

FINAL REPORT

Ex-Post Evaluation Study on the Environmental and Productivity Management of Marginal Soils in the Philippines

Japan International Cooperation Agency



PrimeLogic Consulting, Inc.

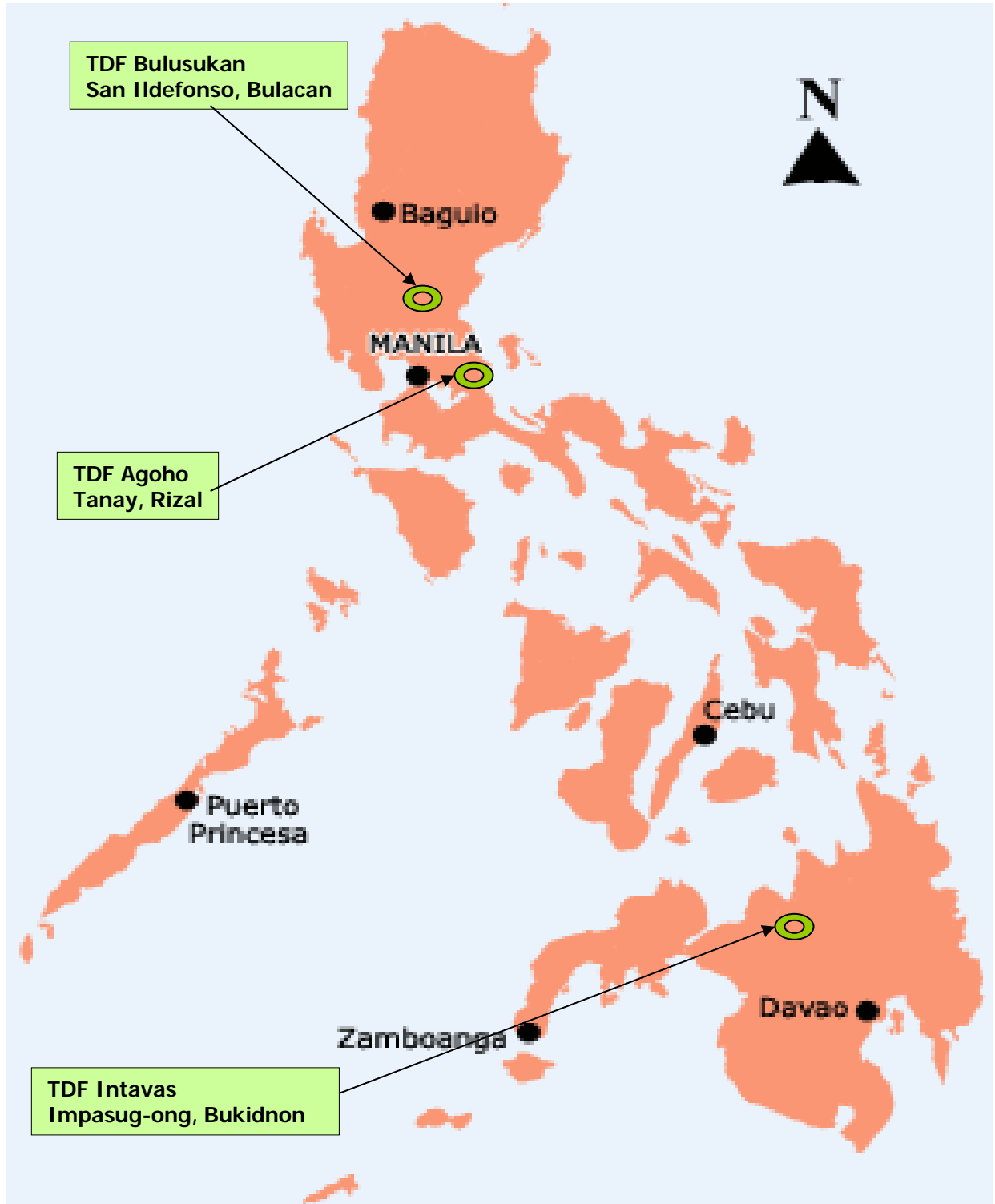
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Location Map



ABBREVIATIONS USED IN THE REPORT

ARIS	Agricultural Resource Information System
ARMM	Autonomous Region for Muslim Mindanao
ATI	Agricultural Training Institute
BSWM	Bureau of Soils and Water Management
CDA	Cooperative Development Authority
DA	Department of Agriculture
DAC-OECD	Development Assistance Committee-Overseas Economic Cooperation Development
DAR	Department of Agrarian Reform
DENR	Department of Environment and Natural Resources
DOST	Department of Science and Technology
DTI	Department of Trade and Industry
EPMMA	Environmental and Productivity Management of Marginal Soils
EO	Executive order
FFS	Farmers' field school
FGD	Focus group discussion
FIDA	Fiber Industry Development Authority
GAA	General Appropriations Act
GOJ	Government of Japan
GOP	Government of the Philippines
HVCC	High value commercial crop
LGU	Local government unit
LLDA	Laguna Lake Development Authority
MAO	Municipal Agriculture Officer
MARO	Municipal Agrarian Reform Office
MOA	Memorandum of Agreement
MOOE	Maintenance and Other Operating Expenses
NCIP	National Council for Indigenous People
NOMIARC	Northern Mindanao Integrated Agricultural Research Center
PARO	Provincial Agrarian Reform Office
PDMe	Project Design Matrix for Evaluation
PENRO	Provincial Environment and Natural Resources Officer
PS	Personal Services
PTTC	Project-type technical cooperation
RFU	Regional Field Unit
RIARC	Regional Integrated Agricultural Research Center
SAFDZ	Strategic Agriculture and Fisheries Development Zones
SUADC	Sustainable Upland Areas Development Council
TDCC	Techno-Demo Coordinating Committee
TDF	Technology demonstration farm
THLC	Tanay Hilly Lands Consortium
TMWDC	Tigbao Micro Watershed Development Council
URS	University of Rizal System
WB	World Bank

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PHOTOGRAPHS

Visit to BSWM Quezon City



Meeting with project counterparts held at BSWM Lecture Room in Quezon City



Some of the equipment provided by the project being used by the Soil Conservation Division



Multimedia projector and video camera also acquired by the project and currently utilized by the TIDS of BSWM.

PHOTOGRAPHS

Visit to Tanay, Rizal



EPMMA-supplied 4-wheel tractor at work at the BSWM research station in Tanay.



Newly-established demo farm on soil conservation farming in hilly lands within the BSWM property in Tanay, Rizal.



Focus group discussion with members of TDCC held at the BSWM Tanay Station.

PHOTOGRAPHS

Visit to Tanay, Rizal



“Living museum” on soil conservation farming at BSWM Tanay’s Salakot farm



Field trial on high value crops being done by BSWM at its Tanay station.



Closer view of the newly established contours of the techno demo on soil conservation farming set up by BSWM Tanay Station.

PHOTOGRAPHS

Visit to San Idefonso, Bulacan



Techno demo farm at
Bulusukan, San Idefonso,
Bulacan



Satellite demonstration farm on
soil conservation farming
supported by the LGU



Focus group discussion with
members of TDCC

PHOTOGRAPHS

Visit to San Idefonso, Bulacan



Water pump with engine used for irrigation. Same unit was supplied to BSWM stations in Tanay and Malaybalay.



4-wheel tractor and disc plow supplied to BSWM Bulacan station



Trailer used for hauling by the BSWM station which maintains a 20 hectare farm.

PHOTOGRAPHS

Visit to Impasug-ong, Bukidnon



Focus group discussion with upland farmers in Tigbao micro-watershed in Impasug-ong



4-wheel Kubota tractor and disc plow provided by the project to the BSWM station in Bukidnon



Group picture with the members of TDCC in Bukidnon

PHOTOGRAPHS

Visit to Impasug-ong, Bukidnon



BSWM Field Office in Dalwangan, Malaybalay City. This facility was rehabilitated by the project.



This portable rain gauge acquired by the project is currently not being used due to its defective printer.



Corn planter provided by the project to the BSWM Research Station in Malaybalay City, Bukidnon.

事後評価調査結果要約表

評価実施部署：フィリピン事務所

1. 案件の概要	
国名：フィリピン	案件名：農民参加によるマージナルランドの環境及び生産管理計画
分野：農業	協力形態：プロジェクト方式技術協力（現：技術協力プロジェクト）
所轄部署：農村開発部第一グループ水田地帯第二チーム	協力金額：5億円
協力期間	2000年2月1日～2005年1月31日
	先方関係機関：農業省土壌・水管理局（Bureau of Soil and Water Management, BSWM） 日本側協力機関：農林水産省
他の関連協力	無償資金協力；土壌研究開発センター計画（1988～1989年） プロジェクト方式技術協力；土壌研究開発センター計画（1989～1994年） 土壌研究開発センター計画フェーズII（1995～2000年）
1-1 協力の背景と概要	
<p>フィリピン国農業省土壌・水管理局（BSWM）に対する日本政府の協力は、1988年に開始され、土壌研究開発センターが無償資金協力により建設された。その後、無償資金協力で整備された施設、機材を活用して2つのプロジェクト方式技術協力が実施された。フェーズ1（1989～1994年）は、合理的土地体系と実用的営農技術開発に必要な土壌調査・分析、土壌評価、土壌管理、技術普及、研修の分野でのBSWM職員の能力開発、フェーズ2（1995～2000年）は、ウルチゾルを含む不良土壌に係る技術開発を目的として実施された。</p> <p>1998年9月、フィリピン国政府は、限界土壌及び劣化土壌地の土壌・水管理技術の改善を通じた食糧生産増加を目的として、「農民参加によるマージナルランドの環境及び生産管理計画」を日本政府に対して要請した。それに対して、日本政府は、JICAを通じて事前調査団を2回派遣し、2000年1月12日、農業省とJICAとの間で本プロジェクト実施に係る協議議事録に署名が行われた。</p> <p>本事後評価調査は、本プロジェクトをインパクトと自立発展性の観点から評価するとともに、教訓を抽出し、将来の類似プロジェクトの形成・実施に資する提言をまとめることを目的とする。</p>	
1-2 協力内容	
<p>(1) 上位目標 安定した持続的な農業生産に貢献する土壌・水管理技術がパイロット限界農地（3つのテクノデモファームの大流域）で適用される。</p> <p>(2) プロジェクト目標 3つのテクノデモファーム及びその小流域に適した持続的な土壌・水管理システム*が開発される。 *システムとは、実践的研究・展示のためのBSWMの総合的なプログラム実施方法のことで、適用可能な技術が地元関係組織との協調と、農家の圃場への導入を通じて決定される。</p> <p>(3) アウトプット（成果） 1. 土壌・水管理技術が3つのテクノデモファームに適した形に修正される。</p>	

2. 3つのテクノデモファームが良好に維持管理される。

(4) 投入 (評価時点)

<日本側>

- ・ 長期専門家派遣 13名
- ・ 短期専門家派遣 15名
- ・ 研修員受入 16名
- ・ 機材供与 0.78億円
- ・ ローカルコスト負担 0.37億円

<フィリピン側>

- ・ カウンターパート配置 48名
- ・ ローカルコスト負担 113百万ペソ (約2.26億円)
- ・ 土地・施設提供

2. 評価調査団の概要

調査者	Mr. Rudini Baoy, Supervisor, JICA Philippine Office Ms. Violeta Corpus, Team Leader, PrimeLogic Consulting, Inc. Mr. Fernando de Villa, Survey Specialist, PrimeLogic Consulting, Inc.	
調査期間	2007年7月2日～9月10日	調査種類：事後評価

3. 実績の確認

3-1 プロジェクト目標の状況

ブラカン州サン・イルデフォンソ町、リサル州タナイ町、ブキドノン州インパスグオン町においては、本プロジェクトで開発・実証された技術の対象小流域への普及に際して、テクノデモファーム (TDF) 方式が適用された。サン・イルデフォンソ町、タナイ町では、他の関係者の協力を得て、TDF に導入された本プロジェクトの推奨技術を普及するためのサテライト・デモファームが対象小流域内に設置された。インパスグオン町では、推奨技術を町農業事務所が町独自の複数のプロジェクトに導入した。さらに、TDF 運営委員会 (TDCCs) は、その構成機関、機能ともに拡大した後継機関 (Councils) に発展し、技術開発や普及のみならず、対象小流域の持続可能な開発にまで関与している。

3-2 上位目標の達成状況

- (1) ブラカン州サン・イルデフォンソ町：推奨技術は2箇村に普及しており、ブルスカン村では5名の農家、ブロン・ムンティ村では7名の農家が推奨技術を適用している。(当該農家は本プロジェクトで実施された研修の受講者)。
- (2) リサル州タナイ町：BSWM のタナイ試験場が実施した保全型農業に関する研修を44名の農家が受講し、推奨技術をそれぞれの農地で適用している。5名の農家のイニシアティブにより、丘陵地の保全型農業のためのTDFが対象小流域内に設置された。
- (3) ブキドノン州インパスグオン町：ティグバオ小流域の46名の農家が土壌・水管理に関する推奨技術を積極的に適用している。さらに、同小流域内の約400名の野菜農家が等高線耕作を、その中の約120名の農家が堆肥その他の肥培管理手法を適用している。

3-3 終了時評価での提言の活用状況

終了時評価での提言に関連して、それぞれの機関により以下の活動が実施された。

- (1) 協力農家はTDFでの活動を継続するとともに、TDFの管理が自治体に移管された(ブキドノン州を除く)。

- (2) TDF での活動計画の作成、他の農家への技術の普及に際して、Councils が支援を行った。
- (3) プロジェクト終了後 2 年間、BSWM 及び JICA は TDF での活動のモニタリングを行った。
- (4) BSWM は推奨技術を他の限界農地でのプロジェクトにも適用し、プロジェクトの成果の普及を行った。
- (5) より利用可能な技術の導入や、他の農家への技術移転に際しての協力農家の経験の活用等を通じて、BSWM はプロジェクトの成果の普及を行った。
- (6) BSWM は本プロジェクトで供与された施設や機材の維持管理費用を含むプロジェクト活動の継続、強化、拡大に必要な年間予算を支弁した。

4 . 評価結果の概要

4 - 1 評価結果の要約

(1) インパクト

本プロジェクトは正のインパクトを生み、限界農地で推奨される土壌・水管理技術を適用した農家の数は、プロジェクトが終了した 2005 年時点の 381 名から現在までに少なくとも 478 名に増大した。継続的に技術普及を行う組織的な枠組みも確立され、TDF の管理の自治体への移管、TDCCs の Councils への改組が行われた。Councils はその構成、役割が拡大し、本プロジェクトの推奨技術の普及から対象小流域の開発計画の立案・調整まで行っている。

さらに、本プロジェクトは予期していなかった以下の正のインパクトを生んだ。

- ・ 本プロジェクトで研修を受けた農家自身がトレーナーとなり、学生、農家等が TDF を訪問する際、土壌・水管理技術に関するリソースパーソンとして活用されている。
- ・ Councils のメンバーは対象流域の統合開発・管理計画を立案・承認し、自治体がこれらの計画を当該自治体全体の開発計画に統合した。
- ・ 政府、民間を問わず、土壌・水管理技術やそれらの保全技術に関する BSWM の知見や技術支援を求め、活用する機関の数が増大した。
- ・ 本プロジェクトのカウンターパートは、プロジェクト提案書の作成や、他のプロジェクトの実施の際に、プロジェクトから得た技能を自信をもって適用している。
- ・ TDF や BSWM の試験所は、農業専攻の学生の研修旅行や農家の相互訪問の際に頻繁に訪問されるようになった。

本事後評価調査時点では、本プロジェクトによる負のインパクトは認められなかった。

(2) 自立発展性

【組織的】

BSWM は、現在も、農業生産のための土壌及び水の持続可能な開発と利用への取り組みを任務とする、政府の中心的機関であり、本プロジェクトの組織的自立発展性は見込まれる。本プロジェクトの上位目標は、依然としてフィリピン国政府の重点目標に合致している。BSWM の組織構造に変化は無く、プラカン州、リサル州、プキドノン州に位置する 3 つの試験所では、本プロジェクトでの活動がそれら試験所の本来業務に統合されている。94 人の本プロジェクトのカウンターパートの内 83 名、本邦研修に参加した 22 名のカウンターパートの内 19 名は、現在も BSWM に勤務している。各試験所には元カウンターパート等が配置されている。元カウンターパートは全員常勤職員で

ある。

3箇所の TDF の管理は BSWM から各自治体（町農業事務所）に移管されており、自治体レベルでも組織的自立発展性は見込まれる。1991 年の地方自治法により農業分野の技術普及の機能は地方自治体に移管されていることを考慮すると、TDF の管理主体を地方自治体へ移管したことは最も妥当であったと思われる。さらに、本プロジェクトの他のステークホルダーを技術開発・普及に関与させるべく設立された TDCCs は、構成、機能ともに拡大し、対象小流域の持続開発までも担う Councils に改組された。

農場レベルでは、ブラカン州の TDF は 3 名の協力農家により良好に維持管理されている。しかしながら、リサル州の 2 名の協力農家の内 1 名、プキドノン州の 2 名の協力農家の双方の土地所有権の問題及び経済的問題により、それらの農家が運営していた TDF は現在維持されていない。TDF の協力農家の状況がさまざまであるにもかかわらず、Councils が継続的に技術普及活動を行ったことにより、対象流域では推奨技術の適用がみられる。

【技術的】

本プロジェクトの技術的自立発展性は、同様に見込まれる。本邦研修に参加した 22 名の元カウンターパートの内 19 名は現在も BSWM に勤務している。さらに、元カウンターパートは、限界農地に適した土壌・水管理技術の開発等の BSWM の機能を果たす際に、本プロジェクトで向上した技能を適用することができるようになっている。3 箇所の BSWM の試験所では、本プロジェクトでの経験が活用されるとともに、農地の状況に適合しかつ農家にとって利用可能となるよう、本プロジェクトで開発された技術が継続的に改良されてきた。プロジェクト終了後の研修の機会は限られていたにも関わらず、元カウンターパートは、大学院での学業継続、同僚・専門家からの学習、文献・インターネット参照、シンポジウム・セミナーへの参加、フィールド訪問や農民集会への参加等を通じて、その能力を向上させている。本プロジェクトにより供与された機材の多くは適切に維持管理され、BSWM 本局及び試験所の場合は技術の研究開発や普及活動に、農民の場合は整地その他の活動に使用されている。

【財務的】

本プロジェクトの財務的自立発展性は相当程度見込まれる。BSWM は、2005 年度、2006 年度ともに、9 千万ペソ以上の年間予算を政府から配分されている。全体予算の中の維持管理・その他運営経費の大部分は、研究開発、普及支援、教育訓練サービス、情報支援サービスに充当されている。本プロジェクトで調達した機材の運用・維持管理費用は少額であり、BSWM の年間予算の枠内で十分に賄われている。自治体レベルでは、TDF 内外の協力農家への普及活動等の継続に必要な資金については、限られてはいるものの、町農業事務所の予算に組み入れられている。また、当該自治体は、農業省の地域統合農業試験所、農地改革省、環境天然資源省等の協力機関から、資金的及び物的協力を得ている。農家レベルでは、農家の資金力が弱いため、より低コストの技術の開発や信用供与がない限り、それらの農家が推奨技術を適用することが困難になっている。

