESC), Ministry of Agriculture, Beijing**

Dr. YANG Puyun, Director, Division of Pest Control; Project Expert  
Ms. LI Ping, Senior Agronomist, Division of Pest Control; Project Expert  
Mr. ZHU Xiaoming, Agronomist

#### **Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing**

Dr. CAO Aocheng

#### **Research Center for Eco-Environmental Sciences (RCEES), Chinese Academy of Sciences, Beijing**

Dr. ZHU Jianxin, Associate Professor; Project Expert, Non-Closed System Dicofol Production  
Dr. LIU Wenbin, Associate Professor; Project Expert, In-situ, Closed-System Dicofol Production

#### **Zhanhua County, Shandong Province**

##### **Agriculture Bureau, Binzhou City**

Mr. WANG Shouqi, Deputy Director General  
Mr. GAO Shuqiang  
Mr. JIN Zongting

##### **Agriculture Bureau, Zhanhua County**

Mr. ZHANG Yulong, Deputy Director General; Director, Local Project Management Office  
Ms. Wu Zhenmei, Section Chief

##### **Vegetation Protection Station, Zhanhua County**

Mr. ZHANG Wenyin,

### **Vegetation Protection Central Station of Shandong Province**

Mr. LIN Yanru, Director General  
Ms. REN Baozhen, Deputy Director General; Project Expert

#### **Farmers:**

##### **Cao Jia Gou Village and Feng Jia Town:**

Xu Jianling, Wang Yousan, Gao Zhaojun, Li Zhitao, Wang Fengsan

### **Yidu City, Hubei Province**

#### **Yidu Municipal Government**

Mr. CHEN Honglin, Vice Mayor

#### **Agriculture Bureau, Yidu City**

Ms. WANG Defeng, Director General  
Mr. ZHAO Qiang, Deputy Director General; Director, Local Programme Management Office  
Mr. ZHANG Hua, Director, Financial Planning

#### **Vegetation Protection Station, Yidu City**

Mr. CAO Shihong, Director General; Project Expert

### **Vegetation Protection Central Station of Hubei Province**

Mr. LUO Hangang, Deputy Director General  
Mr. ZHANG Qiudong, Director General; Project Expert

#### **Farmers**

**Hong Hua Tao Village and Nan Qiao Village:** GUO Weihua, YANG Yunfeng, YANG Chenglin, LIAO Zuoju, ZHAO Zhongxing, WANG Wanrong, PEI Xueping, CHEN Houliang, MAO Zhongxi

### **Chaozhou Zhongtian Agricultural Science and Technology Co., Ltd., Chaozhou, Guangdong**

Mr. HE Yong, Director, General Manager

### **Louchuan County, Shaanxi Province**

#### **Louchuan County Government**

Mr. CHEN Yaozhong, Party Committee Secretary, Deputy County Mayor

#### **Agriculture Bureau, Luochuan County**

Qu Juntao, Director General

#### **Apple Bureau, Louchuan County**

Mr. Shi Xiaobin, Director General

#### **Environmental Protection Bureau, Luochuan County**

Mr. ZHAO Jingfeng, Director General

#### **Finance Bureau, Luochuan County**

Mr. WU Jinqun, Director General

**Vegetation Protection Central Station of Shaanxi Province**

Ms. WANG Yahong, Senior Agronomist; Project Expert

**Vegetation Protection Station of Luochuan County**

Mr. Zhao Wenhui, Director General

**International Cooperation Division, Institute for the Control of Agrochemicals, Ministry of Agriculture**

Mr. BO Rui, Principal Staff

**Farmers:**

**Jing Zhao Village:** A total of more than 20 farmers, including WU Xiaobin, HAN Wenquan, SUN Yaolong, HAN Tieshuan, FU Zhimin

**Dong Bei Ding Village:** A total of more than 20 farmers, including Ms. YANG Fangxia, Ms. CHEN Yanxia, MA Yinhu, JUO Qinhuai, REN Miaoqin

**Environmental Protection Bureau, Yangzhou, Jiangsu**

Mr. WU Yanlong, Deputy Director General  
Mr. SUN Jiang, Division Chief, Science and Technology Division

**Jiangsu Yangnong Chemical Group Co., Ltd., Yangzhou, Jiangsu**

Mr. Ren Shijian, Vice Director, Production Division

**Institute of Environmental Science, Nanjing University**

Dr. ZHU Xiaodong, Professor and Director

**Zhangjiakou City Environmental Protection Bureau, Hebei Province**

Mr. HAN Guoyu, Deputy Director General  
Mr. ZHANG Zhenyong, Division Chief

**Huilai County Environmental Protection Bureau, Zhangjiakou City, Hebei Province**

Mr. LIU Changyu, Director General  
Mr. CHING Shul, Deputy Director General  
Ms. CHEN Hua

**Veolia Environmental Services, Tianjin City**

Mr. HUA Mingliang, Head Engineer  
Mr. ZHANG Shiliang  
Mr. WANG Shuyuan, Division Chief

## Annex IV - Summary of Field Visits

The international and national evaluators joined in Beijing for the duration of 8 – 26 July 2013. In addition to conducting evaluation meetings with the IA and EA and key project partners in Beijing, the evaluators carried out field trips to the three demonstration sites (Zhanhua County, Shandong Province, Yidu City, Hubei Province, and Luochuan County, Shaanxi Province), the closed-system dicofol plant of Jiangsu Yangnong Chemical Group Co. Ltd. at Yangzhou, Jiangsu Province, and the cleaned-up contamination site of Great Wall Pesticide and Chemical Group at Zhangjiakou, Hebei Province. Summary of field visits to the above locations is provided below.

