

**ドミニカ共和国
サバナ・イエグア・ダム上流域の
持続的流域管理計画
終了時評価調査報告書**

平成21年8月
(2009年)

独立行政法人国際協力機構
地球環境部

序 文

日本国政府は、ドミニカ共和国政府からの技術協力の要請を受け、平成 18 年（2006 年）4 月から同国において、ドミニカ共和国環境・自然資源省およびスール・フツーロ財団の関係職員を対象に、流域管理に関する技術力とプロジェクトを運営するための能力の向上を目的とする「サバナ・イエグア・ダム上流域の持続的流域管理計画」を開始しました。

国際協力機構は、3 年間の協力期間の終了を前に、本プロジェクトの実績の把握および評価を行い、今後両国が取るべき措置を両国政府に提言することを目的として、平成 20 年（2008 年）11 月 2 日から同年 11 月 23 日まで当機構 地球環境部森林・自然環境グループ長 小川登志夫を団長とする終了時評価調査団を派遣しました。

調査団は、ドミニカ共和国側メンバーと合同評価調査チームを構成し、本プロジェクト投入実績や活動実績、活動の達成度を確認し、ドミニカ共和国政府関係者との協議及びプロジェクト・サイトでの現地調査実施を通してプロジェクトの運営や事業内容等に対して必要な提言を行いました。