4 - 2 プロジェクトの促進要因

(1) インパクト

インパクト発現を促進した要因としては、BSWM、自治体、TDCCs のメンバー等のプロジェクトのステークホルダーによる対象小流域での技術普及活動が継続的に行われたこと、サテライト・デモファームが設立されたこと、本プロジェクトの推奨技術が対象小流域の開発計画に統合されたこと、等があげられる。

(2) 自立発展性

自立発展性強化を促進した要因は、中央政府の BSWM に対する継続的予算的支援が示しているように、限界農地の開発に高い優先度が与えられたこと、協定書を締結し TDF の管理責任を自治体に移管したこと、機能を拡大した上で、TDCCs を Councils に改組したこと、等があげられる。

4 - 3 プロジェクトの阻害要因

(1) インパクト

自治体の普及費用が限られていたため、プロジェクトで開発した技術を対象流域内で大々的に普及することが困難であった。さらに、対象流域内の中で推奨技術を適用した農家が相当数いた可能性がある一方で、それらの農家をモニタリングするメカニズムがなかった。

(2) 自立発展性

協力農家が土地の所有者ではなかったため、TDF における活動継続が困難になった。また、プロジェクトの推奨技術の中には多額の投資を必要とするものがあり、限界農地の農家にとってはそれらの推奨技術の適用は困難であった。

4 - 4 結論

対象流域で土壌・水管理に関する推奨技術を適用する農家の数が、プロジェクト開始時点の 400 名弱から本事後評価調査時点の約 500 名に拡大したことに示されるとおり、本プロジェクトの上位目標は達成された。TDF の管理が自治体に移管され、TDCCs が対象小流域の持続可能な開発という長期的な目的をもった Councils に改組され、対象流域における推奨技術の普及に係る組織的な枠組みが確立された。技術的自立発展性については、元カウンターパートの大部分が現在も BSWM に勤務し、本プロジェクト関連の活動を継続するのに必要な技術を活用している。BSWM が土壌・水管理技術の開発及び普及に必要な予算的支援を中央政府から継続的に得ていることから、本プロジェクトの財務的自立発展性についても同様に見込まれる。本プロジェクトの推奨技術の対象流域内外での適用を促進するためには、農家レベルでの資金的支援が必要不可欠である。

4 - 5 提言

【BSWM】

- ・ TDF での活動を維持するために、モニタリング及び自治体への技術的支援を継続すること。
- ・ 土壌・水管理技術の普及を管理し調整するため、プキドノン試験所へ常勤職員を配置すること。
- ・ 対象流域及び他の限界農地において推奨技術を農家にとってより利用しやすいものにするため、技術の開発・改善を継続すること。
- ・ Councils の活動、特に対象流域内での推奨技術の普及を目的とした活動をモニタリングするとともに、必要な技術支援を継続すること。

【自治体】

- ・ TDF の管理を継続し、Councils の運営に主導的役割を果たすこと。
- ・ Councils が作成した流域管理計画を自治体の開発計画に統合するとともに、TDF 活動の実施に必要な資金を提供するため、町議会による決議その他の法的手段を活用すること

【JICA】

- ・ 自治体及び Councils の能力を強化し、対象流域における土壌・水管理技術の

<p>普及活動を強化するため、BSWM からのフォローアップ協力要請を検討すること。</p>
<p>4 - 6 教訓</p>
<ul style="list-style-type: none"> ・ 技術開発・普及活動の計画、実施に際して、ステークホルダーを積極的に関与させることが、プロジェクトの自立発展性につながる。 ・ 技術普及プロジェクトにおいては、利用可能な資金ソースを農民に提供することが、財務的自立発展性を達成するために必要不可欠な措置である。
<p>4 - 7 フォローアップ状況</p>
<p>BSWM は、土壌保全型農業に関するフォローアップ研修の実施、自治体主導による Councils の活性化、農民主導の試験圃場の設置等のため、フォローアップ協力「参加型土壌・水保全開発を通じた生産性改善」に係る要請書を JICA に提出した。</p>

Ex-post Evaluation Summary Sheet

Evaluation conducted by: JICA Philippines Office

1. Outline of the project	
Country: Philippines	Project Title: Environmental and Productivity Management of Marginal Soils in the Philippines
Issue/sector: Agriculture	Cooperation scheme: Project Type Technical Cooperation (PTTC)
Division in charge: Paddy Field Based Farming Area Team II, Group I, Rural Development Department	Total cost: 500 million yen
Period of cooperation	(R/D): 2000.2.1~2005.1.31
	Partner Country's Implementing Organization: Bureau of Soils and Water Management (BSWM)
	Supporting organization in Japan: Ministry of Agriculture, Forestry and Fisheries (MAFF)
Related cooperation:	
Grant aid: The Soil Research and Development Center Project (1988-1989)	
PTTC: The Soil Research and Development Center Project (1989-1994); The Soil Research and Development Project, Phase II (1995-2000)	
1-1 Background of the project:	
<p>Development assistance by the Government of Japan (GOJ) to the Bureau of Soils and Water Management (BSWM) of the Department of Agriculture (DA) began in 1988 when the Soils Research and Development Center (SRDC) was established through Japan's Grant Aid program. This was followed by two successive Project-Type Technical Cooperation (PTTC) projects utilizing the facilities and equipment provided with the Center. Phase I, which was implemented from 1989 to 1994, built the capacity of BSWM staff in the fields of soil survey analysis, soil classification, fertility management, technology dissemination and training for rational land use and practical technology development. Phase 2, which was implemented from 1995 to 2000, developed technologies for problem soils including Ultisols. In September 1998, the Government of the Philippines (GOP) made a request to the GOJ for a project entitled the "Environmental and Productivity Management of Marginal Soils in the Philippines (EPMMA)" for the purpose of increasing food production through the improvement of the soil and water management of marginal lands and degraded soils. In response, the GOJ through the Japan International Cooperation Agency (JICA) dispatched two Study Teams in 1999. Subsequently, on January 12, 2000, the DA and JICA signed the Record of Discussions for the PTTC on EPMMA.</p> <p>This ex-post evaluation study was conducted to determine the impact and sustainability of the project as well as extract lessons from the project cooperation and formulate recommendations to improve planning and implementation of similar projects in the future.</p>	
1-2 Project overview	
(1) Overall goal	
The soil and water management technologies contributing to stable and sustainable agricultural production are adopted in pilot marginal lands (macro watersheds of three techno-demo farms)	
(2) Project purpose	
Suitable soil and water management systems are developed for the three techno-demo farms and their micro watersheds.	

(3) In Impasug-ong, Bukidnon – 46 farmers in Tigbao micro-watershed actively apply soil and water management technologies introduced by EPMMA. In addition, some 400 vegetable farmers within the watershed have been practicing contour farming with about 120 among them already practicing composting and other soil fertility management methods.

3-3 Follow-up of the Recommendations by Terminal Evaluation Study

The following activities were carried out by the responsible entities in response to the recommendations made during the terminal evaluation study:

- (1) Continuation of TDF activities by farmer-cooperators and transfer of TDF management to concerned LGUs (except for Bukidnon TDF);
- (2) Assistance by the Councils in TDF planning and dissemination of technologies to other farmers;
- (3) Monitoring of the TDFs for the last two years after project completion by JICA and BSWM;
- (4) Expansion of project achievement through TDF technology replications by BSWM in its other projects involving other marginal lands;
- (5) Dissemination of project results by BSWM through introduction of more affordable technologies and utilization of farmer-cooperators' experiences to transfer technology to other farmers;
- (6) Provision of necessary budget by BSWM to sustain, strengthen and expand project activities, including the O&M requirement of the facilities and equipment provided under EPMMA project.

4. Results of evaluation

4-1 Summary of evaluation results

(1) Impact

The project generated positive impact as the number of farmers who adopted the soil and water management technologies recommended for marginal lands increased from 381 at the end of project cooperation in 2005 to 478 at present. The institutional framework for sustained technology promotion has been established with the assumption of TDF management by LGUs and transformation of TDCCs into Councils/Consortium with expanded membership and re-defined roles ranging from promotion of EPMMA technologies to planning and coordination of micro-watershed development.

In addition, the project generated the following unintended positive impacts:

- (a) Farmers trained under the project have become trainers themselves and are utilized as resource persons on soil and water management technologies during site visits of students, farmers and other visitors to the TDF sites;
- (b) Members of the Councils/Consortium that succeeded the TDCCs have formulated integrated watershed development and management plans and endorsed these plans to the respective LGUs. The LGUs, in turn, have incorporated these plans into the overall LGU development plans;
- (c) The number of institutions, both government and private, that requested and availed of BSWM expertise and technical assistance on soil and water management and conservation has been increasing;
- (d) Former BSWM counterparts confidently apply the skills learned from the EPMMA project in packaging of project proposals and in implementing other BSWM projects; and
- (e) The TDFs and BSWM research stations became regular venues of educational field trips for agriculture students and farmer cross visits.

There was no negative impact generated by the project at the time of evaluation.

(2) Sustainability

Institutional

The institutional sustainability of the project is secured because BSWM remains as the principal government agency mandated to address sustainable development and utilization of soil and water resources for agricultural production. The overall goal of the project still remains in accordance with the national government goals. BSWM has maintained its organizational structure with the 3 National Research Centers located in Bulacan, Rizal and Bukidnon subsuming the EPMMA project activities into their regular work programs. Out of the 94 project counterparts, 83 remain employed at the BSWM. On the other hand, 19 out of 22 project counterparts sent to Japan for training are still working with the different divisions of BSWM. Each Research Center is manned by the former counterparts and other staff. All former project counterparts have permanent employment status.

At the LGU level, institutional sustainability is secured with the transfer of management of the three TDFs from BSWM to the LGUs through their respective Municipal Agricultural Offices. This arrangement is deemed most appropriate considering that agricultural technology extension functions have been devolved to the local governments by virtue of the Local Government Code of 1991. Moreover, the TDCCs established by the project to allow stakeholder participation in technology development and promotion have been institutionalized in the project sites and evolved into successor Councils/Consortium with expanded membership and redefined roles including the sustainable development of target micro-watersheds. At the TDF level, the TDF in Bulacan is well maintained by the 3 farmer-cooperators. One of the 2 farmer-cooperators of the TDF of Tanay and the two farmer-cooperators in the TDF of Bukidnon failed to maintain their farms due to land ownership and financial issues. Despite the mixed performance by farmer-cooperators in the TDFs, the sustained technology promotion activities of the Councils/Consortium resulted in technology replication in the watershed areas.

Technical

The technical sustainability aspect of the project is likewise secured. Nineteen out of 22 former project counterparts trained in Japan continue to work at the BSWM. Moreover, former project counterparts are able to apply the skills they have acquired during the project in carrying out the BSWM's mandate including development of soil and water management technologies for marginal areas. Using the EPMMA experiences, the three Research Centers have continuously improved or modified the developed technologies to suit farm conditions and make these affordable to farmers. Despite the limited opportunities for training after the project, former project counterparts were able to upgrade their skills through pursuit of graduate studies, learning from colleagues, experts and field contacts, literature review and internet searches, attending symposiums/seminars, and field visitations/farmer assemblies. Most of the equipment provided under the project are properly maintained and are regularly utilized by the BSWM Central Office and Research Centers for technology research and development and promotional activities and by farmers for their land preparation and other farm-related activities.

Financial

The financial sustainability aspect of the project is fairly secured. BSWM received an annual budget from the government of more than Php 90 million in 2005 and 2006. Most of the operating expenses were spent on research and development, extension support, education and training services and information

support services. The operation and maintenance expenses for the project-supplied equipment, which have been minimal, are adequately provided in the annual budget of BSWM. At the LGU level, funds for continuing the EPMMA activities including the provision of extension support services to farmer-cooperators within and outside the TDF sites, albeit limited, is included in the budget of the Municipal Agricultural Office (MAO). In view of their limited budget, the LGUs mobilize financial and material support from cooperating agencies, e.g., DA Regional Integrated Agricultural Research Centers, Department of Agrarian Reform and Department of Environment and Natural Resources. At the farmers' level, the low financial capacity of farmers in marginal areas is a major factor that could hinder replication of recommended technologies unless more affordable technologies and credit assistance are put in place.

4-2 Factors that have promoted the project

(1) Impact

Factors that have promoted impact include: (a) sustained technology promotion activities by project stakeholders including BSWM, LGU and TDCC members in target micro-watersheds; (b) establishment of satellite demonstration farms; and (c) integration of EPMMA-recommended technologies in micro-watershed development plans.

(2) Sustainability

Factors promoting sustainability include: (a) high priority given to development of marginal lands as evidenced by continuous budgetary support to BSWM by the national government; (b) formal acceptance by LGUs of the responsibility for managing the TDFs through the forging of MOAs with BSWM; (c) transformation of TDCCs into Councils/Consortium with expanded functions.

4-3 Factors that have inhibited the project

(1) Impact

The LGU's limited budget for extension has inhibited the widespread promotion and adoption of EPMMA technologies within the target watersheds. Moreover, while some farmers in the target watersheds may have adopted some of the recommended technologies, the project did not provide a mechanism for monitoring them.

(2) Sustainability

The non-permanent tenurial status of farmer-cooperators hindered the continuity of TDF activities. The high cost of investment required by some EPMMA technologies is another factor hindering the technology adoption by farmers in marginal areas.

4-4 Conclusion

The project's Overall Goal has been achieved as evidenced by the increased number of farmers adopting recommended soil and water management technologies within the target watersheds from 381 at the end of the project to about 478 at the time of evaluation. The institutional framework for dissemination of EPMMA technologies within the target watersheds has been established with the assumption of management of TDFs by the LGUs and transformation of the TDCCs into Councils/Consortium with the long-term objective of sustainable micro-watershed development. Technical sustainability is secured as most of the former project counterparts remain working at BSWM utilizing skills acquired in continuing EPMMA-related activities. Financial sustainability of the project is likewise secured as BSWM receives continuing budgetary support from the national government for development and promotion of soil and water management technologies. At the farmers' level, financial support is necessary in order to encourage replication of EPMMA technologies within and outside the target areas.

4-5 Recommendations

For BSWM

- To continue monitoring and providing technical support to the LGUs in order to ensure that the TDFs are maintained;
- To assign a permanent staff to its national research center in Bukidnon to supervise and coordinate soil and water management technology dissemination activities;
- To continue the development and modification of technologies with a view towards making them more affordable to farmers in the target watersheds and other marginal areas;
- To continue monitoring and providing technical assistance to the activities of the Councils/Consortium particularly those aimed at propagating EPMMA technologies within the target watersheds.

For the LGUs

- To sustain the management of the TDF and take the lead role in steering the activities of the Councils/Consortium;
- To facilitate the issuance of resolutions and other legal instruments that will integrate the Councils/Consortium -initiated watershed management plans into the LGU development plans providing funds thereof for implementation of TDF activities.

For GOJ-JICA

- To consider the BSWM proposal for follow-up cooperation with a view towards enhancing the capacity of the LGU and the Councils/Consortium to manage soil and water management technology dissemination and promotion activities in the target watersheds.

4-6 Lessons learned

- Active participation of stakeholders in planning and implementation of technology development and promotion activities is key to project sustainability.
- Linking farmers to sources of credit financing should be a complementary intervention for technology promotion projects to achieve financial sustainability.

4-7 Follow-up situation

BSWM submitted to JICA a proposal for follow-up technical cooperation entitled “Productivity Improvement through Participatory Soil and Water Conservation Development” which seeks to: conduct follow-up trainings on soil conservation farming; activate LGU-led Councils; and establish farmer-led *in-situ* trial farms.

1. Outline of the Ex-post Evaluation Study

1.1 Project Background

Development assistance by the Government of Japan (GOJ) to the Bureau of Soils and Water Management (BSWM) began in 1988 when the Soils Research and Development Center (SRDC) was established through a Japanese grant aid. This was followed by two successive five-year Project-Type Technical Cooperation (PTTC) projects utilizing the facilities and equipment provided with the Center. The first PTTC, implemented from 1989 to 1994, built the capacity of BSWM staff in the fields of soil survey analysis, soil classification, fertility management, technology dissemination and training for rational land use and practical technology development. The second PTTC, carried out from 1995 to 2000, developed technologies for problem soils including Ultisols.

In September 1998, the Government of the Philippines (GOP) made a request to the GOJ for a technical cooperation in implementing the project entitled the “Environmental and Productivity Management of Marginal Soils in the Philippines (EPMMA).” This project aimed at increasing food production through the improvement of the soil and water management of marginal lands and degraded soils. In response, the GOJ through the Japan International Cooperation Agency (JICA) dispatched two Study Teams in 1999 to clarify the contents of the request and recommend a tentative framework for technical cooperation. Subsequently, on January 12, 2000 the Department of Agriculture (DA) and JICA signed the Record of Discussions for the PTTC on EPMMA.