### 10 – 11 July 2013, Zhanhua County, Shandong Province

**Participating Organizations:** Binzhou City Agriculture Bureau, Zhanhua County Agriculture Bureau, Vegetation Protection Central Station of Shandong Province, Zhanhua County Vegetation Protection Station, Farmers.

The evaluation team visited Zhanhua County, the location for IPM demonstration for cotton, and started with a meeting with the participation of project partners and key stakeholders. Final project progress reports were presented by the Zhanhua County Agriculture Bureau, the Zhanhua County Vegetation Protection Station, and the Vegetation Protection Central Station of Shandong Province. Zhanhua County Agriculture Bureau was designated the Local Project Management Office (LPMO) to undertake project management, and to implement the demonstration activities. Technical expert from the Vegetation Protection Central Station of Shandong Province was subcontracted to prepare the Operating Manual for the demonstration of cotton, and to provide technical assistance on the demonstration activities.

Reports from the LPMO and the Vegetation Protection Station of Zhanhua County both confirmed complete implementation of all demonstration activities and achievements of excellent project results after 7 years of hard work since the start of project formulation. Zhanhua County promulgated legislation to prohibit the production, sale and use of dicofol that took effect on December 2011. IPM Demonstration activities yielded significant impacts in alternative technologies; capacity building; increased awareness on harm of dicofol to environment and human health, benefits of IPM technologies; resulted in significant reduction in pesticide use and elimination of dicofol use from 1.25 MT in 2010 to zero consumption recorded since 2011.

Zhanhua County had successfully carried out IPM technologies demonstration in a total of 154,406 mu covering 11 towns, 200 villages with participation of about 1,800 families. Through demonstration, IPM applications were confirmed as economically viable and effective alternatives to substitute dicofol use for cotton. Through the active involvement at the national, provincial, city and county levels on the Training of Trainers (TOT) and Farmers Field School (FFS) training programme, a total of 230 Trainers and 30,365 farmers had been trained, generated knowledge and awareness on IPM applications, marketing skills and capacity strengthening.

In terms of the effectiveness of the project, the comprehensive social benefits are obvious in the enhanced scientific growing techniques and quality of cotton that contribute to agricultural development and facilitate the further promotion and implementation of IPM technology. IPM technologies introduced had increased yield of cotton. Through training, public awareness activities, promotion of IPM technologies, and data gathered through pesticide residues monitoring, all these made it possible to present the authorities with solid data to form the foundation to prevent highly toxic pesticide applications. In terms of economic benefits, the reduced quantity and frequency of pesticide use, and increased yield and quality of cotton, led to increased profit for farmers who participated in the demonstration activities. Zhanhua County became one of the Nation's more than 100 Green Prevention Demonstration Areas, awarded financial support between RMB 20,000 – 50,000 to further implement demonstration activities.

The Vegetation Protection Central Station highlighted its efforts that contributed to the successful implementation of the demonstration activities, particularly the direct involvement in training activities, efforts in securing multi-party support, providing technical support from Provincial Central Station. To promote IPM technologies for cotton, provincial level technical trainings were conducted at more than 130 counties. A replication and promotion plan was prepared to further promote IPM technology to ensure the long term sustainability of the excellent demonstration results.

The evaluators also had the opportunities to visit the demonstration plots and had productive interviews with two groups of farmers from two separate villages who participated in the demonstration activities and/or attended the FFS training. Through interviews, farmers confirmed their increased awareness on harms of dicofol to environment and human health, their knowledge and acceptance of IPM technologies. Farmers also testified to the economic benefits generated and committed not use dicofol.

The evaluators also visited 5-6 pesticide suppliers in the area and had discussions with owners of the suppliers who confirmed that there is no longer dicofol for sale in the market.

### **15 – 16 July 2013, Yidu City, Hubei Province**

**Participating Organizations:** Yidu City Municipality Government, Yidu City Agriculture Bureau, Yidu City Vegetation Protection Station, Hubei Province Vegetation Protection Central Station, Farmers

Yidu City was selected as the location for IPM demonstration for citrus. The field visit started with visit to several demonstration areas in different sections of the City boundary demonstrating varieties of IPM technologies and met afterwards with farmers from two different villages and had some in-depth discussions. Farmers expressed their increased understanding and positive experience with IPM applications, and their favourable view on the replication program. They confirmed the economic benefits generated as a result of reduced pesticide usage, improved quality of citrus resulting in produces being supplied to central government residences in Beijing, and exported to Russia and Kazakhstan etc. The farmers regarded the FFS training as very effective and conveyed their wish that continued trainings would be offered under the replication program.