本報告書が本プロジェクトの今後の推進に役立つとともに、この技術協力が両国の友好・親善の一層の発展に寄与することを期待します。

最後に、この調査にご協力とご支援をいただいた団員各氏、関係者の皆様に対し、心から感謝の意を表します。

平成 21 年 8 月

独立行政法人 国際協力機構
地球環境部部長 中川 聞夫

プロジェクト位置図

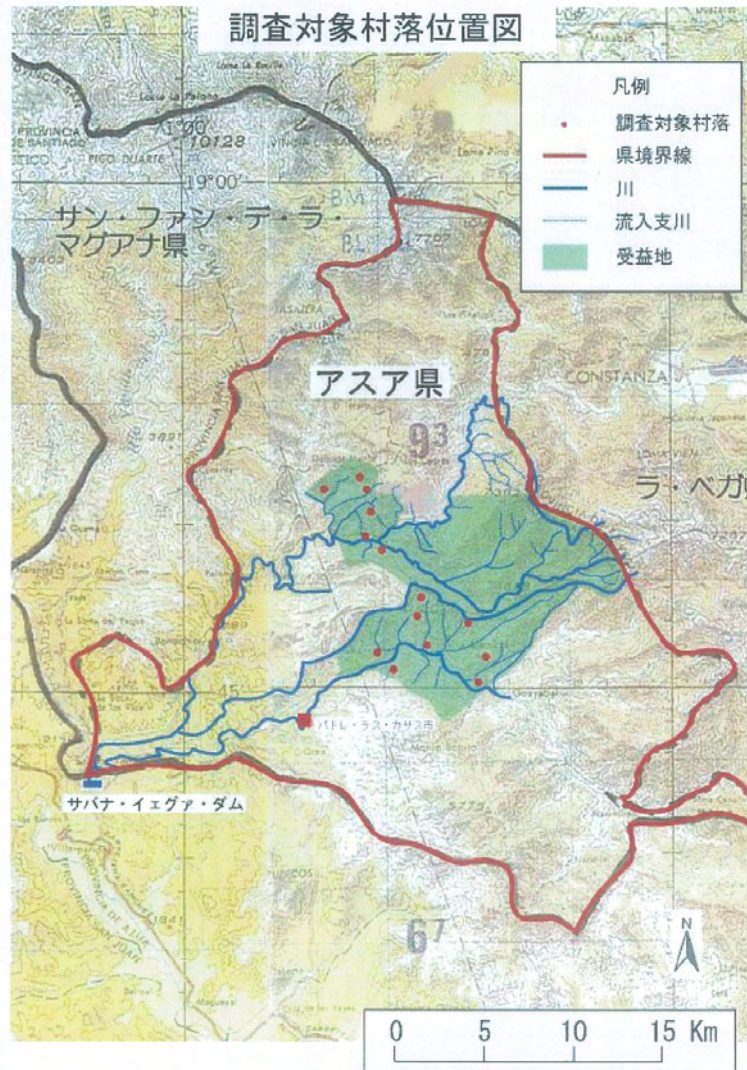


図 1-1 プロジェクト対象村落位置図

写

真



第1回合同評価委員会



FSFにおける植林用苗木生産（マホガニ）



FSFにおける苗木調査（右から小川団長、増井チーフアドバイザー、苗木/植林担当



Naranjos 村落におけるヒアリング



アグロフォレストリーのデモンストレーションファームにおけるアボガド栽培（La Meseta 村落）



焼畑耕作、放牧等により消失した森林



スール・フツォ財団
パドレ・ラス・カサス支所



パドレ・ラス・カサス支所での
C/P との協議



スール・フツォ財団本部
(サントドミンゴ市内)



第3回合同評価委員会後



合同調整委員会における増井チーフに
よるプロジェクト活動報告



ミニッツ署名（前列右からスール・フツ
ォ財団 Constanza 局長、環境・自然資
源省 Bernabe 次官、JICA 小川団長、経済
企画開発省 America 次官）

略 語 表

CD	Capacity Development	キャパシティ・ディベロップメント
C/P	Counterpart Personnel	カウンターパート
FSF	Sur Futuro Foundation	スール・フツェロ財団
JCC	Joint Coordination Committee	合同調整委員会
JICA	Japan International Cooperation Agency	独立行政法人国際協力機構
ODA	Official Development Assistance	政府開発援助
PCM	Project Cycle Management	プロジェクト・サイクル・マネジメント
PDM	Project Design Matrix	プロジェクト・デザイン・マトリックス
PLC	Padre Las Casas	パドレ・ラス・カサス（地名）
PO	Plan of Operation	活動計画
R/D	Record of Discussions	討議議事録
SD	Santo Domingo	サント・ドミンゴ（地名）
SEEPyD	Secretariat of State of Economy, Planning and Development	ドミニカ共和国経済企画開発省
SEMARENA	Ministry of State of Environment and Natural resources	ドミニカ共和国環境・自然資源省

終了時評価調査結果要約表

1. 案件の概要		
国名：ドミニカ共和国		案件名：サバナ・イエグア・ダム上流域の持続的流域管理計画
分野：自然環境保全		援助形態：技術協力プロジェクト
所轄部署：地球環境部 森林・自然環境保全第2課		協力金額（評価時点）：約2.5億円
協力期間	2006年4月28日～2009年3月31日	先方関係機関：環境・自然資源省、スール・フツーロ財団
	(R/D): 2005年11月30日	
	(F/U): N/A	日本側協力機関：農林水産省林野庁
	(E/N)（無償） N/A	他の関連協力：なし
1-1 協力の背景と概要		
ドミニカ共和国の森林率は、1940年頃の約70%から、1998年には28%まで低下した。その理由は、山間地農民の焼畑耕作、商業伐採、山火事及びハリケーン被害等とされている。「ド」国の南西部の水瓶として非常に重要な役割を担っているサバナ・イエグア・ダム上流域に関しても例外でなく、貧困層の地域住民による傾斜地の無秩序な焼畑農業や山火事被害によりほとんどの森林が消失しており、「ド」国において最も荒廃が激しい地域の一つである。毎年周辺流域の水涵養機能は低下してきており、さらに大雨やハリケーンにより土壌は流出し、ダムの貯水量の30%以上は土壌が堆積しており、下流域への用水供給及び洪水緩和といった重要な役割を果たすことが難しい状況にある。 このような状況のもと、2000年11月から約2年間、我が国は上述の流域を対象に、開発調査「サバナ・イエグア・ダム上流域流域管理計画」を実施し、荒廃した流域における森林管理、アグロフォレストリー、村落開発、土壌保全、コミュニティでの組織強化等をコンポーネントするマスタープラン（15年間）を策定した。また、右プランの確実な実施のためには、プランを監理・指揮する環境・自然資源省（以下、SEMARENA）およびプランの実施機関であるスール・フツーロ財団（以下、FSF）の職員の能力強化が必要であることから、ドミニカ共和国の要請を受け2006年4月より本技術協力プロジェクトが開始された。その後、JICAは2007年7月に運営指導調査を派遣し、プロジェクト活動の進捗を踏まえ、PDM指標の修正・確定に係る協議を行い、PDMVer2.を合意した。 今回、プロジェクト終了を4ヶ月後に控え、JICAは協力活動全般の達成状況の把握と評価を実施するため2009年11月に終了時評価調査団を派遣した。		
1-2 協力内容		
サバナ・イエグア・ダム上流域における、流域管理マスタープランの効果的な実施のための、技術移転およびSEMARENAおよびFSF職員の能力強化を通じて、アグロフォレストリー・灌漑農業・造林・苗木生産・森林管理活動の導入を支援する。 (1) 上位目標 スール・フツーロ財団及び環境・自然資源省の関係職員から技術指導を受けた地域住民が、その技術を実践することにより、プロジェクト対象地域の森林資源が適切に管理される。		