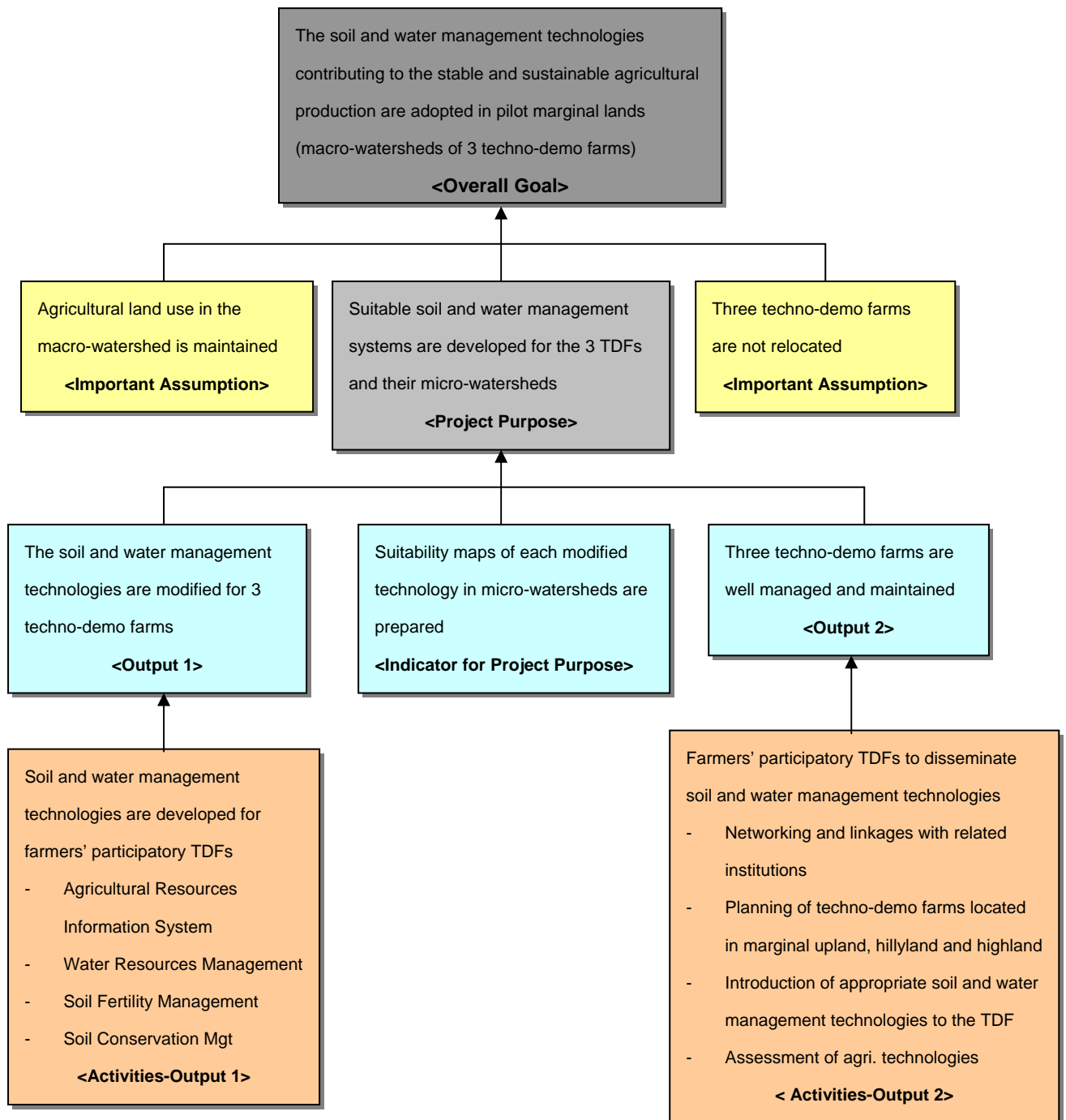
1.2 Project Overview

The PTTC on EPMMA was implemented by the BSWM of the DA from February 1, 2000 to January 31, 2005. Towards the overall goal of adopting sustainable soil and water management technologies in pilot marginal lands, the project aimed at the development of suitable soil and water management systems for the three pilot technology demonstration farms (TDFs) and their micro-watersheds. To encourage the adoption of soil and water management technologies by the farmers, the project established the three TDFs in the following sites: (a) Bulusukan, San Ildefonso, Bulacan for marginal uplands; (b) Sampaloc, Tanay, Rizal for the marginal hillyland; and (c) Intavas, Impasug-ong, Bukidnon for marginal highlands.

To achieve the project purpose, the project was designed to accomplish the following Outputs: (a) soils and water management technologies were modified to demonstrate the technologies suited to typical conditions of the TDFs in the aforementioned marginal lands; and (b) techno-demo farms were well-managed and maintained.

The overall framework of the Project is described in Figure 1 below (refer to PDMe in Annex 1).

Figure 1: Project framework



1.3 Study Objective

This ex-post evaluation study sought to assess the impact and sustainability of the PTTC on EPMMA more than two years after its termination on January 31, 2005. The study also aimed to: (a) draw lessons and formulate recommendations for the improvement of planning and implementation of similar projects; and (b) promote greater accountability and transparency by disseminating the evaluation results to the project stakeholders and the Japanese public.

1.4 Scope of Work

In conducting the study, the Evaluation Team focused on the impact and sustainability criteria as defined by the DAC-OECD as follows:

Impact – the foreseen or unforeseen, favorable or adverse effect of the project on the target groups or persons possibly affected by the project. The study team examined the impact attained at the Overall Goal level of the project and those not anticipated at project completion.

Sustainability – the extent to which the positive effects, as a result of the project, will still continue after the external assistance is concluded. The study team examined the institutional, financial, and technical sustainability aspects of the project as well as the sustainability of project effects.

The study was conducted in BSWM Central Office in Quezon City and in its three Research Stations, in San Ildefonso (Bulacan), Tanay (Rizal) and Impasug-ong (Bukidnon). Field visits to the techno demo farms in Sampaloc (Tanay, Rizal), Bulusukan (San Ildefonso, Bulacan), and Intavas (Impasug-ong, Bukidnon) were undertaken. Discussions were also conducted with Local Government Unit (LGU) officials of Impasug-ong, Bukidnon and San Ildefonso, Bulacan and with the Sustainable Agriculture Center of Xavier University in Cagayan de Oro City. Visits and interviews were also carried out in technology expansion/replication areas within the target micro-watersheds.

1.5 Constraints of the Study

The bad road condition and unavailability of the farmer cooperator in Sampaloc, Tanay, Rizal TDF did not allow the planned site visit and interview. The LGU staff in Impasug-ong, Bukidnon who keeps records of the TDF and the Techno-Demo Coordinating Committee (TDCC) was on leave at the time of the field visit thus information gathered was limited to FGDs and interviews with TDCC members, farmers and LGU officials. In addition, quantifying project effects proved to be difficult as project counterparts and farmer-cooperators did not maintain farm records after the project.

1.6 Evaluation Team

In order to ensure objectivity of the evaluation study, JICA commissioned PrimeLogic Consulting Inc., a local consulting firm, to undertake the ex-post evaluation study. PrimeLogic Consulting Inc. assigned Ms. Violeta Corpus and Mr. Fernando de Villa to carry out the study as Team Leader and Survey Specialist, respectively.

The JICA Philippines Office through its In-house Consultant, Engr. Nick Baoy, provided technical guidance and supervision to the Study Team.

1.7 Study Period

The study was conducted from July 2, 2007 to September 10, 2007.

2. Methodology

2.1 Evaluation Questions

The study was aimed at addressing the following Main Evaluation Questions:

(a) Relating to impact

- Is the Overall Goal “soil and water management technologies contributing to the stable and sustainable agricultural production are adopted in pilot marginal lands (macro-watersheds of three techno-demo farms) “being achieved”?
- To what extent has the Project contributed to the achievement of the Overall Goal? Are there external factors that influenced the achievement of the Overall Goal?
- Are there other impacts (positive, negative or unintended effects) that can be attributed to the Project?

(b) Relating to sustainability

- To what extent has the implementing agency been able to sustain the outcomes/effects of the Project?
- How likely are the outcomes/effects of the Project to be sustained?
- What are the factors that contribute/inhibit the sustainability of Project outcomes/effects?

See Annex 2 for the Evaluation Grid.

2.2 Methodology

The study methods used in this ex-post evaluation are enumerated below:

Table1: Study Methods Adopted in the Ex-post Evaluation of EPMMA

Stakeholder	Respondents	Methods
Implementing Agency		
BSWM	<ul style="list-style-type: none"> ▪ Project Manager ▪ Chief, ARIS Group ▪ Chief, Soil Conservation and Management Group ▪ Chief, Soil Fertility Management Group ▪ Chief, Water Resources Management Group ▪ Other Project Counterparts 	<ul style="list-style-type: none"> ▪ Interview ▪ Focus Group Discussion ▪ Questionnaire ▪ Literature Review ▪ Direct Observation (e.g., donated equipment)
BSWM Field Stations	<ul style="list-style-type: none"> ▪ Station Chief, BSWM Tanay ▪ Station Chief, BSWM Bulacan ▪ Station Chief Bukidnon 	<ul style="list-style-type: none"> ▪ Interview ▪ Focus Group Discussion ▪ Questionnaire ▪ Direct Observation
Beneficiaries – Direct		
Counterpart staff from cooperating agencies (LGUs, DA-RIARCs, etc)	<ul style="list-style-type: none"> ▪ Municipal Agricultural Officers, San Ildefonso, Tanay and Impasug-ong municipalities ▪ Municipal Agrarian Reform Officers, San Ildefonso, Tanay and Impasug-ong municipalities ▪ NOMIARC staffs ▪ DA-Region 3, 4 and 10 staffs 	<ul style="list-style-type: none"> ▪ Interview ▪ Group Discussion ▪ Questionnaire
TDCCs in micro-watershed	<ul style="list-style-type: none"> ▪ Members of the TDCCs 	<ul style="list-style-type: none"> ▪ Focus Group Discussion ▪ Interview
Farmers in the micro-watersheds	<ul style="list-style-type: none"> ▪ Farmer-cooperators ▪ Farmer-adopters 	<ul style="list-style-type: none"> ▪ Focus Group Discussion ▪ Interview
Beneficiaries-Indirect		
Farmers in macro-watershed not directly involved in the project	<ul style="list-style-type: none"> ▪ Selected farmers in the macro-Watershed 	<ul style="list-style-type: none"> ▪ Focus Group Discussion ▪ Interview

2.3 Schedule of the Study

The schedule of the study is attached as Annex 3.

3. Ex-Post Project Performance

3.1 Performance of Project Purpose

The project purpose of EPMMA was to develop suitable soil and water management systems for promotion in the three techno-demo farms and their micro-watersheds. The project terminal evaluation conducted in 2004 concluded that the project purpose was achieved considering that: a) suitability maps of each modified technology in micro watersheds have been prepared; b) technologies demonstrated in the TDF are being introduced by farmers outside the TDF; and c) LGUs have expressed interest to adopt the TDF strategy in their future programs.

Field surveys conducted during this ex-post evaluation revealed that the LGUs of San Ildefonso, Bulacan, Tanay, Rizal and Impasug-ong, Bukidnon have adopted the TDF strategy in propagating the technologies developed and demonstrated by EPMMA in the micro-watersheds. The LGUs in San Ildefonso and Tanay, in cooperation with other stakeholders, have established satellite demo farms replicating some of the technologies introduced in the TDFs in strategic locations within the target micro watershed. In Impasug-ong, the Municipal Agricultural Office (MAO) already introduced the technologies in several ongoing LGU projects. Moreover, successor entities (Councils/Consortium) have evolved from the TDCCs created to promote stakeholder participation in technology development and promotion with expanded membership and re-defined roles including the sustainable development of the target micro-watersheds. Below are the key activities of successor entities after project completion in 2005:

Table 2: TDCC Successor Entities and their Key Activities after Project Completion

Pilot site	Successor Entity to TDCC	Key Activities
Bulacan	Sustainable Upland Areas Development Council (SUADC)	<ul style="list-style-type: none"> - Formulation of Sustainable Upland Area Development Program; - Conduct of farmers' training - Establishment of satellite demonstration farms - Conduct of monthly council meetings
Rizal	Tanay Hilly Lands Consortium (THLC)	<ul style="list-style-type: none"> - Establishment of open learning areas - Conduct of farmers' trainings - Conduct of Consortium meetings - Maintenance of TDF
Bukidnon	Tigbao Micro-Watershed Development Council (TMWDC)	<ul style="list-style-type: none"> - Preparation of Tigbao Micro-Watershed Development Program - Micro-watershed boundary delineation - Conduct of farmers' trainings - Maintenance of TDF - Conduct of monthly council meetings and community orientation workshops

Source: Results of FGDs and Field Interviews (see Annex 4)

3.2 Achievement related to Overall Goal

The Overall Goal of the EPMMA project was stated as “the soil and water management technologies contributing to the stable and sustainable agricultural production are adopted in pilot marginal lands (macro-watersheds of the three TDFs)”. The objectively verifiable indicator (OVI) was stated as “number of farmers who adopted the recommended technologies for marginal lands (three TDFs and macro-watersheds)”.

The terminal evaluation conducted in 2004 indicated the early achievement of the Overall Goal with some 381 farmers around the three TDFs reported to have adopted the recommended technologies. It was anticipated that many farmers in the macro-watersheds will continue to adopt the technologies developed by the project if sustainability actions towards technology promotion, extension and dissemination would be carried out.

The FGDs conducted by the Evaluation Team with the BSWM staff, TDCC members and farmers revealed that the project generated impact on the Overall Goal as indicated by a total of 97 new farmers within the target watershed adopting the technologies developed by the project. Below are the achievements of the project relative to the Overall Goal per pilot site:

Table 3: Key Achievements Related to Overall Goal per Pilot Site

Pilot Site	Key Achievements Related to the Overall Goal
1. San Ildefonso, Bulacan	Technology replications were observed in two barangays, namely: Bulusukan with 5 farmers, and in Bubulong Munti with 7 farmers, with each farmer having a farm size of 1 hectare. These farmers have been recipient of several trainings conducted under EPMMA in the area. In addition to the existing TDF, two satellite demonstration farmers were established by the LGU-MAO and the TDCC.
2. Tanay, Rizal	Some 44 farmer adopters were reported within the Tanay micro watershed. These farmers recently attended a 20-day Participatory Training on Conservation Farming sponsored by BSWM and the TDCC. Apart from the existing TDF, 5 farmer-initiated demonstration farms are being developed to serve as the future open learning areas within the Tanay microwatershed.
3. Impasug-ong, Bukidnon	About 46 farmers within Tigbao micro-watershed were reported to have applied the soil, water and conservation farming technologies introduced under the EPMMA project in their farms. These farmers received various types of trainings jointly conducted by LGU and the Councils/Consortium.

Source: Results of FGDs and Field Interviews (see Annex 4)

3.3 Follow-up of the Recommendations by Terminal Evaluation Study

The terminal evaluation study made three key recommendations: a) for BSWM and JICA to monitor the activities of TDCCs or LGUs after transferring the management of TDF to the LGUs; b) for the LGUs to maintain the activities in the TDF and the function of TDCC; and c) for BSWM

to develop the project results. The Evaluation Team noted the following actions carried out by concerned entities in response to the recommendations made during the terminal evaluation:

Table 4: Actions Taken on the Recommendations of the Terminal Evaluation Study

Recommended Areas for Follow- up Action	Specific Activities to be Carried Out	Actions taken
1. TDF Activities and TDCC Function	<input type="checkbox"/> Continue TDF activities and disseminate the developed technologies to neighboring farmers	<input type="checkbox"/> Being carried out by farmer cooperators with continuing technical guidance from LGU and BSWM
	<input type="checkbox"/> Transfer the TDF management to the LGU and the LGU Mayor to take leadership of the TDCC	<input type="checkbox"/> TDF management was transferred to the LGUs concerned through MOAs and assignment of technician to monitor the TDF.
	<input type="checkbox"/> TDCC to provide advice on TDF management in terms of planning its activities, in consultation with the stakeholders	<input type="checkbox"/> Being done through provision of technical advice, equipment assistance, TDF monitoring and conduct of follow-up training for farmer-cooperators.
	<input type="checkbox"/> TDCC members to assist in disseminating information and technologies to farmers	<input type="checkbox"/> Being carried out through conduct of agri fairs and packaging of LGU projects which include promotion of EPMMA technologies to farmers
2. TDF Monitoring after Project Completion	<input type="checkbox"/> BSWM and JICA to monitor the TDF activities for at least 2 years after the transfer of TDF management	<input type="checkbox"/> Regular visits to project sites and two monitoring workshops were carried out
	<input type="checkbox"/> BSWM to take measures in case the transfer encounters some difficulties	<input type="checkbox"/> Transfer was effected without difficulties
	<input type="checkbox"/> To ensure the transfer of TDFs to LGUs, the Japanese government may dispatch short-term experts, if necessary	<input type="checkbox"/> Not necessary but JICA officials occasionally visited the TDFs for monitoring purposes
3. Future Strategy of Marginal Land Development	<input type="checkbox"/> BSWM to expand and sustain the achievement attained in the Project through replications in other marginal areas	<input type="checkbox"/> Being done through packaging and implementation of similar projects in other provinces, farmer cross visits and assemblies
	<input type="checkbox"/> BSWM should train their staff to deal with the cultivation of high value crops	<input type="checkbox"/> Being done through trainings or sharing of knowledge with farmers, academe and other government institutions
	<input type="checkbox"/> BSWM should dispatch appropriately trained staff to Bulacan, Rizal and Bukidnon National Research Centers.	<input type="checkbox"/> Research centers are being manned by competent staff
4. Dissemination of Project Results	<input type="checkbox"/> More affordable strategies and technologies should be introduced to the farmers	<input type="checkbox"/> Being done as the Research Stations continually develop affordable technologies
	<input type="checkbox"/> BSWM should brush up the technologies in the project and make them more adoptable for farmers	<input type="checkbox"/> Being done as the Research Stations continually develop affordable technologies
	<input type="checkbox"/> The experience of farmer cooperators in the TDFs should be utilized to transfer technologies to other farmers and provide initial support when necessary	<input type="checkbox"/> Sharing of experiences being done in farmers trainings or thru cross site-visits

5. Budget allocation and maintenance of equipment	<input type="checkbox"/> BSWM to secure necessary budget to sustain, strengthen and expand the project activities after the termination of the Project	<input type="checkbox"/> Being done through the annual BSWM budget preparation, oriented by or regular BSWM Central Office & Research Station's work programs
	<input type="checkbox"/> The facilities and equipment provided through the Project and Grant aid should be used effectively and kept in good condition even after the termination of the Project	<input type="checkbox"/> Facilities and equipment being well kept and utilized for their intended purposes

Source: Terminal evaluation study report and FGD Results

4. Evaluation Study Results

4.1 Impact of the Project

4.1.1 Achievement of Expected Impacts

The project expected that the number of farmers adopting the recommended technologies within the target watersheds will increase as a result of sustained technology promotion utilizing the TDF strategy and the TDCC framework developed under EPMMA. More than two years after project completion, the field survey revealed that the number of farmers adopting the EPMMA-recommended technologies increased from 381 at the time of the terminal evaluation in 2004 to 478 at the time of this evaluation. In addition to the three existing TDFs, seven satellite TDFs (2 in San Ildefonso, Bulacan and 5 in Tanay, Rizal) were established to further promote soil and water management technologies recommended by EPMMA.

Table 5: Achievement of expected impacts

Project Site	Number of farmer adopters			Number of TDFs		
	2004	2007	Total	2004	2007	Total
Bulacan	152	7	159	1	2	3
Rizal	152	44	196	1	5	6
Bukidnon	77	46	123	1	-	1
Total	381	97	478	3	7	10

Source: FGD Results

Moreover, the institutional framework for technology promotion developed during the project was strengthened with the transformation of TDCCs into Councils/Consortium with expanded roles and membership. Summarized below is the current status of TDCCs.

Table 6: Status of TDCCs

Project site	Successor Entity to TDCC	Current Status
Bulacan	Sustainable Upland Area Development Council (SUADC)	From the original 5 members (BSWM, LGU, DA-RFU, MARO and Bulacan Agricultural State College), membership

		of the Council expanded to 6 to include PENRO. Aside from assisting the LGU in formulating the Sustainable Upland Area Development Project, the SUADC provides direction to technology replication in expansion sites, monitors project implementation and assists in fund sourcing.
Rizal	Tanay Hilly Lands Consortium (THLC)	The THLC membership expanded from 9 to 17 agencies. Regular activities include conduct of annual agricultural trade fairs, conduct of farmers' trainings on conservation farming and provision of technical assistance in dissemination and promotion of sustainable farming technologies within the Tanay watershed.
Bukidnon	Tigbao Micro-Watershed Development Council (TMWDC)	The TMWDC expanded from 9 to 11 member agencies. The Council formulated and adopted a holistic and participatory approach to micro-watershed development consisting of five components, namely: a) land mapping and delineation; b) technology promotion; c) technology adoption; d) community organization and development; and e) technical support services.