The evaluation team also visited a demonstration program on green production under the cooperation of Yidu City Agriculture Bureau and a private enterprise. In addition to demonstrating IPM technologies in several crops, a green brand label “Greenest” was created to promote and sell the green crops.

In a meeting attended by Yidu City Agriculture Bureau, Yidu City Vegetation Protection Station, and Hubei Province Vegetation Protection Central Station, final progress reports on the demonstration activities were presented. Yidu City Agriculture Bureau was designated the LPMO to undertake project management and to implement the demonstration activities. LPMO reported full completion of all demonstration activities, achieving excellent project results. Yidu City promulgated legislation to prohibit the production, sale and use of dicofol effective January 2010. Through the TOT and FFS trainings, 350 Trainers and 34,649 farmers had been trained on mites detection and identification, pesticide use, and IPM applications. Trainings were also conducted for personnel involved in selling pesticides. The training resulted in increased awareness of the harms of dicofol to environment and human health, knowledge on pesticide use, and on IPM applications. IPM demonstration was conducted in a total area of 158,400 mu, covered 10 towns, 127 villages, with 11,739 families participated. Sale of dicofol of 15.5 MT/a recorded in 2008 was completely eliminated since 2011. With the introduction of IPM applications, frequency and quantity of pesticide use at orchards was reduced, resulting in reduction in production costs, in pesticide residues, and in environmental pollution, and increased profit for the farmers in the demonstration plots amounting to RMB180 million as compared to non-demonstration plots. In addition to generating increased autonomy for the farmers, it also led to the increase in environmental, social and economic benefits.

Report from Hubei Province Vegetation Protection Central Station outlined the technology training and support extended to the IPM demonstration activities. Modeled on the experience of Yidu City, it organized experts to develop technology plans, including training and awareness programmes, to provide trainings targeting provincial vegetation protection technicians. In addition to reinforcing the excellent project impacts: efficacy of alternatives, reasonable costs, low negative environmental impact, alignment with the provincial citrus pest control techniques that helped to promote the growth of its citrus industry, it also highlighted the social and environmental benefits in reduced frequency of pesticide use, increased quantity of natural enemies protection, farmers trained to lead the use of environmentally friendly alternatives, promoted local sustainable development, and led to the establishment of a number of green citrus production bases that will contribute to sustainable development of local citrus industry. The report also summarized the experience gained through the excellent project implementation efforts:

- 1) Management by objectives: Focused on overall objectives. Based the project planning, design, implementation, management and evaluation activities on the identified objectives, to ensure successful achievement of project objectives;
- 2) Emphasis on the implementation process: In the implementation process, 7 “focus” points were identified: planning and design; supervision and management; capacity building; practical results; matching technology with materials; promotion and publicity; and long term impact;
- 3) Importance of teamwork: Project involved multidisciplinary, cross-ministerial cooperation, there existed efficient coordination, effective collaboration, and strong spirit of cooperation that contributed to orderly and efficient implementation.

In January 2013, the Provincial Vegetation Protection Central Station issued Notice on the “Investigation and application of alternative technology for citrus” and launched a provincial survey on dicofol use, and organized technical training on selection of alternatives and promotion of IPM demonstration and application. The IPM technology replication program had been initiated.

The evaluation team visited several pesticides suppliers and verified that there was no dicofol available for sell for several years, neither was there inquiry to buy dicofol. Pesticides suppliers had been trained to introduce and promote environmentally friendly and effective alternatives to farmers.

#### **17 – 18 July 2013, Luochuan County, Shaanxi Province**

**Participating Organizations:** Luochuan County Agriculture Bureau, Luochuan County Vegetation Protection Station, Luochuan Apple Bureau, Shaanxi Province Vegetation Protection Central Station, Institute for the Control of Agrochemicals of MOA, Farmers

Luochuan County was selected as the location for IPM demonstration of apple. Apple is a major crop for Luochuan County in terms of national sales and the export market, it is nicknamed Apply City. The Apple Bureau had spared no effort to promote improved technology and management standards in order to expand development of the industry. Luochuan County Agriculture Bureau was designated LPMO responsible for project management and implementation of the demonstration activities. Through effective TOT and FFS trainings, a total of 274 persons received technical trainings to act as trainers. A total of 30,160 farmers successfully completed the FFS training with increased awareness on pesticide use and risks of dicofol to human health and environment, and gained experience and knowledge in IPM applications. IPM demonstration was carried out in a total area of 152,641.60 mu, covering 5 counties/towns, in 85 villages, with participation of 6,757 families. The full implementation of all demonstration activities contributed to the achievement of all project outcomes and objectives. The excellent efforts could be attributed to the strong policy, management and financial support from the leadership as its foundation for success, complemented by an effective and operational system, with outstanding advocacy and training as its driving force, and IPM as the key technology.