(2) <u>プロジェクト目標</u> スール・フツール財団及び環境・自然資源省の関係職員の流域管理に関する技術力とプロジェクトを運営するための能力が向上する。 (3) <u>アウトプット</u> 1. 対象村落の自然環境や社会経済状況に関する情報が整理される。 2. 対象地域において、森林保全に対する意識を向上させるためのアグロフォレストリー及び簡易灌漑農業が適切に導入される。 3. 対象住民のニーズを把握し、各村落毎の造林年次計画に沿った活動、評価が出来るようになる。 4. 対象地域において森林火災の予防・消火体制が強化される。 (4) <u>投入（評価時点）</u> 日本側：<u>総投入額 〇〇億円</u> 専門家派遣 6名〔46.89M/M（人・月）〕 機材供与 8,758 千円 ローカルコスト負担 69,820 千円（機材供与費を含む） 研修員受入 8名（第3国研修除く） 相手国側： カウンターパート配置 9名 土地・施設提供 1,095 千 RD\$（3,329 千円） ローカルコスト負担 3,250 千 RD\$（9,882 千円）		
2. 評価調査団の概要		
調査者	（担当分野：氏名/職位） (1) 団長/総括；小川 登志夫/JICA 地球環境部 森林・自然環境グループ長兼次長 (2) 協力企画；南雲 孝雄/JICA 地球環境部 森林・自然環境グループ 森林・自然環境保全第2課 職員 (3) 評価分析；櫃田 木世子/株式会社 日本開発サービス 調査部 主任研究員	
調査期間	2008 年 11 月 2 日～2008 年 11 月 23 日	評価種類：終了時評価
3. 評価結果の概要		
3-1 実績の確認 (1) <u>アウトプット</u> ・アウトプット1；対象村落における自然環境や社会経済状況に関する報告書が作成されるという、成果1の指標は終了時評価時点までに完全に達成された。 ・アウトプット2；本成果を構成する各活動は大方予定通り進捗しているものの、外部要件のハリケーンによる事業の遅れを原因として、プロジェクト終了までに灌漑農業における十分な営農指導を実施するには至らないため、本アウトプットの一部である「簡易灌漑農業の適切な実行為 FSF の技術者により導入される」ことは困難である。 ・アウトプット3；指標 3-1（造林計画に基づき造林が 110ha 以上実施される）に関しては		

当初設定した目標には達しなかったが、植林需要に応える SEMARENA および FSF の苗木生産システムは確立されており、今後も継続的に実施されていく見込みである。

・アウトプット 4 ; 4-1 (住民による消防団が 4 以上結成される)、4-2 (森林火災の発生件数が、1 年目

に対して 40%以上減少す)。全ての指標が達成された。

(2) プロジェクト目標

本プロジェクトは終了時点で灌漑農業関連部分(アウトプット 2 の一部)を除き、ほぼプロジェクト目標を達成するものと考えられる。しかし、本プロジェクトで導入した簡易灌漑システムが地域の森林保全に寄与するかは、これら営農指導の成否に大きく委ねられており、プロジェクト目標達成への大きな課題となっている。