Source: FGD Results

4.1.2 Causality between the Project and the Impacts

The project addressed two major concerns: (a) the development of soil and water management technologies at the research station for utilization at the TDFs; and (b) the establishment of farmers' participatory TDFs. By the end of the project in 2005, it was noted that the project succeeded in developing suitable soil and water management systems for the three TDFs and their micro watersheds. Also, it was observed that suitability maps of each modified technology in micro watersheds have been prepared and technologies demonstrated in the TDF were being introduced by farmers outside the TDF.

The increase in number of farmer adopters of recommended technologies within the target watersheds may be largely attributed to the effectiveness of the approach for dissemination and promotion of soil and water management technologies developed by the project for marginal areas. In fact, early achievement of the expected impact was already observed prior to project termination in 2005. The sustained technology promotion and dissemination utilizing the TDF strategy and the TDCC framework institutionalized by EPMMA was instrumental in the sustained achievement of expected impact after 2005.

4.1.3 Unexpected Significant Positive/Negative Impacts

The project generated the following unexpected positive impacts:

- a) The trained farmers have become trainers themselves and are being utilized as resource persons on soil and water management technologies during site visits of students, farmers from neighboring areas, and other visitors to the TDF sites;
- b) The successor Councils/Consortium members formulated development plans for target watersheds integrating the TDF approach towards addressing agricultural productivity and environmental issues in a sustainable manner. The said Plans have been endorsed to the LGUs, and in the case of San Ildefonso, Bulacan the plan has been incorporated in the LGU Development Plan;
- c) An increase in the number of requests from various institutions for BSWM expertise and technical assistance on matters relating to soil and water management and conservation was noted after project completion; and
- d) Former BSWM counterparts confidently apply the skills and learning gained from the EPMMA project either in the packaging of proposals or in the implementation of other BSWM projects assisted by foreign donors or using local funds.

Moreover, the TDFs and BSWM research stations became regular venues of educational field trips for agriculture students and farmer cross-visits. In Tanay Research Station alone, there were about 1,295 visitors who registered in the logbook from February 2005 up to the time of the evaluation. The composition of the visitors includes LGU officials, other government agencies involved in rural development, university and high school students, and tourists. In San Ildefonso, Bulacan, about 100 students from the Bulacan Agricultural State College visited the Bulusukan TDF annually to learn about practical soil and water management technologies for marginal areas.

The team did not observe any negative impact as a result of the project at the time of evaluation.

4.2 Sustainability of the Project

4.2.1 Organizational Aspect of Sustainability

The organizational sustainability of the project is secured considering that BSWM remains as the principal government agency mandated to conduct research and development and promotion of soil and water management technologies for agricultural production. The overall goal of the project still remains in accordance with the national government goals described in the Medium-Term Philippine Development Plan, 2004-2010 (Poverty reduction), Republic Act 8435

(Modernization of agriculture and fisheries and increment of employment) and DA-Administrative Order 481 (Promotion of organic farming technology). Moreover, BSWM has maintained its organizational structure to carry its mandate. Under the Office of the Director, there are seven divisions/groups based at the Central Office in Quezon City, 12 Regional Soil and Water Access Terms (SWATs) and three National Research Centers located in Bulacan, Rizal and Bukidnon that subsume into their regular work program the continuation of the EPMMA project activities. The Central Office-based Divisions, headed each by a Chief, are the: Soil Conservation and Management Division (SCMD), Soil and Water Resources Research Division (SWRRD), Water Resources Management Division (WRMD), Agricultural Land Management and Evaluation Division (ALMED), Soil Survey Division, Laboratory Services Division and Cartographic Division.

Status of project counterparts

Out of the 94 BSWM personnel who served as counterparts during the implementation of EPMMA, 83 are still employed with the Bureau as of survey date. From 2003 to date, 3 employees had retired, 5 resigned, 1 was transferred/promoted as Director in DA-Region III, and 2 were deceased.

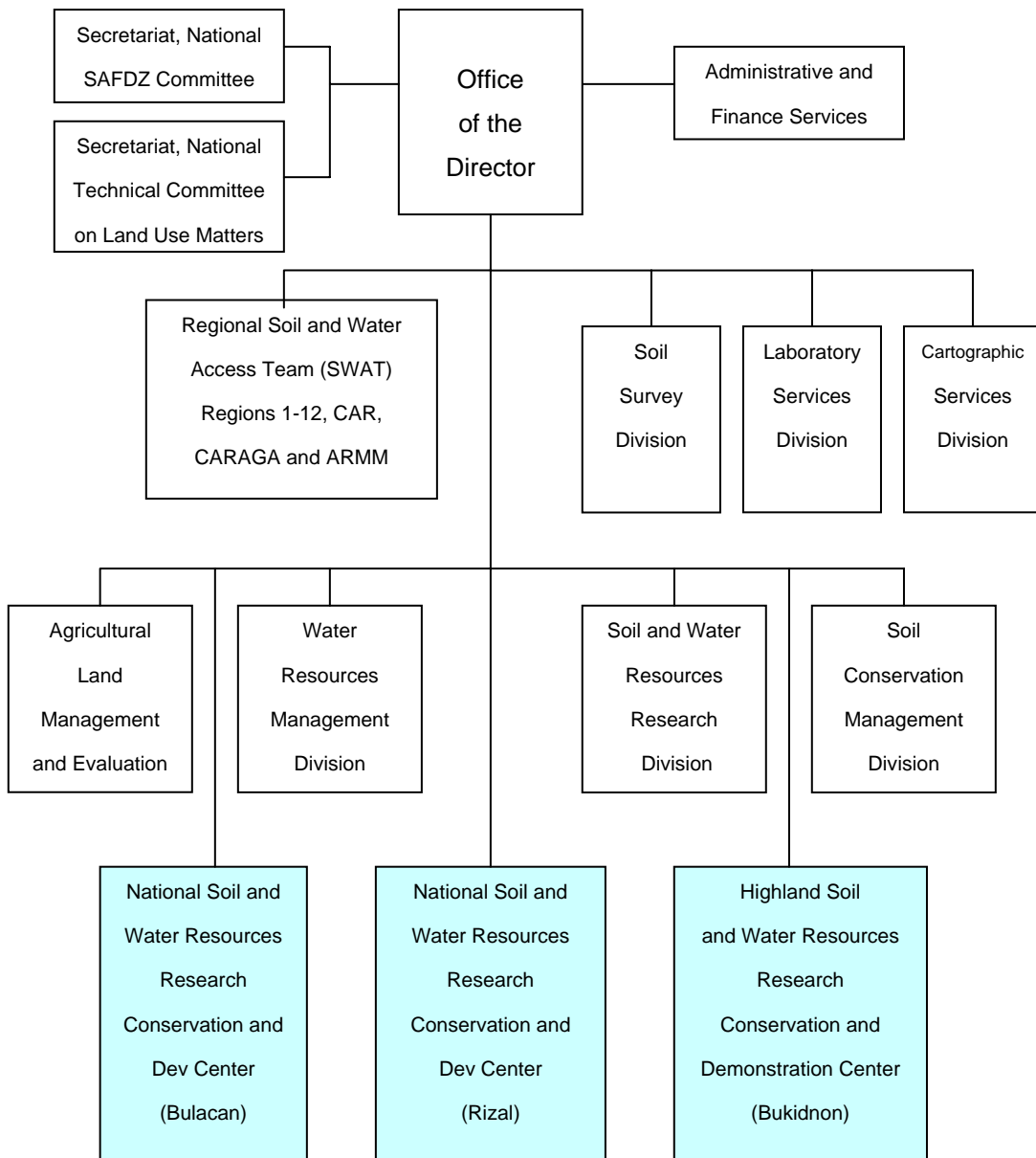
On the other hand, 19 out of 22 project counterparts who attended training in Japan are still working in the different divisions of BSWM and in the Research Centers. All former project counterparts have permanent employment status.

Table 7: Status of BSWM Counterparts of EPMMA Project

Division	As of First Quarter 2003 (Number of Personnel)	As of Second Quarter 2007 (Number of Personnel)	Remarks
ARIS	14	11	1 retired; 2 resigned
WRMD	19	18	1 retired
SCMD	19	15	1 resigned; 1 promoted/transferred as Dir to DA-Regional Office 3; 2 deceased
SWRRD	25	24	1 resigned
TD & P	17	15	1 retired; 1 resigned
Total	94	83	

Source: Results of FGDs and Interviews

Figure 2. Organizational Chart of BSWM, 2007



Source: BSWM

The government ban on hiring (AO 129) followed by the rationalization efforts (EO 366) to streamline the government bureaucracy and promote efficiency in government operations did not allow the recruitment/replacement of additional manpower. Nonetheless, the reduction in staff since 2003 did not deter BSWM from carrying out its mandate. Refer to Annexes 5 & 6 for Status of Project Counterparts.

Technology dissemination framework

At the project sites, the institutional sustainability of the technology dissemination framework is likewise secured with the transfer of management of the three TDFs from BSWM to the LGUs through their respective Municipal Agricultural Offices (MAOs) following the signing of Memorandum of Agreement (MOA) between the two parties at the end of the project in 2005. This arrangement is deemed most appropriate considering that agricultural technology extension functions have been devolved to the local governments by virtue of the Local Government Code of 1991.

Moreover, the TDCCs established by the project to allow stakeholder participation in technology development and promotion have been institutionalized in the project sites and have evolved into successor Councils/Consortium with expanded membership and re-defined roles including the sustainable development of target micro-watersheds. After EPMMA was terminated in 2005, the three TDCCs were transformed into the following: (a) Sustainable Upland Areas Development Council (SUADC), for the TDCC in San Ildefonso, Bulacan; (b) Tanay Hilly Lands Consortium (THLC), for the TDCC in Tanay, Rizal; and (c) Tigbao Micro-Watershed Development Council (TMWDC), for Impasug-ong, Bukidnon. At the time of the field survey, the Councils/Consortium were functional with varying levels of activities and projects. In view of the election of a new set of LGU officials in May 2005, there is a need to re-affirm the support and commitment of the local governments to EPMMA activities in their jurisdictions through the passage of local resolutions.

At the demo farm level, the TDF in Bulacan is still being maintained by the 3 farmer-cooperators. One of the 2 farmer-cooperators of the TDF of Tanay and the 2 farmer-cooperators in the TDF of Bukidnon failed to maintain their farms due to land ownership and financial issues. Despite the mixed performance by farmer-cooperators in the TDFs, the TDF strategy was sustained by the LGU and the Councils/Consortium with the establishment of satellite demonstration farms in strategic sites within the target watersheds.

4.2.2 Technological Aspect of Sustainability

The technical sustainability aspect of the project is likewise secured. Nineteen out of 22 former project counterparts trained in Japan continue to work at the BSWM. Moreover, former project counterparts are able to apply the skills they have acquired during the project in their assigned work such as soil fertility analysis, water management studies, preparation of project proposals, and actual implementation of projects in collaboration with funding agencies, LGUs, private sector, research institutions and other government agencies.

Using the EPMMA experiences, the three Research Centers have continuously improved or modified the developed technologies to suit farm conditions and make these affordable to farmers. These include: use of cheaper plastic technology for mulching, use of rain shelters to demonstrate how to grow other Highly Value Commercial Crops (HVCCs) not tested during the EPMMA project, compost production (e.g., vermi-compost) and increased application of organic fertilizers as substitute to expensive inorganic fertilizers.

Notwithstanding the limited opportunities for counterpart training after the project, the results of survey administered among the 14 former project counterparts affirm that they are still able to upgrade their skills largely through their active involvement in the preparation and implementation of BSWM programs and projects, pursuit of graduate studies, learning from colleagues, experts or field contacts, literature review and internet searches, and field visitations/farmer assemblies. The farmers, likewise, have opportunities for updating their skills through: LGU-managed Field Farmers' Schools, farmers' trainings being provided by DA or initiated by the Councils/Consortium, cross visits/observations of the TDFs and other farmer-adopters' farms, farmer assemblies, and the Lakbay Aral (farmer educational tours sponsored by LGUs and other government agencies).

Table 8: Ways of Acquiring Skills by Former Project Counterparts

Ways of Acquiring/ Upgrading Skills	Frequency of Responses	% of Total Respondents
a. Take graduate studies	1	7
b. Learn from colleagues, experts or field contacts	4	28
c. Actively participate in implementing BSWM programs and projects	8	57
d. Literature review (books, internet, etc)	7	50
e. Attend seminars, workshops, trainings	4	28
f. Farm visitations/farmer assemblies	5	38

Source: Survey of BSWM Counterparts; Note: Total respondents = 14; respondents had multiple responses

Most of the equipment provided under the project are properly maintained and are regularly utilized by the BSWM Central Office and Research Centers for technology research and development and promotional activities and by TDF farmer-cooperators for their land preparation and other farm-related activities (Refer to Annex 7 for the Equipment Inventory Sheet).

4.2.3 Financial Aspect of Sustainability

The financial sustainability aspect of the project is fairly secured. BSWM received an annual budget from the government of more than Php 90 million in 2005 and 2006. Most of the operating expenses went to research and development, extension support, education and training services and information support services. The operation and maintenance expenses for the project-supplied equipment, which have been minimal, are adequately provided in the annual budget of BSWM.

Table 9: BSWM Budget Allocation, CY 2005-2007

Major Final Output	Personal Services (Php M)	Maintenance & Other Operating Expenses (Php M)	Total (Php M)
CY 2005			
Irrigation Development	-	-	-
Extension Support, Education and Training Services	7.43	4.38	11.81
Research & Development	19.25	4.87	24.12
Regulatory Services	5.77	2.51	8.28
Information Support services	28.42	10.25	38.67
Policy formulation, Planning & Advocacy	6.12	3.48	9.60
Total (CY 2005)	66.99	25.49	92.48
CY 2006			
Irrigation Development	6.01	1.18	7.19
Extension Support, Education and Training Services	20.03	6.40	26.43
Research & Development	23.83	8.36	32.19
Regulatory Services	2.90	1.61	4.51
Information Support services	16.44	3.42	19.86
Policy formulation, Planning & Advocacy	6.88	1.89	8.77
Total (CY 2006)	76.09	22.86	98.95
CY 2007 (1st semester)			
Irrigation Development	3.47	1.17	4.64
Extension Support, Education and Training Services	5.91	3.92	9.83
Research & Development	9.20	2.87	12.07
Regulatory Services	1.04	.38	1.42
Information Support services	4.86	1.03	5.89
Policy formulation, Planning & Advocacy	.58	.27	.85
Gen Admin & Production Support	26.03	10.28	36.31
Total (CY 2007 - 1st Semester)	51.09	19.92	71.01

Source: BSWM

At the LGU level, funds for continuing the EPMMA activities including the provision of extension support services to farmer-cooperators within and outside the TDF sites, albeit limited, is included in the budget of the Municipal Agricultural Office (MAO). In view of their meager resources, the LGUs mobilize financial and material support from cooperating agencies, e.g., DA Regional Integrated Agricultural Research Centers (RIARCs), Department of Agrarian Reform (DAR) and Department of Environment and Natural Resources (DENR). Financial support from said agencies, however, invariably depends on the availability of operating funds at their field offices.

At the farmers' level, the low financial capacity of farmers in marginal areas is a major factor that could hinder replication of recommended technologies unless more affordable technologies and credit assistance are put in place. During the field survey, the common issue raised by the farmer-replicators was the lack of access to financing which forces them to enter into unfavorable contractual arrangements with well-off farmers/traders in their areas. In Impasug-ong, Bukidnon for instance, vegetable traders based in Cagayan de Oro supply the input requirements of local farmers growing high-value crops (e.g., carrots, cabbage, etc.). In return, the traders collect 60 percent of gross harvest at the end of the cropping season.

4.3 Analysis of Promoting Factors

4.3.1 Factors Promoting Impact

Sustained technology promotion activities by project stakeholders

After project completion in 2005, BSWM and the various stakeholders, mostly members of TDCC, continuously promoted EPMMA technologies through the maintenance of the TDFs as showcase of EPMMA recommended technologies, conduct of farmers' trainings using the TDFs as venue for practicum and technology demonstration, conduct of agricultural fairs (e.g., Tanay, Rizal), among others.

Establishment of satellite demonstration farms

The setting up of satellite demo farms in Tanay, Rizal and San Ildefonso, Bulacan facilitated the dissemination and adoption of technologies in other areas within the target watershed. These satellite demonstration farms also showcased the effectiveness of the TDCC framework initiated by the project as these farms were established through the collaborative efforts of the Councils/Consortium members.

Integration of EPMMA approach in local development plans

The Sustainable Upland Agriculture Development Plan of San Ildefonso, Bulacan and the Tigbao Micro Watershed Development Plan of Impasug-ong, Bukidnon integrated the TDF strategy and recommended EPMMA technologies as part of the overall strategy for increasing productivity and protecting the ecosystem within the watershed. These plans are contributing to the promotion of soil and water management technologies to more farmers within the target watershed.

4.3.2 Factors Promoting Sustainability

High priority given to development of marginal areas

The government's medium term (2004-2010) development plan for the agriculture sector gives priority to the development of two million hectares of arable land for agribusiness including the marginal areas. As such, the government sustained its budgetary support to the BSWM for its various technology research and promotion activities. In carrying out the plan, BSWM plays an important role particularly in identifying suitable soil and water management interventions in target marginal lands utilizing the skills and technologies accumulated by the agency under EPMMA and previous technical cooperation.

Transfer of TDF management to LGUs

The transfer of management of TDF from BSWM and the LGUs was formalized with the signing of Memorandum of Agreement (MOAs) between the concerned parties at the end of the project in 2005. By virtue of the MOAs, the LGUs through the MAO have been supervising and monitoring the activities of the TDFs with technical assistance from BSWM. The active involvement of the LGUs during the project implementation being a member of the TDCC also facilitated the smooth turn-over of TDF responsibilities from BSWM to the LGU.

Creation of Councils/Consortium

Creation of Councils/Consortium provided the continuity to the institutional mechanism developed by EPMMA which allows stakeholder participation in technology development and dissemination. Currently, these councils are actively involved in implementation of post-EPMMA activities including conduct of farmers' trainings, establishment and maintenance of satellite demonstration farms and other technology promotion activities.

4.4 Analysis of Inhibiting Factors

4.4.1 Factors Inhibiting Impact

Limited LGU budget for technology promotion

The limited budget of LGUs for agricultural extension has inhibited the widespread promotion and adoption of EPMMA technologies within the target watersheds. Given its meager extension budget, the LGUs are unable to hire appropriate number of agricultural technicians to perform technology dissemination activities in the entire watershed.

Inadequate monitoring of project impact

While the BSWM and the cooperating agencies were able to address most of the sustainability issues raised during the terminal evaluation, there was not much attention given to monitoring the main indicator for project impact, i.e., number of farmers who adopted recommended technologies for marginal land, after 2005. Also, farmer-cooperators at the TDFs did not maintain the farm records which could have been useful in validating the economic benefits of the technologies introduced in the TDFs.