The Provincial Vegetation Protection Central Station outlined the works it had done in areas of training, promotion, surveys and data collection, technology support to the demonstration activities that contributed to smooth implementation, successfully achieving project outcomes and objectives, and generated economic, environmental and social benefits. From the recorded consumption of 400 – 500 kg. in 2010, dicofol consumption had been totally eliminated since 2011. In addition, it also credited the well thought-out project design, clear objectives, scientific planning and design of the IPM demonstration activities, efficient management and coordination efforts, strong policy, management and financial support from County Government and related departments, as important contributing factors to the success of the project. It was also reported that activities were already initiated to implement and promote the replication of IPM technologies at the provincial level.

In meeting with the farmers at two villages, they indicated that they were not sure of the IPM technology at the initial stage, but through the FFS training, they not only accepted IPM technologies, but created catalytic and leading effect to attract many other farmers to apply IPM technologies in their own plots, at their own costs. Through training, they learned to apply specific pesticides targeting different types of pest. The farmers concluded that the investment cost on IPM technology was reasonable, the sugar content and quality of apply was increased, making it more tasty and with nicer appearance, and led to increase in profit.

The evaluation team subsequently visited pesticide suppliers to investigate on supply and sale of dicofol. Luochuan County had relocated all its pesticide suppliers in one central location where pesticides were on sale, to minimize impact to the environment in case of waste, accidental discharge and spillage. Suppliers confirmed that they no longer sell dicofol, and farmers no longer select dicofol for mites control. Suppliers were trained to introduce and promote environmentally friendly and effective alternatives to farmers.

Review of implementation activities undertaken by all the three LPMOs reconfirmed observations and conclusions from the MTE on their efficient project management, effective coordination and strong ownership that contributed to successful achievements of all project outcomes and objectives. The achievements were also resulted from strong policy, management and financial support of high level officials from the County Governments and relevant departments. Detailed information on the project results achieved under the IPM demonstration in the three demonstration counties is provided under Outcome 2 in Section 3.3 Project Results.

### **19 – 20 July 2013, Yangzhou, Jiangsu Province**

**Participating Organizations:** Yangzhou City Environmental Protection Bureau, Jiangsu Yangnong Chemical Group Co. Ltd.

The evaluators met at Yangzhou Environmental Protection Bureau (EPB) in Yangzhou City, Jiangsu Province where the closed-system dicofol production plant of the Jiangsu Yangnong Chemical Group Co. Ltd. is located. Yangzhou City EPB was designated to carry out supervision and monitoring of DDT release and DDT waste disposal relating to the closed-system dicofol production to ensure environmentally sound chemical management. Through training on management capacity, and taking into consideration the characteristic of Yangnong's dicofol production line, Yangzhou City EPB had developed environmentally sound management techniques to effectively monitor the DDT emission during the dicofol production process on regular basis. Yangzhou City EPB would also initiate public awareness campaign to bring awareness on the risks of dicofol and POPs to human health and the environment.

Representative from Jiangsu Yangnong Chemical Group Co. Ltd. presented progress on its environmentally sound management of its closed-system dicofol production line. Yangnong instituted a three-system standardized management mechanism, QEO, which combined Quality management, Environmental management and Occupational management techniques to effectively monitor the waste disposal and emission of DDT in the dicofol production process. Throughout project implementation, Yangnong had been able to comply with the requirements of the Stockholm Convention, continued to strengthen its production control, reinforced environmental management, conducted regular monitoring to ensure its DDT emission is within limit, and cooperated with inspection, monitoring and evaluation activities carried out by independent entity, MEP or EPB.

As Yangnong's current production location will be subject to relocation, it has already established its relocation plan, and has already started to gradually reduce the quantity of its dicofol production since November 2012. To comply with the Stockholm Convention, Yangnong will not seek application for exemption when current exemption expires on 17 May 2014, and will close down its closed-system dicofol production line.

### **22 July 2013, Zhangjiakou, Hebei Province**

**Participating Organizations:** Zhangjiakou City Environmental Protection Bureau, Huailai County Environmental Protection Bureau, Zhangjiakou Agro-Chemical Group, Veolia Environmental Services of Tianjin City

Since Great Wall Agro-Chemical Group Co. Ltd. ceased production and abandoned the production site and its production equipment, the contaminated site had been under the custody of the local EPB. Under the cooperation of the Zhangjiakou City EPB, Huailai County EPB and FECO/MEP, and through a competitive bidding process, Veolia Environmental Services of Tianjin City was contracted in 2011 to carry out contaminated site and contaminated equipment clean-up.

Veolia presented the conditions of DDT contamination at the Great Wall site and provided details on its clean-up operation for the period of December 2011 to November 2012. In the clean-up process, Veolia conducted training, carried out risk assessment, researched control measures exercised by the county, identified secondary pollution prevention safety measures and emergency measures. There was no occurrence of safety incident throughout implementation. A total of 1,600 MT of contaminated waste were carted to Tianjin City for environmentally sound disposal. In addition to the presentation, Veolia conducted a tour of the Great Wall site, showed the evaluators

and the participants the equipment, production and storage locations that went through the clean-up process and responded to questions posted. The evaluators subsequently examined the testing, inspection and completion reports issued by Tianjin City Environmental Inspection Center, certifying safe disposal of contaminated materials and meeting indicators stipulated in the contract.