(3) 上位目標

植林面積だけで見ると、2006 年から 2008 年にかけてプロジェクトおよび FSF が他のドナーで対象地域に植林した面積 68ha(1,081 タレア)は既に森林面積 3.6%増に寄与したことになる。今後、FSF および SEMARENA によって植林地の維持管理を行うとともに、既存の森林の現状(増減)を確認する必要がある。

3-2 評価結果の要約

(1) 妥当性 ; プロジェクトの妥当性は極めて高いと判断される。

焼畑や度重なるハリケーンによる被害で荒廃の進むサバナ・イエグア・ダム上流域の持続的流域管理は国家優先事項であり、その一部を担う本プロジェクトは、ドミニカ共和国の森林政策の長期的展望や戦略を体現したプロジェクトといえる。さらに、森林回復は「環境保全」、貧困削減対策は「人間の安全保障」の視点から、日本の援助方針とも整合している。

また、対象村落の選定において、4 村落での簡易灌漑施設の導入では、3 村落で既に導入され、残り 1 村落でも現在導入中の施設が終了見込みであるなどから、対象村落判定基準は妥当であった。

(2) 有効性 ; 一部を除き、プロジェクトは概ね有効であると判断される。

本プロジェクトはアウトプット産出のための活動と、それにより達成されたアウトプットにより一部を除きプロジェクト目標をほぼ達成した。しかしながら、度重なるハリケーンの影響(外部条件)で特に簡易灌漑事業が遅延したため、C/P および住民にとっても経験の少ない乾季の灌漑営農指導(マーケティングを含む)が充分できなくなったことから、アウトプット 2 の発現に遅れをもたらし、それがプロジェクトの目標達成を阻害する要因となった。

(3) 効率性 ; 一部を除き、プロジェクトは概ね効率的に実施されている。

日本側の投入は、量、質、あるいは派遣のタイミングに関しては、専門家の常駐を望む意見もあったが概ね適切と判断される。しかし、簡易灌漑については当初想定していたローカル NGO の活用が FSF の意向により出来なくなったことと、十分な C/P の配置がなされなかったことにより、灌漑担当専門家活動の効率性が低下した。

(4) インパクト；正のインパクトと負のインパクトの両方が予測される。

プロジェクト活動は他の支援組織の関心も呼び、副次効果として、森林消防隊のプロジェクト対象地域以外での結成に加え、FSF は既に新たなアグロフォレストリーデモファームの設置や簡易灌漑の導入および土壌保全研修所の改修といった関連支援取り付けを実現し流域内での事業の拡大を図っている。また、プロジェクトによる灌漑工事を目の当たりにして、個人で灌漑敷設を試みる農民も現れている。一方、外部条件である自然災害以外に、上位目標の達成を阻害する要因として、簡易灌漑適地の農民は限られることから、同一村落や周辺地域で受益者に対する不満が懸念される。

(5) 自立発展性；自立発展性はきわめて高く、FSF による住民への技術支援は継続される見込みである。

・政治・行政面

SEMARENA は国家植林計画（the Plan Nacional Quisqueya Verde）の発案者であり、今後植林を全国的に、特にプロジェクト対象地域で強力に推し進めていく意向を表明している。

・財務的側面

本プロジェクトでは、FSF が簡易灌漑事業を持続的に展開できるように、プロジェクトで投入した灌漑の資材費相当分を受益メンバーが財団に返済することによって、新たな事業資金を確保するリボルビングの仕組みを導入した。財団はこれまでも独自にマイクロクレジット事業を実施しており、資金の継続的な管理、運用面に於いても信頼性、安定性は高い。

・組織的側面

FSF は環境・自然資源省や農業省との強い繋がりを持ち、これらの省から必要に応じて技術者の出向を得ている。そのため、省庁との連携活動もよく調整され問題なく行うことができる。