4.4.2 Factors Inhibiting Sustainability

High cost of technology adoption

The high cost of investment required by some EPMMA technologies hindered their adoption by farmers in marginal areas. This issue was raised particularly by the farmers growing high-value crops in Impasug-ong, Bukidnon and TDF cooperators in Bulacan who planted perennial crops (e.g., mango and citrus).

Non-permanent tenurial status of farmers

Non-permanent tenurial arrangements hinder the continuity of TDF operation and adoption of some EPMMA technologies particularly those that entail high initial cost. This was evident in the TDF of Tanay which was farmed by a caretaker and the TDF in Bukidnon wherein the cooperator mortgaged his farm to another farmer.

4.5 Conclusion

The project's Overall Goal has been achieved as evidenced by the increased number of farmers adopting recommended soil and water management technologies within the target watersheds increased from 381 at the end the project to about 478 at the time of evaluation. The institutional framework for dissemination of EPMMA technologies within the target watersheds has been established with the assumption of management of TDFs by the LGUs and transformation of the TDCCs into Councils/Consortium with the long-term objective of sustainable micro-watershed development. Technical sustainability is secured as most of the former project counterparts remain working at BSWM utilizing skills acquired for continuing EPMMA-related activities. Financial sustainability of the project is likewise secured as BSWM receives continuing budgetary support from the national government for development and promotion of soil and water management technologies. At the farmers' level, financial support is necessary in order to encourage replication of EPMMA technologies within and outside the target areas..

5. Recommendations and Lessons Learned

5.1 Recommendations

For BSWM

- ❑ To continue monitoring and providing technical support to the LGUs in order to ensure that the TDFs are maintained;
- ❑ To assign a permanent staff to its national research center in Bukidnon to supervise and coordinate soil and water management technology dissemination activities;
- ❑ To continue the development and modification of technologies with a view towards making them more affordable to farmers in the target watersheds and other marginal areas;
- ❑ To continue monitoring and providing technical assistance to the activities of the Councils/Consortium particularly those aimed at propagating EPMMA technologies within the target watersheds.

For the LGUs

- ❑ To sustain the management of the TDF and take the lead role in steering the activities of the Councils/Consortium;
- ❑ To facilitate the issuance of resolutions and other legal instruments that will integrate the Councils/Consortium-initiated watershed management plans into the LGU development plans providing funds thereof for implementation of TDF activities.

For GOJ/JICA

- ❑ To consider the BSWM proposal for follow-up cooperation with a view towards enhancing the capacity of the LGU and the Councils/Consortium to manage soil and water management technology dissemination and promotion activities in the target watersheds.

5.2 Lessons Learned for JICA and Counterpart

- ❑ Active participation of stakeholders in planning and implementation of technology development and promotion activities is key to project sustainability.
- ❑ Linking farmers to sources of credit financing should be a complementary intervention for technology promotion projects to achieve financial sustainability.

6. Follow-Up Situation

BSWM submitted to JICA a proposal for a follow-up technical cooperation on “*Productivity Improvement through Participatory Soil and Water Conservation Development*” project which

intends to address the gaps in levels of understanding on what conservation farming is, and the varying experiences of those involved in the EPMMA project, particularly the three Research Stations in Bulacan, Tanay and Bukidnon..

The expected outputs include: follow-up trainings to enhance awareness on the importance of soil conservation farming; farmer-led in-situ trial farms to enhance community participation in soil conservation farming; and activation of the LGU-led Councils/consortia, in partnership with rural development partners for soil conservation and water management.

Annex 1

Project Design Matrix for Evaluation (PDMe)

Project Title: Environmental and Productivity Management of Marginal Soils in the Philippines

Project Duration: February 1, 2000-January 31, 2006

Project Site: BSWM Central Office, BSWM Stations and techno-demo farms (TDF) in San Ildefonso, Bulacan, Tanay, Rizal and Impasug-ong, Bukidnon

Target Group: BSWM staff and farmers in three (3) TDF sites

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumption
<p>Overall Goal</p> <p>The soil and water management technologies contributing to the stable and sustainable agricultural production are adopted in pilot marginal lands (Macro watersheds of three techno-demo farms)</p>	<p>No. of farmers who adopted the recommended technologies for marginal land (Three techno-demo farms and their macro watersheds)</p>	<p>Farm surveys in the pilot marginal lands (three techno-demo farms and their macro-watersheds)</p>	<p>Current priorities of the Department of Agriculture will not change.</p>
<p>Project Purpose</p> <p>Suitable soil and water management systems* are developed for the three techno-demo farms and their micro-watersheds</p>	<p>Suitability maps of each modified technology in micro watersheds are prepared</p> <p>TDF methodology is recognized as effective among the member organizations of TDCC for future authorizations</p>	<p>Technical reports Annual reports Project completion reports</p>	<p>There is no severe climate aberration.</p> <p>Agricultural land use in the macro watershed is maintained.</p> <p>Three techno-demo farms are not relocated..</p>
<p>Outputs</p> <p>(1) The soil and water management technologies are modified for three techno-demo farms</p> <p>(2) Three techno-demo farms are well managed and maintained.</p>	<p>1-1 Technology package recommended for each techno-demo farm</p> <p>1-2 Number of technologies modified for three techno-demo farms</p> <p>2-1 Number of visitors to three techno-demo farms and their satisfaction level</p> <p>2-2 Evaluation and contribution of TDCC for three techno-demo farm operations</p> <p>2-3 .Every technology is modified and assessed through feed back process between TDF and Research station.</p>	<p>Technical reports Annual reports Technical manuals Farm records, farm journal Project completion report Minutes of TDCC meetings Visitors' logbook</p>	<p>Funds are available and released on time</p> <p>Peace and order situation allows continuous field activities</p> <p>Market prices are within normal seasonal fluctuation.</p>

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumption
<p>Activities</p> <p>(I) Development of soil and water management technologies for farmers' participatory techno-demo farms</p> <p>1-1) Development of Agricultural Resources Information System for pilot watersheds</p> <p>1-2) Development and application of Appropriate Water Resources Management Technologies and on-farm Water Management Technologies</p> <p>1-3) Assessment of Soil Conservation System on Soil Productivity and Environment</p> <p>1-4) Improvement of Productivity of Marginal Soils with Environmental Conservation</p> <p>(II) Establishment of Farmers Participatory Techno-demo Farms to Disseminate Soil and Water Management Technologies</p> <p>2-1) Networking and linkages with related institutions</p> <p>2-2) Planning of the Techno-demo farms located in marginal upland, hillyland and highland</p> <p>2-3) Introduction of appropriate soil and water management technologies to the Techno-demo farms located in marginal upland, hillyland and highland</p> <p>2-4) Assessment of agriculture technologies for marginal upland, hillyland and highland.</p>	<p style="text-align: center;">Inputs</p> <p>(Japanese side)</p> <p>1. Long-term experts</p> <p>1.1 Team leader</p> <p>1.2 Coordinator</p> <p>1.3 Long-term experts in soil and land evaluation, soil fertility management and soil conservation</p> <p>2. Short-term experts</p> <p>3. Equipment and machinery</p> <p>4. Counterpart training Training of Philippine personnel in Japan</p>	<p>(Philippine side)</p> <p>1. Provision of buildings and facilities needed for implementation of the project</p> <p>1-1 Land, buildings and facilities</p> <p>1-2 Rooms and space necessary for installation and storage of equipment</p> <p>1-3 Office space and necessary facilities for the Japanese team leader, coordinator and other Japanese experts</p> <p>1-4 Other facilities mutually agreed upon, if necessary.</p> <p>2. Assignment of necessary number of full-time/part-time counterpart personnel to work with Japanese long-term experts, and administrative and technical staff to support the activities of the Project</p> <p>3. Sound budgetary allocation for the smooth commencement and successful implementation of the Project</p>	<p><u>Pre-condition</u></p>

* Systems' mean total program implementation methodology of BSWM for practical research and demonstration, in which applicable technologies are decided through the interaction of local member organization and introduced in farmers' fields.

Annex 2: Evaluation Grid for Ex-post Evaluation of EPMMA

Evaluation Criteria	Study Items	Questions	Necessary Information/ Data	Document Source	Methods																
					Questionnaire					Interview					FGD						
					BSWM	BSWM Field Station	Cooperating Agencies	Direct Beneficiaries	Indirect Beneficiaries	BSWM	BSWM Field Station	Cooperating Agencies	Direct Beneficiaries	Indirect Beneficiaries	BSWM	BSWM Field Station	Cooperating Agencies	Direct Beneficiaries	Indirect Beneficiaries		
Impact	1. Is the Overall Goal of the Project, i.e., "soil and water management technologies contributing to the stable and sustainable agricultural production are adopted in three pilot marginal lands (macro-watersheds of three TDFs" being achieved?	1.1 Was there an increase in the number of farmers who adopted the technologies promoted by the project after completion?	Farmers' data	Monitoring reports	x	x	x				x	x				x	x	x	x		
		1.2 How much was the increase in total crop production in the three TDF sites in 2005? in 2006? in 2007??	Crop production records	Baseline survey; crop statistics	x	x	x				x	x				x	x	x	x		
		1.3 Did the increase in production translate into corresponding increase in farmer cooperators' income? How much was the increase in income?	Income data	Monitoring reports	x	x	x				x	x				x	x	x	x		
		1.4 Did the project contribute to the improvement in land productivity?	Soils data	Monitoring reports	x	x	x				x	x				x	x	x	x		
		1.5 What factors contributed to or hindered the achievement of the Overall Goal at the micro-watershed level?			x	x	x				x	x				x	x	x	x		
		1.6 What factors contributed to or hindered the achievement of the Overall Goal at the macro-watershed level?			x	x	x				x	x	x			x	x	x	x		
	2. Are there other impacts generated by the Project?	2.1 What unintended positive effects/impact were generated by the project?				x	x	x				x	x	x			x	x	x	x	
		2.2 What attitudinal or behavioral changes have been observed among the beneficiaries or participants of the project?				x	x	x				x	x	x			x	x	x	x	
		2.3 Are there any negative effects brought about by the project on stakeholders and beneficiaries?				x	x	x				x	x	x			x	x	x	x	
	Sustainability	3. Is the Overall Goal still significant in terms of the relevant development policy?	3.1 Were there any significant changes in soil and water management policy of the government after project completion in 2005?	Policy directives	Agricultural Development Plan, MTPDP	x	x					x	x				x	x			
3.2 Did the project have any influence on these policy changes?					x	x					x	x				x	x				
3.3 If there have been policy changes, how did these affect the mandate and role of BSWM?					x	x					x	x				x	x				
3.4 What is the current role of BSWM in the soil and water management research, development & extension system in the region?		RDE role of BSWM	Regional agricultural plan	x	x					x	x				x	x					
4. Has the effect of the Project been sustained?		4.1 Did BSWM continue to monitor the project activities at the 3 TDF sites after 2005? What is the frequency of monitoring activities?			Monitoring reports							x	x	x	x			x	x	x	x
		4.2 What activities were continued/discontinued at the TDF sites after 2005? What were the reasons for discontinuing some project activities?			ditto							x	x	x	x			x	x	x	x
		4.3 What average crop yields were attained at the TDF sites after 2005?	Average crop yield	ditto								x	x	x			x	x	x		
		4.4 Did the number of farmers who adopted the technologies introduced by the project increase after 2005?	Number of technology adopters	ditto								x	x	x	x	x	x	x	x	x	x
		4.5 Were there new technologies/innovations introduced in the TDF sites after 2005?	New technologies introduced	ditto								x	x	x	x			x	x	x	

Evaluation Criteria	Study Items	Questions	Necessary Information/ Data	Document Source	Methods														
					Questionnaire					Interview					FGD				
					BSWM	BSWM Field Station	Cooperating Agencies	Direct Beneficiaries	Indirect Beneficiaries	BSWM	BSWM Field Station	Cooperating Agencies	Direct Beneficiaries	Indirect Beneficiaries	BSWM	BSWM Field Station	Cooperating Agencies	Direct Beneficiaries	Indirect Beneficiaries
5. Has technical sustainability been secured?	5.1 Did the farmer-cooperators in the TDF sites continue to adopt the technologies introduced by the project?		Monitoring reports								X	X	X		X	X	X	X	
	5.2 Did the number of farmers adopting the technologies introduced by the project within the microwatersheds of 3 TDFs increase? How about in the macrowatersheds?	Number of technology adopters	ditto							X	X	X	X	X	X	X	X	X	X
	5.3 Were there new technologies/innovations introduced in the TDF sites after the project? How about in areas outside of the 3 TDF sites?	New technologies introduced	ditto							X	X	X	X	X	X	X	X	X	X
	5.4 Were the manuals on SWM technologies developed during the project revised or updated after 2005?	Revisions on manual	Technology manual							X	X	X			X	X	X		
	5.5 Are these manuals useful in technology transfer activities outside the pilot sites?									X	X	X			X	X	X		
	5.6 Did BSWM continue to employ the technology promotion strategy/approach in disseminating SWM technologies outside the 3 TDF sites?	Techno promo strategies employed	Annual reports							X	X	X			X	X	X		
	5.7 Were there any changes made on technology promotion approach/strategy after the project? What were the effects of these changes?	Techno promo strategies employed	Annual reports							X	X	X			X	X	X		
	5.8 Did the former project counterparts continue to receive trainings after 2005? If not, how do the counterparts update their knowledge and skills?	Record of trainings	Training reports	X	X					X	X			X	X				
	5.9 Are the former project counterparts still able to apply the knowledge and skills acquired during the project?				X	X				X	X			X	X				
	5.10 Did BSWM continue to provide trainings to farmers/technicians after the project? If not, how do they update their knowledge and skills?	Record of trainings	Training reports							X	X	X	X	X	X	X	X	X	X
	5.11 Are the farmers/technicians trained during the project still applying the skills learned from the training?									X	X	X			X	X	X		
	5.13 Are the facilities and equipment provided by the Project being upgraded and maintained?	Maintenance records	Technical reports	X	X					X	X				X	X			
	5.15 Are the donated facilities and equipment being used to continue the project activities?	Utilization records	ditto	X	X					X	X				X	X			
	5.16 Are there problems being encountered in O&M of donated facilities and equipment?			X	X					X	X				X	X			
	6. Has the institutional sustainability been secured?	6.1 What is the current role of BSWM in SWM technology research, development & extension system? Is BSWM still mandated to carry out RDE on SWM technologies?	BSWM role and mandate	Office orders/BSWM briefing kit	X	X				X	X				X	X			
		6.2 Were there changes in the BSWM organization structure after the project? What are the reasons for these changes?	Organizational structure	BSWM briefing materials						X	X				X	X			
6.3 Which unit or section within BSWM has assumed the responsibility of sustaining the project activities?		Functional structure	BSWM briefing materials	X	X				X	X				X	X				
6.4 How many of the former project counterparts remain in BSWM? Who among these remaining counterparts are directly involved in sustaining the Project activities?		List of personnel	Personnel Records	X	X				X	X				X	X				
6.5 What institutional arrangements were made between BSWM and cooperating agencies (TDCC members) for sustaining the project activities in the TDF sites?		Roles of cooperating agencies	MOA						X	X	X			X	X	X			

Evaluation Criteria	Study Items	Questions	Necessary Information/ Data	Document Source	Methods														
					Questionnaire					Interview					FGD				
					BSWM	BSWM Field Station	Cooperating Agencies	Direct Beneficiaries	Indirect Beneficiaries	BSWM	BSWM Field Station	Cooperating Agencies	Direct Beneficiaries	Indirect Beneficiaries	BSWM	BSWM Field Station	Cooperating Agencies	Direct Beneficiaries	Indirect Beneficiaries
		6.6 Did LGU and other NGAs assign permanent staff to continue the project activities?		Monitoring reports						X	X	X			X	X	X		
		6.7 Did BSWM assign a staff to monitor the activities of LGUs and farmer-cooperatives in the project sites?		ditto						X	X	X			X	X	X		
		6.8 Did BSWM & cooperating agencies continue to provide training to farmers in the project sites?		ditto						X	X	X			X	X	X		
		6.9 What organizational changes occurred within the TDCCs after the project? Was there an increase in TDCC membership?	Organizational changes	Minutes of meetings						X	X	X			X	X	X		
		6.10 Did BSWM maintain or enhance its collaborative linkage or mechanism with other agencies developed during the project?	Collaborative mechanisms	ditto						X	X	X			X	X	X		
		6.11 What other institutional arrangements were made to ensure project sustainability after 2005?	Institutional arrangements	ditto	X	X				X	X				X	X			
	7. Has the financial sustainability been secured?	7.1 Was BSWM able to secure adequate budget for sustaining the project activities?	BSWM budget	Financial reports	X	X				X	X				X	X			
		7.2 Is this budget regularly appropriated to BSWM? How much was the annual budget after 2005?	ditto	ditto	X	X				X	X				X	X			
		7.3 Is there an adequate budget allocated for maintenance and upgrading of facilities and equipment provided by the project?	Budget for MOOE	ditto	X	X				X	X				X	X			
		7.4 Did the LGU/NGAs provide counterpart funding for continuing the project activities within and/or outside the project sites?	LGU/NGA budget	ditto							X	X				X	X		
		7.5 Aside from the regular budget, what are the other sources of income/revenues of BSWM?	BSWM income	ditto							X	X				X	X		
		7.6 What is the current financial standing of the farmers assisted by the project? Was there an increase in financial assets after the project?	Financial status of farmers	Financial records of farmers									X	X		X	X	X	X
		7.7 Did the farmers receive financial assistance from LGU or other agencies after the project?	Funds received from other agencies	ditto									X	X		X	X	X	X
		7.8 Was there an increase/decrease in income of farmer cooperators in the project sites? What factors contributed to the increase/decrease in income of farmer cooperators?	Farmers' income	ditto		X	X						X	X		X	X	X	X
		7.9 Do the farmers have other sources of income aside from farming?	Income sources	ditto									X	X		X	X	X	X
	8. What factors are affecting project sustainability	8.1 What factors are contributing to project sustainability?	Contributing factors		X	X	X								X	X	X		
		8.2 What factors are inhibiting project sustainability?	Inhibiting factors		X	X	X									X	X	X	

Annex 3
Schedule of Activities of the Study Team

Date	Activity
July 2	Kick-off meeting at JICA Office
July 3-15	Review of project documents; preparation of evaluation grid and survey instruments
July 16	Conduct interviews and FGD in BSWM Central Office
July 17-18	Conduct field survey in Agoho TDF, Tanay, Rizal
July 19-20	Conduct field survey in Bulusukan TDF, Bulacan
July 21-22	Tabulate survey results
July 23-26,	Conduct field survey in Intavas TDF, Bukidnon
July 27-29	Tabulate survey results
July 30-31	Conduct supplemental survey in BSWM Central Office
August 1-3	Analyze survey results
August 4-9	Prepare draft final report
August 10	Submit draft final report
August 11-17	Prepare summary sheet
August 18-30	Revise draft report based on initial comments of JICA
August 31	Submit revised draft report to JICA
September 1-9	Prepare final report based on comments of JICA Tokyo
September 10	Present findings to JICA; Submit final report