Huilai and Zhangjiakou EPBs explained that the entire clean-up process was supervised by the Beijing Normal University and implemented in compliance with environmental regulations. Through the clean-up and disposal of contaminated materials, risk to the local environment had been resolved. Leaders and staff of three divisions of the local EPBs, one major brigade and one of inspection station from the local area all collectively contributed to and coordinated effectively to carry out oversight and related logistical services. Many previous issues and disputes were resolved as a result of the clean-up, and greatly promoted local environmental protection work.

## Annex V - List of Documents Reviewed

- GEF Project Identification Form (PIF)
- Project document signed between UNDP and MEP
- Progress and Technical Reports
- Quarterly Operation Reports (QORs)
- Financial Data including UNDP Combined Delivery Reports (CDRs)
- Project Implementation Reports (PIRs)
- Annual Progress Reports (APRs)
- Midterm Evaluation (MTE) and other relevant evaluations and assessments reports
- List and contact details for project staff, key project stakeholders, including Project Boards, and other partners to be consulted
- GEF Focal Area Tracking Tool
- Annual Audit Reports
- Sample of project communications materials, i.e. press releases, brochures, documentaries, etc.
- Other UNDP documents available for reference:
  - Development Assistance Framework (UNDAF)
  - Country Programme Document (CPD)
  - Country Programme Action Plan (CPAP)

## Annex VI - Evaluation Question Matrix

Evaluative Criteria Questions	Indicators	Sources	Methodology
<b>Relevance: How does the project relate to the main objectives of the GEF focal area (Persistent Organic Pollutants, POPs), and to the environment and development priorities at the local, regional and national levels?</b>			
<ul style="list-style-type: none"> <li>• How does the Project support the objectives of the Stockholm Convention (SC)</li> <li>• How does the Project support the related strategic priorities of the GEF?</li> </ul>	<ul style="list-style-type: none"> <li>• Existence of a clear relationship between project objectives and GEF POPs focal area</li> </ul>	<ul style="list-style-type: none"> <li>• Project documents</li> <li>• GEF focal area strategies and documents</li> </ul>	<ul style="list-style-type: none"> <li>• Document analysis</li> <li>• GEF website</li> <li>• Interview with government, Project Team, UNDP and other project partners</li> </ul>
<ul style="list-style-type: none"> <li>• How does the Project support the development objectives of PR China?</li> <li>• Does the Project adequately take into account the national realities, both in terms of institutional framework and programming, in its design and its implementation?</li> <li>• To what extent were national partners involved in the design and implementation of the Project?</li> <li>• Were the capacities of executing institutions and counterparts properly considered when the project was designed?</li> <li>• Does the Project participate in the implementation of the SC in China?</li> <li>• How country-driven is the Project?</li> </ul>	<ul style="list-style-type: none"> <li>• Degree of coherence between project objectives and national development priorities, policies and strategies</li> <li>• Level of involvement of government officials and other partners in project design and implementation</li> <li>• Coherence between needs expressed by national stakeholders and UNDP-GEF criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Project documents</li> <li>• China POPs National Implementation Plan</li> <li>• Key project partners</li> </ul>	<ul style="list-style-type: none"> <li>• Document analyses</li> <li>• Interview with government officials, UNDP and project partners</li> </ul>
<ul style="list-style-type: none"> <li>• How does the Project support the objectives of UNDP in this sector?</li> </ul>	<ul style="list-style-type: none"> <li>• Consistency between project objectives and UNDP strategies and development objectives</li> </ul>	<ul style="list-style-type: none"> <li>• Project document</li> <li>• UNDP strategies and programme</li> </ul>	<ul style="list-style-type: none"> <li>• Document analyses</li> <li>• Interviews with government, UNDP, other partners</li> </ul>