・技術的側面

FSF のプロジェクトの多くはサバナ・イエグア・ダム上流域の持続的流域管理と関連性があり、C/P は様々なプロジェクト任務の兼任により、当プロジェクトで習得した能力を活用するとともに、更に業務の中でその能力を高めていくと見込まれる。ただし、市場戦略を踏まえた乾季の灌漑営農技術については経験が乏しいことから、自立発展性を確実なものとするためには更なる支援が必要である。

3-3 効果発現に貢献した要因

(1) 計画内容に関すること

本案件の上位目標達成に必要な植林は、地域住民によってそれだけではインセンティブになりにくく、本プロジェクトにおいては、対象4村落に簡易灌漑施設を作り、住民の生計向上に資する見返りとして、焼畑をやめ、灌漑面積の3倍の植林を住民に求めるという手法をとった。また財団が簡易灌漑事業を持続的に展開できるように、プロジェクトで投入した灌漑の資材費相当分を受益メンバーが財団に返済することによって、新たな事業資金を確保する「リボルビングファンド」の仕組みを導入した。住民の間で灌漑敷設への要求は非常に高いため、本手法を採用したアプローチは適切であり、貢献要因と言える。

(2) 実施プロセスに関すること

プロジェクト前半においては、専門家とドミニカ共和国側とのコミュニケーションと連携が不十分であり活動が効率的に行われない面があったが、2年目から週例会議の実施等、両国側の運営改善にかかわる努力で状況は大幅に改善された。

3-4 問題点及び問題を惹起した要因

(1) 計画内容に関すること

特になし

(2) 実施プロセスに関すること

F S Fの事情で特に灌漑農業分野の C/P が交代あるいは一時期不在となったり、また灌漑施設の設置に関し、当初想定していたローカル NGO の活用が FSF の意向により出来なくなったことが原因で、灌漑農業に係る技術指導が効果的に実施できなかった。さらに、度重なるハリケーンの影響（外部条件）で特に簡易灌漑事業が遅延したため、C/P および住民にとっても経験の少ない乾季の灌漑営農指導（マーケティングを含む）が充分できなくなったことから、アウトプット2の発現に遅れをもたらし、それがプロジェクトの目標達成を阻害する要因となった。

3-5 結論

本プロジェクトは、国家レベルの政策および日本のODA政策、対象地域のニーズの観点から妥当性が極めて高い。しかし、度重なるハリケーンの影響（外部条件）で特に簡易灌漑事業が遅延したため、C/P および住民にとっても経験の少ない乾季の灌漑営農指導（マーケティングを含む）が充分できなくなったことから、アウトプット2の発現に遅れをもたらし、それがプロジェクトの目標達成を阻害する要因となった。簡易灌漑システムの森林保全への寄与は、営農指導の成否に大きく委ねられており、プロジェクト目標達成への大きな課題となっている。灌漑営農技術に必要な技術移転は、今後2回程度の乾季（12～翌年4月頃）の活動により完了すると想定されることから、1年の協力延長を行うことで、本プロジェクト目標が達成されると見込まれる。

またすでに FSF が流域内でプロジェクトの経験を生かした新たな活動を展開し始めたり、住民の環境保全に対する意識が向上する等、正のインパクトが発現している。さらに環境・自然資源省及び FSF の自立発展性については、政策面、財政面、技術面において確保されており、FSF が技術職員の増員に更に努めるのであれば、自立発展性は極めて高いと考える。

3-6 提言（当該プロジェクトに関する具体的な措置、提案、助言）

(1) 簡易灌漑農業の実施

FSF は簡易灌漑施設を導入した4村落において、灌漑の維持管理能力強化および市場戦略を含めた灌漑営農技術習得のため、乾季における簡易灌漑農業を実施すること。このために、アウトプット2の当該部分の活動について1年間の延長を行い、この間の乾季2回の灌漑営農指導を通じて C/P の能力を強化すること。