Annex 4: Results of FGDs and Interviews Conducted by the Study Team

FGD with Former Project Counterparts

Venue: Lecture Hall 2, 2nd Floor, SB Hall, BSWM Bldg, Elliptical Road, Quezon City

Date: July 16, 2007

In Attendance: Ms. Edna Samar, Chief, BSWM Tanay Station
Mr. Bayani Villanueva, Chief, BSWM Bulacan Station
Mr. Cris Mamorbor, OIC, BSWM Bukidnon Station
Mr. Gavino Uriza, Supervising Agriculturist
Engr. Samuel Contreras, Chief, WRMD
Engr. Rodolfo Gisete, OIC, Soil Conservation Division
Ms. Belinda Pajarito, Supervising Agriculturist
Ms. Clarita Bacatio, Supervising Agriculturist
Ms. Celia Gorospe, Senior Agriculturist
Dr. Gina Nilo, Supervising Agriculturist
Ms. Filipina Ventigan, Agriculturist II
Ms. Violeta Corpus, Consultant
Mr. Ding de Villa, Consultant)
Mr. Nick Baoy, JICA In-house Consultant

Highlights:

1. Dr. Samar, Chief of the BSWM-Tanay Research Station) expressed that *there is an increasing concern for marginal lands, specifically for their use in agricultural activities.*
2. Dr. Nilo (BSWM-CO) cited some of the ongoing activities by BSWM include: Community-Based Management Project for the marginal lands in Ilocos, Bulacan and Bohol, and the Evaluation of Adoption of Best Management Practices in 2 Watersheds (Upland and Hillyland) in Bohol. The latter was a follow-up project to the Integrated Watershed Management of Inabanga (2002-2006)/ It was added that BSWM is the national point agency for the UN Convention on Desertification, which concerns the land degradation and soil erosion concerns/issues.
3. Mr. Contreras likewise cited the following actions being done by BSWM after the EPMMA project: ACIAR project on Shallow Ground Water Resource-Sub-water Basin (in Burgos, Pangasinan and Ilocos Norte) using electrical resistivity meters donated by JICA; in collaboration with JIRCA, the Development of Environmental Technologies in Tropical & Sub-tropical Countries, which looks on the effect of hard pan on sugar cane growth in Negros Occidental and on water aspect in Isabela; a tie up with the Laguna Lake Authority (LLDA) on the installation of instruments in Lumban, Laguna. In general, He described that *a lot of expertise from the experts were gained/earned by the BSWM staff, and these were applied to these ongoing projects.*
4. Mr. Gesite added that for the soil conservation aspect, this was established in its regular work program, i.e., specifically citing soil conservation technologies in Limay, Bataan, and the soil conservation and water resources development in Dasul, Pangasinan. *An impact of the EPMMA was that there had been more requirements/requests from Isabela and the private sector for BSWM assistance in adopting technologies.*
5. According to Mr. Ramat, *he learned through EPMMA that soil loss can be addressed through the use of perennial crops.* He is a participant of the DAR/s In-Country Technical Cooperation Project (2004-2008) wherein BSWM provides trainings and set-up for 8 TDFs to demonstrate various soil conservation technologies. He added that in 2 municipalities in Isabela, zero tillage and crop rotation were introduced already.
6. According to Mr. Villanueva, Chief of the Bulacan Research Station, *the LGU developed additional 3-4 TDF sites of at least 1 hectare each in San Idefonso, as expansion areas.* The TDCC still exists and had included the Provincial Environment and Natural Resources Officer (PENRO) from among its members. He added that the Bulacan watershed likewise includes portions of Pampanga (another province). He added that the TDFs are regular venues for field work of Bulacan Agricultural College students.
7. According to Mr. Cris Mamorbor (Chief, Bukidnon Research Station), the TDCC was reorganized into Tigbao Micro-Watershed Management Development Council. Joint monitoring by the Council and the LGU was being done, and the He informed, *TDFs became the study areas for other farmers to replicate the technologies.* He added that 3 trainings for farmers were done after EPMMA, with support from the other agencies.

- However, that the lack of LGU funding support contributed to low adoption rate.
8. Dr. Samar added that in the case of Tanay, the TDCC gave birth to Tanay Hillyside Consortium, and expanded its membership to a total of 17 members. The Consortium became the venue for influencing adoption of conservation farming under a pilot training involving 20-day sessions (every Friday) which runs from May – September 2007. *The TDF became the “open area for learning”, in addition to the other 5 farmer-initiated TD sites which were also established but are more accessible.* She added that the TDF has a problem on access, which is about 11 kms away from the Research Station, and the condition of the road is poor.
 9. Currently, the BSWM Central Office provides technical assistance, or advisory on technologies being continuously developed and/or updated on request of the Research Stations. Steering of EPMMA post-project activities are steered by the respective Center Chiefs. Technical people from the Central Office are being invited as resource speakers in the training activities being conducted in the Research Stations.
 10. On the ARIS component of EPMMA, it was reported that some Mindanao LGUs installed and uploaded the Information System. The Tanay Research Station benefited as it was able to download the system for use of the University of Rizal System (URS). It was also informed that ARIS is linked to ITCAF-DA, but not yet linked to the DA's-National Information Network (NIN) , although linked already into some of NIN activities.
 11. On the positive impact of EPMMA, Dr. Samar cited that making affordable alternatives to the soil conservation and water management technologies are being done in the Research stations. Mr. Contreras cited as an example: the use of indigenous technologies versus the use of pressurized irrigation system. To counter the negative effect of using plastic technology for bitter gourd, he also added that a cheaper technology was developed. This technology is intended for soils with high infiltration rates. The technology was found to promote bacteria growth due to the moisture content (MC) level. Meanwhile, to make the technology affordable, and at the same time address the MC level, plastic mulching using double layering of plastic polyethylene sheets, ironed together for proper sealing, was substituted for the commonly used but expensive engineering membrane.
 12. In terms of the promotion efforts, Dr. Samar shared that they *hold an annual Agriculture Trade Fair (January 2006, January 2007, January 2008-being planned) in Tanay, showcasing technologies and products.* Other municipalities and their Municipal Agricultural Officers are being invited in these trade fairs. She added that the Tanay Research Station has linked with the PCARRD, whereas the RDE agenda for marginal lands is clear in the RIARC of DA, and the DA-BAR agenda, i.e., improvement of the productivity of marginal soils, and soil and water pollution mitigation.
 13. Except for Tanay, the MOAs for the TDFs of Bulacan and Bukidnon which were contemplated to have been approved and operational by now were not approved. In the case of Bukidnon, 2 hearings were conducted for the approval of the Sanggunian Bayan Resolution. In the absence of a MOA for Bulacan, collaborative mechanisms were set up: DA-RFU provides input/planting materials, Bulacan Agricultural College also provided planting materials and PENRO - free forest trees/. The Tanay Research Stations, meanwhile, obtained funding support for the trainings. Although the TDF was totally turned-over to the LGU, the Research Station still steers the Consortium activities. *With the clear implementation and collaboration arrangements in Tanay, the TDF and additional farmer TD sites became the open learning centers, and the farmers became the trainors.*
 14. In terms of the improvement of the EPMMA design, Bulacan Research Station chooses the cooperators who would assume the responsibility of being trainors after training. In the case of Tanay Research Station, the *choice of farmer cooperator now depends on satisfying the condition that the one who tills the land should be the landowner and not merely a caretaker.* Under EPMMA, one of the 2 TDFs in Tanay was farmed by a caretaker. As its remaining TDF is not accessible, the Tanay Research Station *introduced additional “open learning areas” as demonstration sites for farmers.* In Bukidnon, however, one of the TDF cooperators mortgaged his farm and is now being tenanted by another farmer. The sites, according to the BSWM staff were correctly chosen, but if not owned and farmed by the cooperator, outright decisions on the technologies to be adopted cannot be made.
 15. Some positive impacts after the EPMMA project were noted: *the importance of LGU involvement from the planning stage gained support of the Local Chief Executives*

(Mayors); the involvement of the state colleges, and DAR's MAROs, PENROs, RIARCs and LGU staffs-MAO and agricultural technicians gained also their continuing support to the Council/Consortium activities. On the negative side, the turn-over of BSWM staff in the Research Stations, and the lack of budgetary support, particularly in sending/retaining BSWM staff in Bukidnon Research Station, constrained the sustainability of EPMMA activities.

FGD with Members of Tanay Hilly Lands Consortium (THLC)

Venue: BSWM Research Station, Bgy. Cuyambay, Tanay, Rizal
Date: July 18, 2007
In Attendance: Ms. Violeta Corpus, Consultant
Mr Ding de Villa, Consultant
Mr. Nick Baoy, JICA In-house Consultant
Ms. Edna Samar, Chief, BSWM Tanay Research Station Chief
BSWM Tanay Staff
MAO of Tanay
Officials of DA-RFU, DAR-MARO, University of Rizal System

Highlights:

1. The Consortium which subsumed the TDCC function was organized on 13 January 2005 with 9 members – BSWM- Tanay Research Station, LLDA, DENR, DA-RFU, DAR, LGU, URS, NGO-Tanay Environment Foundation, and Farmers' Group. BSWM chaired the Consortium, with LGU as the Co-chair. The Consortium has now expanded its membership to 17 with the ff additional agencies: DOST, NCIP, DTI, FiDA, PDA, 2nd Infantry Division, in order to unify efforts at the TWG level in promoting conservation farming, and to sustain developments in Tanay.
2. In order to promote conservation farming, Agriculture Fairs were held in January of 2006 and 2007. Plans for January 2008 will feature *Organic Vegetable Production*, DECS-program on *Gulayan para sa Kalusugan at Kinabukasan*, and *Paaralang Walang Hagdan for the Indigenous Peoples*. These fairs further intended to develop farmers to become trainers.
3. In addition to the agricultural fairs, the first batch of (pilot) training on Conservation Farming involving 20-day sessions of every Friday runs from May – September 2007. (The curriculum is provided in the attachment). The training cost was Php 125,000 – shared by LGU (Php 30,000) DA-RFU4 (Php 50,000), BSWM (Php 23,000), and URS (Php 22,000). Out of the 44 participants, 21 participants were drawn from the URS trained participants on Season-Long Vegetable Production. The participants came from NCIP, DAR, FiDA, DTI, TEFI, Consortium Members, farmers and agricultural technicians. As of the time of the interview/FGD, 9 sessions have been attended by the participants. *Each participant is expected to "Adopt-A-Farm"*, a concept of disseminating the learned technologies and adoption of the other farmers. The other concept is to establish during the training 5 "*farmer-initiated demonstration areas*" wherein the farmers themselves shell out the cost for putting up said demo sites. Individual farm implementation plans (FIPs) were prepared, and the farm owner tills the land.
4. Under the *WB-assisted (Laguna Institutional Strengthening and Communities Project (LISCOP), EPMMA learning was used by the URS (c/o Dr. Penaranda)* to prepare the topographic mapping and water resource feasibility study (FS) for the Tanay watershed enhancement component. The LGU donated a total of 90 hectares, 50 hectares of which was intended for agro-forestry, ecology center, and cooperative organization, and 30 hectares was donated to BSWM Research Station (where the Station is located). The Consortium was responsible with the identification of the agro-forestry area for LISCOP. The agro-forestry was planted with mango and cacao trees and cut flower to address both IP and women concerns.
5. The Consortium prepares its *annual Work and Financial Plan (WFP) wherein every member was consulted for a more unified undertaking and complementation with individual agency WFPs*. The WFP thrusts include capacity building, conservation farming (both the "open learning demo TDF" and the "5 farmer-initiated demo areas"). A Sustainability Plan though was not embedded in the unified WFP.
6. *The strength of EPMMA lies mainly in the voluntary commitment and dynamic participation of the Consortium members*. In addition to knowledge products they produce, the members maintain its own email group and share information online. In addition, the

Agoho experience was/will be shared or brought in many fora: in Bicol, in the 2nd National Agro-Forestry Congress held in CLSU, Nueva Ecija, and in the 3rd Agro-Forestry Congress to be held in November 2007 in DMMSU, La Union, in the Techno Pinoy Information, FITS Center-DOST, in Salakot (Tanay's living Museum for Conservation Farming, Tanay's Agro-Eco Tourism Site). The Consortium members are of the view that: *"One lesson learned through EPMMA is that LGU ownership of the project is very crucial in disseminating EPMMA gains. The EPMMA objective of having a participatory approach to sustainable conservation farming is therefore attained."*

7. One problem that recently occurred was that *the alley cropping in one of the TDFs was not maintained due to the absentee farmer, but left to the caretaker*. In addition, the Consortium is still an Ad Hoc group, and not yet registered with the SEC, although there are plans to do so.
8. In terms of technologies developed and promoted, those technologies for research were done during EPMMA project, while technologies for production purposes were the ones continued after EPMMA. Therefore modified technologies borne out of researches were introduced to the farmers. An example was the *introduction of double plastic lining for mulching, instead of the plastic membrane, lowering the cost from Php 325/sq meter to Php 70 per sq. meter*. Another example of affordable technology is the use of manual labor in the compaction of the small reservoir, instead of using the bulldozer. For purposes of research, 3 rain shelters for HVCCs- lettuce, strawberry, sweet pepper and cucumber intends to show the potential of these HVCCs. For farm adoption however, low tunnel dome (with plastic-covered bamboo frames) was used for tomato. All these crops are being grown organically. The results of all these researches and trials experimentations, whether in pots or plots are being made available in the Tanay Research Station.
9. In terms of the continuity of farmer trainings, the TWGs continuously hold informal sharing/meetings which were institutionalized already. These trainings were largely funded by the LGU. There have been about 13 TWG meetings and 5 Consortium meetings since the EPMMA project completed.

Interview/FGD with Tigbao Micro-Watershed Development Council (TMWDC)

Venue: BSWM Research Station, Impasug-ong, Bukidnon

Date: July 23, 2007

In Attendance: Ms. Violeta Corpus, Consultant

Mr. Nick Baoy, JICA In-house Consultant

Mr. Cris Mamorbor, OIC-BSWM Bukidnon Station

BSWM Bukidnon Research Station Staff

Representatives of DAR-PARO, DA-RFU-10, DA-NOMIARC, and
2 farmer leaders

Highlights:

1. The group confirmed that TDF was turned-over to the LGU of Impasug-ong for maintenance and management in October 2005.
2. The TDCC has evolved into the Tigbao Micro-Watershed Development Council (TMWDC), with original membership of the following agencies: DA-RFU10, DAR-R10, BSWM-Bukidnon, ATI, DENR-PENRO, Xavier University, CMU and LGU-Bukidnon and Impasug-ong. Later on, membership expanded to include CDA and Kaanib Foundation, a local NGO.
3. It was recalled that there were 3 major trainings conducted after EPMMA: DENR-led Watershed Delineation of Areas; Evaluation Survey; and CME-Training on "Organic Farming, Soil Analysis & Conservation Technologies, Biological Controls, etc". This became the basis for the TMWDC core members in its formulation of a proposal for a follow-up project for JICA assistance.
4. It was informed that in order to promote replication and adoption of soil conservation and fertility management practices after EPMMA, 6 cell groups of farmers, grouped according to tribes/areas, with each cell group represented by 8 members were provided various types of trainings. Said trainings were jointly conducted by the Council and the LGU, drawing resource persons and from various researches, as well as funds from the agency members themselves. From among the trained farmers, wider farmers' adoption of the applicable technologies was realized. These farmers became the pool of micro-watershed adopters. About 46 members were reported to be actively applying said technologies.

5. The farmer adopters' adoption of the soil conservation and management technologies learned through EPMMA, include contour farming, crop rotation, compost application, among others. Most of these farmers plant high value commercial crops (HVCCs) such as cabbage, lettuce, carrot, tomato and potato. In addition, more intensive use of locally-available organic fertilizers such as chicken dung and vermicompost (P50-P100/sack of chicken manure and P200/sack of vermicompost), which are a lot cheaper than inorganic fertilizer but of equally good quality. Per DA-RFU 10 official, this practice is also compliant with DA Administrative Order (AO) 481 on the National Promotion of Organic Farming that recommends 50:50 application rate of organic and inorganic fertilizers. Consistent with said AO, nature and organic farming technologies in vegetable production and use of fermented juice, aside from animal manure and composts, to fertilize the soil are just a few examples in current application.
6. On inquiry about the status of the 2 original farmer cooperators (not in the meeting) who established the techno demo farms (TDFs) under EPMMA, it was informed that only Mr. Pasadoble continued with his TDF activities in his 1.15 hectare farm, but he depends to a large extent on the available rainfall which has become unreliable in recent months. Mr. Tortola, the other farmer cooperator, mortgaged his farmland to cover his hospitalization bills after he met a motorcycle accident. It was also informed that there was no actual monitoring being done on the economic costs and returns of said TDFs, except the monitoring of standing crops.
7. Meanwhile, the Council had not convened any meeting during the year. Its inactivity was likewise preceded by certain changes in officials represented in the Council – change in MAO (but timed during the turn-over of TDFs to the LGU), change in PENRO, change in CMU representative. The BSWM-RS Chief (Mr. Cris Mamorbor) was likewise recalled in the BSWM-Central Office in 2006, for the entire duration of one year. Likewise, the BSWM-RS did not receive enough funds to support Council activities in 2006, and its regular activities contemplated in its CY 2006 Work Plan. The national and local elections in May 2007 and the attendant preparations at the local level likewise sidetracked the TMWDCouncil activities because its OIC Chairman was then running for a seat in the Local Council of Impasug-ong. Nevertheless, Mr. Mamorbor was recently detailed back to the Impasug-ong BSWM-RS after said elections. He is currently complemented by five other support staff.
8. Per account of Mr. Mamorbor, the Council had actually planned during its turn-over in 2005 to get a formal registration/accreditation of its organization, but that had not happened because of the aforementioned events. For the time being the current institutional arrangement is very informal and largely relies on the high commitment level of its members to share their time and available resources. Apart from the completion of the Tigbao micro-watershed topography map and profiling of the farmers, including identification of their training and technology needs, and the continuing information dissemination and farmers' trainings as well as adoption of EPMMA technologies, one of the Council's immediate plans involves the establishment of demonstration farms per crop type.
9. On the holistic and participatory framework approach of the Council, DAR-R10 official elaborated that the intention is for each barangay/sitio to appreciate the soil and water conservation/management technologies prior to adoption, as differentiated from the EPMMA approach that mainly focused on technology adoption in the 2 TDFs. The Council intends to deal with the entire micro-watershed, and all of its tribes so that the farmers themselves would have identified their own training needs and technology needs.
10. On the skills learned from EPMMA project, the 2 farmers said they learned good farm planning. The most popular soil conservation measure they apply is the contour farming although considered very laborious. Mentioned was the Xavier University training under the auspices of the Council on the *Seven Dimensions of Sustainable Agriculture* which they also attended after EPMMA project. They both shared that the only constraint for them to apply the rest of the technologies learned from EPMMA is their lack of own seed capital/funds, as they count on either the LGU or the Council for financial assistance.
11. The NOMIARC representative shared that techno demo nursery on white potato existed before EPMMA but when turned over to the LGU for O & M the seeds system was not sustained. Mentioned also was the *season long training* which already covered about 25% of the communities but assistance in the entire region was also limited by insufficient funds. With EPMMA, she had the opportunity to assist more farmers, i.e., offer them

choices for crop selection and a wide range of soil conservation and fertility management technologies.