Evaluative Criteria Questions	Indicators	Sources	Methodology
<ul style="list-style-type: none"> <li>• How does the Project support the needs of target beneficiaries?</li> <li>• Is the implementation of the Project been inclusive of all relevant stakeholders?</li> <li>• Are local beneficiaries and stakeholders adequately involved in Project design and implementation?</li> </ul>	<ul style="list-style-type: none"> <li>• Strength of the link between expected project results from the project and the needs of relevant stakeholders</li> <li>• Degree of involvement and inclusiveness of stakeholders and beneficiaries in project design and implementation</li> </ul>	<ul style="list-style-type: none"> <li>• Project partners and stakeholders</li> <li>• Needs assessment studies</li> <li>• Project documents</li> </ul>	<ul style="list-style-type: none"> <li>• Document analysis</li> <li>• Interviews with relevant stakeholders</li> </ul>
<ul style="list-style-type: none"> <li>• Are there logical linkage between expected results of the project (logframe) and the project design (in terms of Project components, choice of partners, structure, delivery mechanism, scope, budget, use of resources etc.)?</li> <li>• Is the length of the project sufficient to achieve project outcomes?</li> </ul>	<ul style="list-style-type: none"> <li>• Level of coherence between expected project results and project design internal logic</li> <li>• Level of coherence between project design and implementation approach</li> </ul>	<ul style="list-style-type: none"> <li>• Program and project documents</li> <li>• Key project stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>• Document analysis</li> <li>• Key interviews</li> </ul>
<b>Effectiveness: To what extent have the expected outcomes and objectives of the project been achieved?</b>			
<ul style="list-style-type: none"> <li>• Has the project been effective in achieving its expected outcomes? <ul style="list-style-type: none"> <li>○ Capacity, institutional arrangement, policy enabling environment established or strengthened;</li> <li>○ Alternatives, including IPM technologies, introduced, demonstrated, promoted and accepted;</li> <li>○ Non-closed system production facilities closed and usage of DDT eliminated. 2,800 MT/a of DDT usage, 1,000 MT/a DDT discharge with waste, and 170 MT/a DDT residues in dicofol consumption eliminated;</li> <li>○ Closed-system production plant optimized and DDT waste and release reduced, 350 MT/a DDT discharge with waste, 180 MT/a DDT residues in dicofol consumption minimized;</li> <li>○ Effective M&amp;E activities implemented;</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Indicators in project document results framework and logframe</li> </ul>	<ul style="list-style-type: none"> <li>• Project documents</li> <li>• Project Team and relevant stakeholders</li> <li>• Data reported in project annual and quarterly reports</li> </ul>	<ul style="list-style-type: none"> <li>• Document analysis</li> <li>• Interviews with Project Team</li> <li>• Interviews with relevant stakeholders</li> </ul>

Evaluative Criteria Questions	Indicators	Sources	Methodology
<ul style="list-style-type: none"> <li>○ National replication program prepared, project experience documented and disseminated;</li> <li>○ Effective project management carried out and national capacity established and strengthened.</li> </ul>			
<ul style="list-style-type: none"> <li>● What lessons have been learned from the project regarding achievement of outcomes?</li> <li>● What changes could have been made (if any) to the design of the project in order to improve the achievement of the project's expected results?</li> </ul>	<ul style="list-style-type: none"> <li>● Changes necessary during project implementation</li> </ul>	<ul style="list-style-type: none"> <li>● Data collected through evaluation</li> </ul>	<ul style="list-style-type: none"> <li>● Data analysis</li> <li>● Key interviews</li> </ul>
<b>Efficiency: Was the project implemented efficiently, in-line with international and national norms and standards?</b>			
<ul style="list-style-type: none"> <li>● Was adaptive management used or needed to ensure efficient resource use?</li> <li>● Did the project logical framework and work plans and any changes made to them use as management tools during implementation?</li> <li>● Were the accounting and financial systems in place adequate for project management and producing accurate and timely financial information?</li> <li>● Were progress reports produced accurately, timely and responded to reporting requirements including adaptive management change?</li> <li>● Did the leveraging of funds (co-financing) happen as planned?</li> <li>● Was procurement carried out in a manner making efficient use of project resources?</li> </ul>	<ul style="list-style-type: none"> <li>● Availability and quality of financial and progress reports</li> <li>● Timeliness and adequacy of reporting provided</li> <li>● Planned vs. actual funds leveraged</li> <li>● Occurrence of change in project design / implementation approach (i.e. restructuring when needed to improve project efficiency)</li> </ul>	<ul style="list-style-type: none"> <li>● Project documents and evaluations</li> <li>● EA and IA reports</li> <li>● Project Team</li> </ul>	<ul style="list-style-type: none"> <li>● Document analysis</li> <li>● Key interviews</li> </ul>
<ul style="list-style-type: none"> <li>● To what extent partnerships/linkages between institutions / organizations were encourage and supported?</li> <li>● What partnerships/linkages were facilitated? Which ones can be considered sustainable?</li> <li>● What was the level of efficiency of cooperation and collaboration arrangements?</li> </ul>	<ul style="list-style-type: none"> <li>● Specific activities conducted to support the development of cooperative arrangements between partners</li> <li>● Examples of supported partnership</li> <li>● Evidence that particular</li> </ul>	<ul style="list-style-type: none"> <li>● Project documents and evaluations</li> <li>● Project partners and relevant stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>● Document analysis</li> <li>● Interviews</li> </ul>