12. It was also shared that the DENR assisted in the topographic mapping of the micro-watershed as well as its protected areas covering about 287 hectares of land. Identification of ownership or leasehold arrangements in terms of who actually owns and leases the land was done after the mapping/survey. The Council with DENR's help had produced a master list of the tribal people (c/o Datu Emilio Locdayan, present in the meeting).
13. It was also shared that DAR's role had been in community organizing for the various trainings and assistance in the land tenure concerns of the farmers, i.e., in protecting the land tenure rights in matters dealing with tenant-owner relationships. Mention was also made on the DAR program supporting *connectivity of non-agrarian reform beneficiaries and indigenous peoples* so they also stand to benefit from DAR interventions.

Interview with Farmer Cooperators in Sitio Intavas, Impasug-ong, Bukidnon

Venue: Barangay Hall, Sitio Intavas

Date: July 24, 2007

In Attendance: Ms. Violeta Corpus, Consultant,
Mr. Nick Baoy, JICA In-house Consultant
Mr. Cris Mamorbor, OIC, BSWM Bukidnon Station
Farmer-cooperators (14)

Highlights:

1. Sitio Intavas is located at the foot of Mt. Kitanglad where the TDF was established. The farmer adopters who live around the area shared that most of them have already completed the training packages on soil conservation and management technologies provided through the Council. They commonly share that financial constraint was the sole stumbling block why they cannot fully apply the technologies learned. They are fully aware of the benefits of the technologies, and would apply them to the extent possible in terms of the labor requirements and using available animals to assist them in land preparation. The Sitio's farmer-population is about 500, 85% of which is estimated to be applying contour farming. Igorot tribes who resettled in the area were cited to have introduced potato, including some of its varieties.
2. According to Datu Locdayan, their tribal leader, there had been about 4 trainings under EPMMA and some DA-initiated trainings (2-30 days) the farmers availed of, including TDF site visits. He learned contour farming, gardening and compost-application. On the average, there were about 30 farmer attendees per training. He added that the tribe mainly includes native Ilokanos, Higaonons, Boholanos and Cebuanos. They either have titled lands or those covered by Declaration (for IPs).
3. Ms. Leonila Javierto learned to apply compost and planted carrots (0.25 ha) and cabbage (0.25 hectare). (We visited her farm after the meeting.) Meanwhile, Mr. Orlando Jubiera applied contour farming and compost in his 1 hectare farm. He planted crops which include Chinese cabbage, beans, carrots, lettuce, broccoli, strawberry and potato. He qualified that he even attended the *Season-long training @ the Farmers' Field School (FFS)*, but did not receive assistance either in the form of seedlings or cash. The rest of the farmers likewise shared that they plant high value commercial crops (HVCC), including corn, beans and gabi. They also shared with the sentiment of Mr. Jubiera.
4. The farmers mentioned that the TDF owned by Mr. Pasadoble had not been in operation since 2006. Mr. Pasadoble now operates a *habal-habal*, which provides him a more reliable source of income. Mr. Tortola, the other TDF owner mortgaged his farm and a tenant now tills the land. (We visited the TDFs, and noted that the contours of Mr. Tortola's farm was already leveled-off to what has now become a sloping farm).
5. The farmers' main market is Cagayan de Oro City. The farmer-traders supply their inputs and provide for the hauling trucks for their produce. They provide labor, which is also being paid for by the trader. The profit sharing arrangement is 40:60, wherein the trader gets 60% of the total wholesale prices, at Cagayan de Oro prices. Said traders are also the ones who retail the products in Cagayan the Oro City, thus the farmers feel that the traders somehow dictate the wholesale price, to increase the retail profit margin, thus giving low wholesale price for the farmers' products, and lower farmers' earnings/profit.
6. The farmers on the average have 3-4 cropping seasons per year for the HVCCs, and the net income ranges from Php 10,000/ha to Php 20,000/ha per year. This does not include

the income from hired/paid labor they get from the traders. It was mentioned that in the past credit assistance was tapped from the Bukidnon Resources Cooperative, which already closed down. Kaanib Foundation, an NGO, was likewise mentioned to have a very small program providing for farm inputs in promoting the Organic Farming technology. Kaanib Foundation also provided them potable water supply facility tapping from a nearby spring source. The farmers also heard of a plan to tap the same source for irrigation purposes.

7. The farmers recounted that Agricultural Technician rarely visits their farms to do soil sampling and analysis. They understand that he covers 3 barangays/sitios. They said that chemical dealers would also visit them from time to time but farmers think their products are expensive and did not help them in raising their incomes.
8. The farmers added that the NOMIARC sells them good quality potato seeds, as it conducts varietal testing for potato. On the other hand, the traders provide/recommend to them which seeds/crops to plant during the season that would command better prices, as the traders fairly know the crop price movements in the market.
9. To give an idea of capital requirements for the HVCCs, the farmers estimate that the requirement for seed capital for farm inputs for cabbage is about Php35,000/ha, and about Php 20,000/ha for potato.
10. On the overall, the farmers expressed that they are fully knowledgeable of the benefits of the soil conservation and fertility management technologies learned through EPMMA, and they are confident that they know the technologies too well given the complete package of trainings they attended. They generally feel that what they only need now is the financial/credit assistance from other sources that could shield them from the traders' current practices, hoping the other financing options would increase their farm incomes.

Interview with the Municipal Agriculture Officer & Vice-mayor of Impasug-Ong, Bukidnon

Venue: SB Hall, SB Building-Municipal Center, Impasug-ong

Date: July 25, 2007

In Attendance: Ms. Violeta Corpus, Consultant

Mr. Nick Baoy, JICA In-house Consultant

Mr. Cris Mamorbor, OIC, BSWM-Bukidnon Station Chief

Mr. Venancio Dahino, Municipal Agricultural Officer, Impasug-ong

Hon. Pacifico Rivera, Vice Mayor, Imapasug-ong

Highlights:

1. MAO Dahino shared that his Agricultural Technicians participated in all of the EPMMA trainings. In order to complement the completed EPMMA project, the LGU conducted farmers' trainings on farming systems that utilize available resources. However, the farmers were generally poor. Those who adopted the technologies proceeded at their own initiatives, the rest have a "wait and see" attitude. The question being constantly raised by the farmers to them is: Can we have production funds? It normally stops from there. As a result, there has been *marginal adoption* of the technologies learned by the farmers. He added that in La Fortuna, Intavas there were less than 10 farmers (referring to farmer-traders) out of 150, who can actually provide inputs to other farmers. These are the so-called financiers of other farmers.
2. He mentioned about the 3-yr Agricultural Development Plan of Impasug-ong, which is being updated, considering new set of local officials. The Plan would include the establishment of techno demo farms by cluster (up to 25 farmer-members/cluster who are geographically located with each other), and plan to tap funding sources to provide assistance to farmers. In his privilege hour on 30 July 2007 meeting of the local officials, he will talk about said Plan, including the proposed improvement of water for irrigation purposes for San Juan-La Fortuna, Intavas.
3. According to MAO Dahino, out of the 21 Impasug-ong agricultural technicians (including himself), 6 are his contemporaries, 4 are experts (in fisheries, vegetables/HVCCs, corn & rice, and livestock. All experts prepare their individual programs as inputs to the Plan. Each of the agricultural technicians is assigned one barangay/sitio. All are equipped with the necessary trainings from EPMMA and post-EPMMA, thus all are confident with their present jobs.
4. He cited an ongoing LGU project in cooperation with the Catholic Relief Services (CRS), an NGO that provided seed capital/assistance for crop production to individual farmers who are strategically located within the cluster of farmers (or otherwise called Self-Help

- Groups); the idea is to demonstrate and make farmers adopt organic farming technologies. There were about 20 farmers who were able to avail of said credit assistance/initial production fund. More farmers are lining up for their turn, as the CRS funds are plowed back by the initial set of farmer borrowers. The LGU provided the hauling trucks for farmers' produce, while marketing is being taken care of by the CRS, MEDO and Kaanib Foundation. More specifically, he cited that the Kaanib Foundation and the LGU-Municipal Economic Development Office (MEDO) initially assist in developing the individual farmer's proposal and marketing strategy for CRS evaluation. Kaanib Foundation was cited to have a good track record in its collaboration efforts with the LGU, CRS, DOST, and DTI under the One Town One Product Program (OTOP) that involves production of HVCCs. Currently, squash is being produced and shipped to Manila on a weekly basis (8 tons/week). The LGU has its own cold storage facility that collects and stores the harvested crop. The next crop being readied for contracting out (with Jollibee Foods Inc.) is tomato. Nonetheless, the quality of the crops/products has to be maintained if only to compete with similar products in the Luzon region, like Batangas.
5. MAO Dahino realizes that the cell groups of EPMMA farmers (8 farmers/cell group) can be subsumed under the farmer clusters (of 25 farmers/cluster) in this ongoing project with CRS, as they are basically the same set of farmers covered. More than 85 % of the target 150 farmers still need to avail of the credit assistance.
 6. Meanwhile, Vice-Mayor Rivera confirmed the LGU commitment laid out in the MOU for the turn-over and management of the TDFs. He mentioned that it is to be addressed in the updating of 3-Yr Agricultural Development Plan of Impasug-ong, which has to be passed by the Local Development Council. He added that agriculture remains to be a top priority of the LGU. He stressed that the Plan has to coincide with the LGU budget. The LGU of Impasug-ong has a total annual budget of Php 1 million.
 7. Aside from the ADB-funding (for Mindanao North Coast Integrated Area Development Project, wherein Impasug-ong is one of the 8 municipalities target coverage) anticipated to be released/received this year, prospects for the World-Bank's recently approved Mindanao Rural Development Project, Phase 2 (MRDP2) is high. Meanwhile, the FFS program of the region is a continuing activity in coordination with Impasug-ong LGU. The new Mayor who is the wife of the former Mayor has some discretionary funds that may be tapped for agricultural technology promotion purposes.
 8. We raised a concern, however, regarding the current status of the TMWD Council. Mr. Dahino admitted that there is a need to reactivate the multi-stakeholder Council. He felt the need to reconstitute its members, as there had been changes in the officials that were represented before. The next step would be either to give the Council a legal personality through a Local Development Council Resolution, or a simple authorization of its being a multi-stakeholder organization. Both MAO Dahino and Vice Mayor agreed to reactivate and reconstitute the TMWD Council, and the matter will have to be looked into.

Interview with the TMWD Council Member from Xavier University

Venue: Sustainable Agriculture Center, College of Agriculture, Xavier University

Date: July 25, 2007

In Attendance: Mr. Vic Tagupa, Director, SAC-College of Agriculture, Xavier University
 Ms. Violeta Corpus, Consultant
 Mr. Nick Baoy, JICA In-house Consultant

Highlights:

1. Mr Vic Tagupa had been a long time member of the TDCC, and its successor TMWD Council. He cited some limitations in terms of the continuity of EPMMA activities and consequently, the project gains: *changes in officials and members of the Tigbao Micro-Watershed Development Council (TMWDC) which created instability, gaps during the transition, i.e., from the time the TDFs were transferred to the LGU when EPMMA ceased to be a project and turned into a regular LGU activity, and the lack of the necessary "push" process from the BSWM, being EPMMA project's implementing agency.* Particular mention was made on the high risk of not sustaining the TDFs because these are technology-driven and had no social preparation.
2. From what he understood, EPMMA by design was a technology-driven project. In order for it to be sustained would require a step-wise and long process. The first step required the formulation of a Site Development Plan. The second step was the establishment of Learning Demonstration Farms, the TDFs. The third step should have been the proper

social preparation. The first 2 steps, he recounted, happened. The third step is lacking. The Site Development Plan spells out the long-term sustainability plan for the entire 287 hectare micro-watershed. He informed that DENR completed the boundary delineation and the list of households. He stressed though that a Site Development Plan is not enough if there is no social preparation. His main role during EPMMA was the conduct of EPMMA's internal evaluation which led to the formulation of the Site Development Plan, and the conduct of RRA process. All the other stakeholders including the Indigenous Peoples had their various responsibilities and contributions to the Site Development Plan.

3. Mr Tagupa viewed that giving capital to the farmers is not a straight solution to address poverty, but rather must be accompanied by adequate social preparation (social mobilization cum extension work). He stressed that after EPMMA, the presence of the various stakeholders is very important, and must be continually felt by the farmers. This, he said, is culturally-related to the Filipino way of life. As such, social preparation must also be accompanied by the farmers' internalization. He further explained that social preparation should involve the entire set of processes of community organizing, research and development, extension and information dissemination.
4. During CY 2006 up to present, various farmers' trainings have continued on. However, he said these lacked the necessary follow-ups. He expressed the urgency of farmers' internalization of the entire set of processes involved with social preparation before technology adoption can be sustained. He therefore emphasized that the TMWD Council should be led by the LGU, and somebody from the LGU should lead the Council. He further suggested that the LGU should institutionalize the EPMMA efforts within the Comprehensive Land Use Plan, the Agricultural Development Plan, and within the various LGU Committees, via Ordinances, SB Resolutions, among others.
5. He cited his experience in Tongantongan, Valencia, Bukidnon where the barangay development plan was integrated into the CLUP and cross-validated prior to actual implementation. The whole process of sustainable agriculture and development master planning took 10 years though.
6. He said that if the Council will be re-activated he will confirm his support. He stated that a clear MOA detailing responsibilities of each of the stakeholders is needed. If there is going to be a follow-up JICA assistance, he also suggested for JICA to take a second look at the Site Development Plan and figure out if some of the Plan's components may be taken up in the follow-up assistance. Assistance if continued should be at farm-level but should take a holistic micro-watershed approach. He also suggested that the focus of assistance should be clarified whether it should target LGU or BSWM.

FGD with Members of TDCC of San Ildefonso, Bulacan

Venue: Municipal Hall of San Ildefonso, Bulacan

Date: July 19, 2007

In attendance: Mr. Bayani Villanueva, Chief, BSWM Station, San Ildefonso, Bulacan
Mr. Honorato Apostol, Head, Training Department, Bulacan Agric State College
Mr. Liberato Silverio, Dean, Engineering Department, BASC
Ms. Aila Guansing, Municipal Agriculturist, LGU San Ildefonso
Ms. Priscilla Bonifacio, Office of the Municipal Agriculturist, LGU San Ildefonso
Mr. Bong Manapul, Development Technician, Municipal Agrarian Reform Office
Mr. Nick Baoy, In-house Consultant, JICA Philippines Office
Mr. Ding de Villa, Survey Specialist, PrimeLogic Consulting

Highlights:

Status of TDCC

After the technical cooperation was terminated in 2005, a MOA was forged among key members of the TDCC, namely: LGU, BSWM, DA-RFU, MARO and Bulacan Agricultural State College.. Following the provisions of the MOA, the LGU management of the TDF in Bulusukan was transferred to the LGU specifically the Municipal Agriculturist Office. The members of TDCC with the inclusion of the PENRO also forged an agreement to establish the Sustainable Upland Areas Development Council (SUADC). This body aims to sustain the activities of the TDCC and replicate the soil and water technologies developed and applied in the TDF within the micro-watershed.

Status of Project Activities

1. TDF is being maintained by 3 farmer-cooperators. Monitoring and technical assistance is being provided mainly by the MAO. Under to the SUADC's plan, the TDF will continue to

serve as demonstration and learning center for agro-technologies suitable for marginal uplands.

2. The LGU of San Ildefonso with assistance of SUADC has launched the Sustainable Upland Agriculture Development Project. Under this project, technologies promoted under EPMMA are replicated within the micro-watershed through the establishment of satellite demonstration farms. At present, two demo farms showcasing upland farming technologies have been established in Bgy. Bubulung Munti. Also five (5) farmer replicators have been identified within the same barangay. In the replication activities, SUADC members performed the following roles:
LGU – thru the MAO, assigned full-time agricultural technician in the area to supervise farming activities, assisted in farm planning; provided vegetable seedlings; technical advice on rice and vegetable production; training of key farmers through conduct of FFS in the satellite demo farms;
BSWM - assisted in soil survey and soil analysis, lent farm machineries provided by the project;
BASC – provided training and technical advice;
PENRO – provided forest tree seedlings and technical advice
PARO/MARO – assisted in identification of farmer-beneficiaries

Perceived effects of EPMMA

1. The project was able to demonstrate the technical and economic viability of contour-orchard farming system as a major soil conservation strategy in the micro-watershed of San Ildefonso, Bulacan.
2. Technology replications have been observed in the area, namely: Bulusukan – 5 farmers; Bubulung Munti – 7 farmers. These farmers were recipients of several trainings conducted by EPMMA in the area;
3. The TDF has become a venue for learning by agricultural students from the Bulacan Agricultural State College. Every year, some 100 students are being brought to the TDF on field trip. TDF farmer-cooperators serve as resource persons while the TDF serve as a field laboratory. Moreover, 18 technicians from Bhutan visited the TDF to learn about soil and water conservation practices.
4. The institutional mechanism (i.e. TDCC) established by the project was recognized to be effective such that the LGU and other members of TDCC decided to establish the SUADC.

Factors promoting project sustainability

1. Creation of SUADC and active participation by its members
2. Continuing support of LGU to the maintenance of TDF;
3. Implementation by LGU with support of SAUDC of the Sustainable Upland Agriculture Development Project
4. Adoption of the EPMMA TDF methodology by the LGU.
5. Farmers participation in TDF activities.

Factors hindering project sustainability

1. Orchard-based farming needs substantial initial capital for land development and orchard establishment. Without financial support, marginal upland farmers will not be able to afford it.
2. Insects (cecid fly and capsid bug) attacked the mango orchard established in the TDF in 2006 resulting to poor harvest. These insects have reportedly developed resistance to ordinary pesticides. Technical assistance to farmer-cooperators on how to control pests is needed.
3. Tenurial arrangement affects project sustainability. A landowner will be more inclined to plant long-term crops than tenants or leaseholders.

Interview with Farmer-cooperators and Barangay Officials in San Ildefonso

Venue: TDF Site, Bgy. Bulusukan

Date: July 20, 2007

In attendance: Mr. Boy Bacual, TDF cooperator
Mr. Eduardo Nunez, TDF cooperator
Mr. Ed Calderon, Barangay Chairman, Bulusukan
Mr. Salvador Castillo, TDF cooperator
Mr. Danilo Inducil, Farmer-replicator

Highlights:

1. Skills learned from the project are very applicable to the farming conditions in Bgy. Bulusukan;
2. As TDF cooperators, their responsibilities, as stipulated in the MOA, are: to maintain their farms as a showcase for marginal upland farming technologies and to serve as resource persons in propagating the EPMMA technologies to other farmers.
3. Mr. Castillo has been invited as resource person in seminars conducted by LGU.
4. In 2006, the TDF cooperators did not earn from their farms due to insect pest that attacked the mango fruits (cecid fly and capsid bug). Further training on flower induction and pest management is needed by TDF cooperators. According to Mr. Villanueva of BSWM, flower induction will be part of the training to be provided by the follow-up support project by JICA.
5. Alley cropping is no longer possible in the TDF as the mango trees are already fully developed.
6. TDF cooperators did not maintain farm records after the project was terminated in 2005. One cooperator, however, kept record of his farm activities and visitors to his farm in an old logbook provided by the project.
7. Farmer-replicators were selected by the LGU-MAO based on the following criteria: farmers' interest; farm is a marginal area; ability to provide counterpart resources (e.g., labor and other inputs); consent from the landowner if cooperator is a tenant.
8. LGU-MAO is actively promoting EPMMA technologies in the area through conduct of trainings (FFS) and provision of technical advice (extension) to farmers in the area. Technical and material support is provided by members of TDCC (now called SUADC).