Evaluative Criteria Questions	Indicators	Sources	Methodology
	<ul style="list-style-type: none"> <li>partnership/linkages will be sustained</li> <li>Types/quality of partnership cooperation methods utilized</li> </ul>		
<ul style="list-style-type: none"> <li>Did the project take into account local capacity in design and implementation of the project?</li> <li>Was there an effective collaboration between institutions responsible for implementing the project?</li> </ul>	<ul style="list-style-type: none"> <li>National expertise utilized</li> <li>Number/quality of analysis done to assess local capacity potential and absorptive capacity</li> </ul>	<ul style="list-style-type: none"> <li>Project documents and evaluations</li> <li>UNDP</li> <li>Beneficiaries</li> </ul>	<ul style="list-style-type: none"> <li>Document analysis</li> <li>Interviews</li> </ul>
<ul style="list-style-type: none"> <li>What lessons can be learned from the project regarding efficiency?</li> <li>How could the project have more efficiently carried out implementation (in terms of arrangement structures and procedures, partnership arrangements etc.)?</li> <li>What change could have been made (if any) to the project in order to improve its efficiency?</li> </ul>	<ul style="list-style-type: none"> <li>Changes necessary during project implementation</li> </ul>	<ul style="list-style-type: none"> <li>Data collected throughout evaluation</li> </ul>	<ul style="list-style-type: none"> <li>Data analysis</li> </ul>
<ul style="list-style-type: none"> <li>How and to what extent have project implementation process, coordination with participating stakeholders and important aspects affected the timely project start-up, implementation and closure?</li> </ul>	<ul style="list-style-type: none"> <li>Relationship and coordination mechanism of project partners</li> <li>Timeliness of project activities implemented</li> </ul>	<ul style="list-style-type: none"> <li>Project documents</li> <li>Project Team and relevant stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>Document analysis</li> <li>Key interviews</li> </ul>
<ul style="list-style-type: none"> <li>Do the outcomes developed during the project formulation still represent the best project strategy for achieving the project objectives?</li> </ul>	<ul style="list-style-type: none"> <li>Extent of relevance of project outcomes and objectives to changing circumstances</li> </ul>	<ul style="list-style-type: none"> <li>Project documents</li> <li>Project Team and relevant stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>Document analysis</li> <li>Key interviews</li> </ul>
<ul style="list-style-type: none"> <li>Does the project consult and make use of skills, experience and knowledge of the appropriate government entities, NGOs, community groups, private sector, local governments and academic institutions in the implementation and evaluation of project activities?</li> </ul>	<ul style="list-style-type: none"> <li>National capacities utilized</li> <li>Number/type of partnership formed</li> </ul>	<ul style="list-style-type: none"> <li>Project documents</li> <li>Project Team and relevant stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>Document analysis</li> <li>Key interviews</li> </ul>

Evaluative Criteria Questions	Indicators	Sources	Methodology
<b>Sustainability: To what extent are there financial, institutional, social-economic, and/or environmental risks to sustaining long-term project results?</b>			
<ul style="list-style-type: none"> <li>Was project sustainability strategy developed during the project design?</li> <li>How relevant was the project sustainability strategy?</li> </ul>	<ul style="list-style-type: none"> <li>Evidence/quality of sustainability strategy</li> <li>Evidence/quality of steps taken to address sustainability</li> </ul>	<ul style="list-style-type: none"> <li>Project documents</li> <li>Project Team and relevant stakeholders</li> <li>Beneficiaries</li> </ul>	<ul style="list-style-type: none"> <li>Document analysis</li> <li>Key interviews</li> </ul>
<ul style="list-style-type: none"> <li>Are there any financial risks that may jeopardize sustenance of project outcomes? What is the likelihood of financial and economic resources not being available once the GEF assistance ends (resources can be from multiple sources, such as the public and private sectors, income generating activities, and trends that may indicate that it is likely that in future there will be adequate financial resources for sustaining project's outcomes)?</li> </ul>	<ul style="list-style-type: none"> <li>Financial resources available after project completion to support and sustain project outcomes</li> </ul>	<ul style="list-style-type: none"> <li>Project Team and relevant stakeholders</li> <li>Project partners</li> <li>Beneficiaries</li> </ul>	<ul style="list-style-type: none"> <li>Document and data analysis</li> <li>Key interviews</li> </ul>
<ul style="list-style-type: none"> <li>Are there any social or political risks that may jeopardize sustenance of project outcomes? What is the risk that the level of stakeholder ownership will be insufficient to allow for the project outcomes/benefits be sustained? Do the various key stakeholders see that it is in their interest that the project benefits continue to flow? Is there a sufficient public/ stakeholder awareness in support of the long term objectives of the project?</li> </ul>	<ul style="list-style-type: none"> <li>Social and political risk assessment data to support sustainability of project outcomes</li> </ul>	<ul style="list-style-type: none"> <li>Project Team and relevant stakeholders</li> <li>Project partners</li> <li>Beneficiaries</li> </ul>	<ul style="list-style-type: none"> <li>Document and data analysis</li> <li>Key interviews</li> </ul>
<b>Impact: Are there indications that the project has contributed to, or enabled progress toward, reduced environmental stress and/or improved ecological status?</b>			
<ul style="list-style-type: none"> <li>What are the main positive and negative impacts of the project?</li> </ul>	<ul style="list-style-type: none"> <li>Project impacts (e.g. capacity, policy enabling framework, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>Project documents</li> <li>GEF focal area tracking tools</li> </ul>	<ul style="list-style-type: none"> <li>Document analysis</li> <li>Key Interviews</li> </ul>
<ul style="list-style-type: none"> <li>How has the project contributed to global environmental benefits or reductions in stress to ecological systems, or is there evidence that the project has put in place processes that will lead to such impact?</li> </ul>	<ul style="list-style-type: none"> <li>Levels of reduction of POPs release</li> <li>Systems, structures and capacities that contribute to changes in POPs release</li> </ul>	<ul style="list-style-type: none"> <li>Project documents</li> <li>GEF focal area tracking tools</li> </ul>	<ul style="list-style-type: none"> <li>Document analysis</li> <li>Key Interviews</li> </ul>