Annex 5
Status of Key Project Counterparts

Name of Counterpart		Position/Designation During the Project	Current Position/Designation
1	Dr. Rogelio Concepcion	Bureau Director; Project Director	Retired
2	Dr. Lauro Hernandez	Project Manager	Chief, Laboratory Services Division
3	Ms. Edna Samar	Farm Manager, TDF Agoho, Chief BSWM Tanay Station	Center Chief, National Soil and Water Resources Research Station (NSWRRS), Tanay, Rizal
4	Mr. Bayani Villanueva	Farm Manager, TDF Bulusukan, Chief, BSWM Bulacan Station	Center Chief, National Soil and Water Resources Research Station (NSWRRS), San Ildefonso, Bulacan.
5	Mr. Crisostomo Mamorbor	Farm Manager, TDF Intavas, Chief, Bukidnon Station	OIC, National Soil and Water Resources Research Station (NSWRRS), Malaybalay, Bukidnon
6	Mr. Wilfredo Cabezon	Deputy Project Director; Chairman, ARIS Core Group	Assistant Director, BSWM
7	Mr. Gavino Urriza	Chairman, Soil Conservation and Management	Supervising Agriculturist
8.	Dr. Gina Nilo	Chairperson, Soil Fertility Management	Chief, Soil and Water Resources Research Division
9	Engr. Samuel Contreras	Chairman, Water Resources Managemetn	Chief, Water Resources Management Division

Annex 6
Status of Trained Counterparts

	Name of Counterpart	Training Attended/ Year	Position during the Project	Current Position
1	Ms. Jovette Tenorio	Soil information (2000)	Agriculturist II	Same
2	Ms. Perla Panganiban	Soil fertility management (2000)	Agriculturist II	Same
3	Mr. Rodolfo Lucas	Water resources management (2000)	Chief Agriculturist	Retired
4	Mr. Jose Manguerra	Soil conservation (2001)	Agriculturist II	Sr. Agriculturist
5	Ms. Celia Gorospe	Soil fertility management (2001)	Senior Agriculturist	Senior Agriculturist
6	Mr. Samuel Contreras	Water resources management(2001)	Chief, Water Resources Div	Same
7	Dr. Rogelio Concepcion	Soil conservation (2001)	Director	Retired
8	Ms. Ma. Perpetua Ocampo	Communication (2002)	Planning Officer II	Same
9	Ms. Belinda Pajarito	Soil fertility management (2002)	Supervising Agriculturist	Same
10	Mr. Bayani Villanueva	TDF Management (2002)	OIC, Bulacan BSWM Center	Chief, NSWRRS, Bulacan
11	Mr. Rodelio Carating	Agricultural Resources Info System (2002)	Senior Science Res Specialist	Same
12	Mr. Deogracias Magtalas,	TDF Management (2003)	Agriculturist II	Same
13	Ms. Edna Samar	Agricultural Resources Info System (2003)	Chief, Tanay BSWM Center	Chief, NSWRRS, Tanay
14	Ms. Clarita Bacatio	Soil survey (2003)	Supervising Agriculturist	Same
15	Mr. Diosdado Manalus	Water resources management (2004)	Engineer II	Same
16	Ms. Sharon de Vera	Soil fertility management (2004)	Agriculturist II	Same
17	Mr. Gavino Urriza	Soil conservation (2004)	Supervising Agriculturist	Same

Annex 7

Equipment Inventory Sheet

Equipment acquisition cost: Y20,000-Y100,000

Equipment	Model/Specifications	Qty	Location	Condition of Equipment 0: working X: not working	Frequency of use (Regularly, Occasionally, Rarely or Never)	Problems Encountered After Project Completion / Other Remarks
1. Brush cutter	Makita RVC410	1	Malaybalay station	O	Regularly	
2. Brush cutter	Makita RVC410	1	Malaybalay station	x		Lost (stolen)
3. Brush cutter	Makita RVC410	1	Tanay station	O	Regularly	
4. Scanner	Mustek	1	ARIS	O	Regularly	
5. Recording rain gauge	Isuzu 3-6040-01	1	Agoho TDF	O	Regularly	
6. Recording rain gauge	Isuzu 3-6040-01	1	Bulusukan TDF	O	Regularly	
7. Vacuum pump	Handy pack, portable	1	Soil and Water Div	O	Regularly	
8. Auger for tensiometer	DIKI DIK-1720	1	Soil Conservation Div	O	Regularly	
9. Vacuum pump for soil water extractor	DIKI DIK-3910	1	Soil Conservation Div	O	Regularly	
10. Vacuum pump for soil water extractor	DIKI DIK-3910	1	Soil Conservation Div	O	Regularly	
11. Auger for tensiometer	DIKI DIK-1720	1	Water Res Mgt Div	O	Regularly	
12. Thresher	181-B/FT-370	1	Bulacan station	O	Regularly	
13. Granometer	Everwell 131/rice-500	1	Bulacan station	O	Regularly	
14. Dessicator	TGK 371-07-26-03	1	Lab Services Division	O	Regularly	
15. Electric conductivity meter	TOA DKK CM-21P	1	Soil and Water Div	O	Regularly	
16. Evaporation gauge	Fujiwara	1	Water Res Mgt Div	O	Regularly	
17. Soil sampler	DAIKI DIK-1601	1	Soil Survey Div	O	Regularly	
18. Thermometer	Fujiwara TR 71-S	1	Soil and Water Res Div	O	Regularly	
19. Boring stick	DAIKI DIK-1640	1	Soil Survey Division	O	Occasionally	
20. Color standard	DAIKI CF-300	1	Soil Survey Division	O	Regularly	
21. Grass cutter	Makita RBC-410	1	Tanay station	O	Regularly	
22. Grass cutter	Makita RBC-410	1	Bulacan station	O	Regularly	
23. Grass cutter	Makita RBC-410	1	Malaybalay station	O	Regularly	
24. Refrigerator	GE PTV-16	1	Lab Services Div	O	Regularly	
25. Digital camera	Sony DSC F77	1	Soil and Water Res Div	O	Regularly	
26. Digital camera	Sony DSC F77	1	Soil and Water Res Div	O	Regularly	
27. Digital thermometer	TOA DKK TR-71S	4	Soil and Water Res Div	O	Regularly	
28. Soil hardness meter	DAIKI DIK 5553	1	Soil Survey Division	O	Occasionally	
29. Soil current meter	ASTM-152H	3	Soil and Water Res Div	O	Regularly	
30. Digital lux meter	Tokyo Kodan ANA-F9	1	Soil and Water Res Div	O	Regularly	
31. Hard disk drive	Seagate 73.3 GB	2	ISRIS	O	Regularly	
32. USB Memory	EDP-1G	3	ISRIS	O	Regularly	
33. Landsat data	ETM+2004	1	ISRIS	O	Regularly	
34. Landsat data	ETM+2003	1	ISRIS	O	Regularly	

Equipment acquisition cost: Y100,000 – Y1,600,000

1. Computer	Local assembly, Interl Pentium III 750 mHz, processor Asus CUV-4x motherboard 256 mb	1	ISRIS, ALMED	O		For upgrading
2. Computer	Local assembly, Interl Pentium III 750 mHz, processor Asus CUV-4x motherboard 256 mb	1	ISRIS, ALMED	O		For upgrading
3. Computer	Local assembly, Interl Pentium III 700 mHz, processor (2x) CPU Interl i440BX server motherboard, 256 mb SDRAM	1	ISRIS, ALMED	O		For upgrading
4. Tiller	Kubota TR60	1	Malaybalay station	O	Regularly	
5. Automatic voltage regulator	Mataunaga TA-2234-CK	1	SWRD (Chemistry)	O	Regularly	
6. High pressure air compressor	Daiki DIK-9261	1	Lab services division	O	Regularly	
7. Electric muffle furnace	Isuzu ETR-28K	1	Lab services division	X		For local repair
8. Soiler	Kawabe SV2-BS	1	Tanay station	O	Regularly	
9. Soiler	Kawabe SV2-BS	1	Bulacan station	O	Regularly	
10. Soiler	Kawabe SV2-BS	1	Malaybalay station	O	Occasionally	
11. Recording rain gauge	Isuzu 3-6040-1	1	Intavas techno-demo	x		Printer malfunction
12. Digital video cassette player	Sony DSR-1600	1	TIDS	O	Regularly	
13. Editing controller	Sony PVE-500	1	TIDS	O	Regularly	
14. Audio mixer	Sony SRP-V200	1	TIDS	O	Regularly	
15. Video monitor	PVM-14M2E	1	TIDS	O	Regularly	
16. Copier	Fuji xerox	1	Project office, BSWM	O	Regularly	
17. Color video microscopy system	Cole palmer U-49900-15	1	SWRD/Bio	O	Regularly	
18. Tractor	Kubota B 1700DT	1	Malaybalay station	O	Regularly	
19. Current meter	SANEI D-10	1	Water Res Mgt Div	O	Regularly	
20. Huller	Everwell 185-D/H-25M	1	Bulacan station	O	Regularly	
21. Winnower	Everwell 186/B-2	1	Bulacan station	O	Regularly	
22. Water purification apparatus	Advantec Toyo	1	Soil and Water Res Div	X		Cannot be repaired
23. Drying oven	Isuzu 200-1011-11	1	Soil and Water Res Div	O	Regularly	
24. Sample shipper	121-0050	1	Soil and Water Res Div	O	Regularly	
25. Disc plow	Kubota DP-261	1	Bulacan station	O	Regularly	
26. Rotary plow	Matsuyama SX-1500NA	1	Bulacan station	O	Regularly	
27. Front loader	Kubota KLH 33	1	Bulacan station	O	Regularly	
28. Trailer Delica	Kubota DT-1000D	1	Bulacan station	O	Regularly	
29. Reversible plow	Sugano S/N 017416	1	Bulacan station	O	Regularly	
30. Cutter	Yamamoto S/N 300014	1	Bulacan station	O	Regularly	
31. Crusher	OSK-107-A	1	Bulacan station	O	Regularly	
32. Pipettor	Eppendorf	2	Soil and Water Res Div	O	Regularly	
33. Laptop computer	Compaq EVO NX9010	1	Soil Conservation	O	Regularly	
34. Survey equipment	SOKKISYA Powerset 4010	1	Soil conservation	O	Regularly	
35. Survey software	SOKKISYA Model 12D	1	Soil conservation	O	Regularly	
36. Survey software	Microsurvey AutoCAD engine	1	Water Res Mgt Div	O	Regularly	

37. Topographic software	Map object	1	ISRIS, ALMED	O	Regularly	
38. Topographic software	ARCVIEW	1	ISRIS, ALMED	O	Regularly	
39. Desktop computer	Local manufacture, Pentium 4	1	ISRIS, ALMED	O	Regularly	
40. Desktop computer	Local manufacture, Pentium 4	1	Bulacan Station	O	Regularly	
41. Desktop computer	Local manufacture, Pentium 4	1	Soil and Water Res Div	O	Regularly	
42. Formatter	HP Designject 500	1	Soil conservation	O	Regularly	
43. Formatter	HP Designject 800 PS	2	ISRIS, ALMED	O	Regularly	
44. Drawing board	Calcomp DB-4 36481	1	ISRIS, ALMED	O	Regularly	
45. Server computer	IBM 86717 AX	1	ISRIS, ALMED	O	Regularly	
46. Multimedia projector	NEC LT 260	1	TIDS	O	Regularly	
47. Hand tractor	Kubota K120	1	Tanay station	O	Regularly	
48. Silage cutter	Yamamoto CX-160 JM	1	Malaybalay station	O	Occasionally	
49. Corn planter	Tabata TB-2TD	1	Malaybalay station	O	Regularly	
50. Crawler cart	Mametora SC-10V	1	Malaybalay station	O	Occasionally	
51. Incubator	Yamamoto IN802	1	Soil and Water Res Div	O	Regularly	
52. Tensiometer	Fujiwara HR-001	1	Soil Survey Div	O	Regularly	
53. Lux meter	Shimazu ANA-F12	1	Soil and Water Res	O	Regularly	
54. Balance	Asone PB3002-S	1	Malaybalay station	O	Occasionally	
55. Soil crusher	Yoshida 1023-A	1	Malaybalay station	O	Occasionally	
56. Vacuum pump	Asone 11-0898-01	1	Malaybalay station	O	Occasionally	
57. Grinder	Yoshida 1029-BS	1	Malaybalay station	O	Occasionally	
58. Analytical balance	Asone HR-200	1	Malaybalay station	O	Occasionally	
59. Block digester	Buchi K-437	1	Lab Services Div	O	Regularly	
60. Fume Hood percloric acid	Locally assembled	2	Lab Services Div	O	Regularly	
61. Drying oven	Designer Contherm 8150	1	Soil and Water Res	O	Regularly	
62. Water distiller	Aquatron A-8000	1	Soil and Water Res	O	Regularly	
63. Generator	Kubota ASK-R150B	1	Malaybalay station	O	Rarely	Only during power blackout
64. Generator	Kubota ASK-R150B	2	Tanay station	O	Regularly	
65. Generator	Kubota ASK-R150B	1	Bulacan station	O	Regularly	
66. Water pump + engine	Kubota RK-80+NS100	1	Malaybalay station	O	Occasionally	
67. Water pump + engine	Kubota RK-80+NS100	2	Tanay station	O	Unused	Specs not right for area
68. Water pump + engine	Kubota RK-80+NS100	1	Bulacan station	O	Regularly	
69. Portable EC meter	TOA CM-21P	2	Soil and Water Res Div	O	Regularly	
70. Cone Penetrometer	Daiki DIK-5521	1	Soil Survey Div	O	Regularly	
71. Portable soil moisture sampler	Fujiwara PRN-41	1	Soil and Water Res Div	O	Regularly	
72. Tensiometer	DAIKI DIK-3161	5	Soil Conservation Div	O	Regularly	

Equipment acquisition cost: over Y1,600,000

1. Tractor	Kubota B1700D	1	Malaybalay station	O	Regularly	
2. Utility vehicle	Mitsubishi Strada pick up	1	Central Office	O	Regularly	
3. Atomic absorption spectrometer	Shimadzu AA6650F	1	Lab Services Division	O	Regularly	
4. Video camera	Sony DXC-D53K	1	TIDS	O	Regularly	
5. Spectrophotometer	Hitachi U-2001	1	Lab Services Division	O	Regularly	
6. Utility vehicle	L300 Versa Van	1	Project office	O	Regularly	
7. Utility vehicle	Isuzu Trooper 2002 wagon	1	Project office	O	Regularly	
8. Atomic absorption spectrometer	Hitachi SOLAAR S4	1	Research Division	X		Can not be repaired locally
9. DV-CAM Recorded	Sony DSR-1	1	TIDS	O	Regularly	
10. Digital Video Cassette Recorder	Sony DSR-1800	1	TIDS	O	Regularly	
11. Tractor	Kubota KL-27FBMA	1	Bulacan station	O	Regularly	
12. CN Analyzer	Flash EA1112	1	Lab Service Division	O	Regularly	
13. Electric Resistivity Meter	PASI 16GL	1	Water Res Mgt Div	O	Regularly	
14. Tractor	Kubota B7500DT	1	Tanay station	O	Regularly	

ENVIRONMENTAL AND PRODUCTIVITY MANAGEMENT OF MARGINAL SOILS IN THE PHILIPPINES

The Ex-Post Evaluation Report on the Environmental and Productivity Management of Soils in the Philippines (EPMMA) Project is basically well-written, and easy to understand. It provides lessons that can be learned from. However, there is a need to point out certain gaps, among which can be considered a critical flaw: the assessment has failed to quantifiably establish (and not by conjecture) that the ultimate aim of EPMMA as proposed in 1998 has been achieved. The EPMMA Project “aimed at increasing food production through the improvement of soil and water management of marginal lands and degraded soils. (underscoring ours)” In essence, the ultimate objective is increasing food production and that the adoption of sustainable soil and water management technologies is simply a means of attaining the objective. It would seem though that in the implementation of the EPMMA project the adoption of the technologies was per se deemed the overriding goal.

The proposed impact analysis as can be gleaned from the questions in the evaluation grid was heading in the appropriate direction but the crucial queries on increase in total crop production, income of farmer cooperators, and land productivity were left unanswered. This leaves the reviewer to deduce and further imply sticking to the indicator on the adoption of technologies as the proxy indicator of success, thereby assuming increased food production with the adoption of the technology.

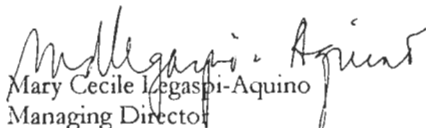
Perhaps, we can turn to an observation on the report to explain this dilemma. At the outset, the ex-post evaluation cited certain constraints. Noted, however, that the evaluation did not discuss how these constraints affected the evaluation process and the analysis of the outcome of the project.

If the ultimate objective were to increase food production through the adoption of the proposed technologies, may we then posit that some of the following questions be answered: what are the criteria for the adoption of the technology; what is the production estimate or potential per area of marginal land for each type of technology that would be adopted; and if the technology were then implemented, what is the actual production per area in the demo farm. Only then, can a meaningful comparison of productivity (clearly quantifiable) be made. The criteria and the potential estimate per area of marginal land can easily be sourced from the R&D institute—the BSWM—while the actual production per area can be estimated from the demo farm. The latter we believe was the constraint cited in the ex-post evaluation. Note though that even if increased income was sought to be an impact indicator (refer to evaluation grid 1.4) to reflect the success of

the project, we are of the opinion that since income is also a function of the price fetched by a farmer, which is in turn determined by a host of factors that may be beyond the scope of the project, then production volume per unit of input could very well suffice to indicate the level of productivity in the area using an adopted technology.

The evaluation report has appropriately pointed to the sustainability of the project in the context of a decentralized environment where local government units play key roles as mandated in the Local Government Code in regard to extension services.

If ever the number of farmer-adopters/cooperators were to be used as indicators, this should be in relation to a target and, likewise, in relation to the potential users in the area. There should be a clear database on marginal lands and degraded soil in the entire archipelago—the report talks of suitability maps, which are nowhere to be found). There is a need to transcend success stories of demo farms through propagation in the country embodied in a national development plan with full support in its implementation at the level of the concerned national government agencies backing committed local government units toward enhancing productivity with the adoption of sustainable soil and water management technologies on marginal soils.


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