## Annex VII - Evaluation Consultant Agreement Form

### ANNEX E: EVALUATION CONSULTANT CODE OF CONDUCT AND AGREEMENT FORM

#### Evaluators:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence, and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals, and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study imitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

#### Evaluation Consultant Agreement Form<sup>3</sup>

##### Agreement to abide by the Code of Conduct for Evaluation in the UN System

Name of Consultant: William Kwan

Name of Consultancy Organization (where relevant): THE NORRIS GROUP

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at New York place on date 16 June 2013

Signature: William Y. Kwan

<sup>3</sup> [www.unevaluation.org/unevaluation/codeofconduct](http://www.unevaluation.org/unevaluation/codeofconduct)

## ANNEX E: EVALUATION CONSULTANT CODE OF CONDUCT AND AGREEMENT FORM

### Evaluators:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence, and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals, and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study imitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

### Evaluation Consultant Agreement Form<sup>3</sup>

#### Agreement to abide by the Code of Conduct for Evaluation in the UN System

Name of Consultant: Chen Yang

Name of Consultancy Organization (where relevant): \_\_\_\_\_

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at Beijing place on date June 30, 2013

Signature: Chen Yang

<sup>3</sup>[www.unevaluation.org/unegcodeofconduct](http://www.unevaluation.org/unegcodeofconduct)

## Annex VIII – Rating Scales

<p><b>Ratings for Outcomes, Effectiveness, Efficiency, M&amp;E, I&amp;E Execution</b></p> <p>6: <b>Highly Satisfactory (HS)</b>: no shortcomings</p> <p>5: <b>Satisfactory (S)</b>: minor shortcomings</p> <p>4: <b>Moderately Satisfactory (MS)</b></p> <p>3: <b>Moderately Unsatisfactory (MU)</b>: significant shortcomings</p> <p>2: <b>Unsatisfactory (U)</b>: major problems</p> <p>1: <b>Highly Unsatisfactory (HU)</b>: severe problems</p>	<p><b>Sustainability ratings:</b></p> <p>4. <b>Likely (L)</b>: negligible risks to sustainability</p> <p>3. <b>Moderately Likely (ML)</b>: moderate risks</p> <p>2. <b>Moderately Unlikely (MU)</b>: significant risks</p> <p>1. <b>Unlikely (U)</b>: severe risks</p>	<p><b>Relevance ratings</b></p> <p>2. <b>Relevant (R)</b></p> <p>1.. <b>Not relevant (NR)</b></p> <p><b>Impact Ratings:</b></p> <p>3. <b>Significant (S)</b></p> <p>2. <b>Minimal (M)</b></p> <p>1. <b>Negligible (N)</b></p>
<p><i>Additional ratings where relevant:</i></p> <p>Not Applicable (N/A)</p> <p>Unable to Assess (U/A)</p>		

## Annex IX – Audit Trail on Comments on the Draft Terminal Evaluation Report

Comments from FECO/MEP:

- 1) Add meeting records with OFP - Incorporated in final report;
- 2) Add “1,600 tons of high risk DDT waste removed and disposed in an environmentally sound manner” – Incorporated in final report

## Annex X – Pictures of the Project

### Project Formulation and Design



### Project Inception



## Project Components and Results

### IPM Demonstration



Demonstration Plots in three demonstration locations: Zhanhua (top left), Yidu City (top right) and Luochuan (above)





Farmers Field School Training



Distribution of Alternatives to Farmers





IPM Demonstration Operation Manual



Technology Exchange

Closure of DDT-based Dicofol Plants and Clean Up of Contaminated Sites





Clean-up at Great Wall Pesticide and Chemical Group contaminated sites at Zhangjiakou (before)



Clean up at Great Wall Pesticide and Chemical Group contaminated sites at Zhangjiakou (after)

Optimization of Closed-system Dicofol Production at Yangnong Chemical Group Co. Ltd.



Training on safety operation



Regular investigation on DDT release and residues

## Monitoring and Evaluation



Monitoring and Evaluation Activities



Terminal Evaluation Activities

## Project Management



Training and Technical Meeting



Annual Review and Work Planning Meeting



Technology Exchange



Annual Review Meeting/Technology Exchange



## National Replication Programme



Launch of IPM National Replication Programme