(2) 人員の増員

FSF は C/P、特に基礎的技能を有した簡易灌漑農業分野の職員を速やかに増員すること。

(3) リボルビングファンド

FSF は本資金を計画的、効果的に運用するため、プロジェクト終了までに今後 10 年間のリボルビングファンド回収計画と回収資金による新たな簡易灌漑事業の実施計画案を策定し、FSF と JICA 事務所の間で、「リボルビング資金の活用に関する覚書」を取り交わすこと。そして覚書に基づき、適切な資金回収と灌漑事業への再投資を継続的に行うこと。

(4) アグロフォレストリー

FSF はアグロフォレストリーの展開において、特に土壌浸食を防止させる手法をより積極的に取り入れること。またアグロフォレストリーが定着し、より多くの農民に裨益するように、デモファームの拡大に加え、普及啓発の方法を検討すること。

(5) 更なる予算と人員の確保を目指した他機関との連携

FSF は流域におけるプロジェクトの活動を展開するために、更なる予算と人員の確保に努めること。そのためには既に実施しているように、他ドナーや G E F 等の国際機関、ケロッグ財団等の民間企業、ローカル N G O 等の他の関係機関からの支援取り付けや連携を強化するとともに、各事業が流域全体の保全のために、効果的、有機的に結びつくように配慮すること。

3-7 教訓（当該プロジェクトから導き出された他の類似プロジェクトの発掘・形成、実施、運営管理に参考となる事柄）

(1) プロジェクト目標と活動の関連性の強化

プロジェクト目標が C/P の流域管理に関するキャパシティディベロップメントであり、そのためのツールとしてアグロフォレストリーや簡易灌漑農業が導入され、さらにそれをインセンティブとして植林や森林火災防止活動を行った。キャパシティディベロップメントは OJT を中心に行ない、概ね目標値に近い達成度であったが、各専門技術の習得には講義形式の理論に関する研修がより多く行われていればより効率的だったのではないかと思われる。

(2) インセンティブ事業の手段としての適切性

対象村落において、住民の主体性を引き出しながら簡易灌漑農業やアグロフォレストリーの導入をインセンティブとして植林活動や焼畑放棄を合意形成するアプローチは、地域住民による自然資源管理の具体的な手法として効果的な戦略である。

(3) 国際協力プロジェクトでのコミュニケーションと相互理解の重要性

C/P 側と日本人専門家側で、構想、進め方、灌漑やアグロフォレストリーの規模、実施方法等、多くの面で意見の相違があった。特に、立ち上げ時には C/P と十分協議し実態調査を行い共通認識の上に基本構想を固めることが重要である。

(4) 参加型プロジェクトにおける合意形成、オーナーシップの重要性

合意形成はされていても、住民から様々な要求が出されたり、参加住民が少なかったこ

とが見受けられた。これは、住民との合意形成、参加意識、オーナーシップが醸成されていなかったことが原因で、それらに時間をより注ぐ必要があったためである。また、意識の醸成は、多くの投入をしたからと言って得られるものでもなく、ある程度の時間が必要である。従って、プロジェクトスケジュールには柔軟性があることが望ましい。

(5) 適切な物質的援助の重要性

村落住民を対象とした他のプロジェクトにおいて、過剰な物質的援助を行った結果、住民の多くは援助慣れをしていたが、適正な物質的援助を行った本プロジェクトを通じ、対象住民の主体性が醸成された。以上の経験より、住民に対する過剰な物質的援助は自立発展性に負の影響を及ぼすと言え、プロジェクトデザインの段階では住民自身が自らの問題に気づき、問題を解決する能力の向上を視野に入れつつ、また発展の方向性やそのためのプロセスを考えることが重要である。

以上

Summary

I. Outline of the Project		
Country : Dominican Republic		Project title : The sustainable watershed management project in the upper area of the Sabana yegua Dam in the Dominican Republic
Issue/Sector : Environment		Cooperation scheme : Technical Cooperation Project
Division in charge : Global Environment Dep. Forestry and Nature Conservation Division 2		Total cost : 79,702(thousand)_yen Share of Japan's Contribution: <u>88</u> %
Period of Cooperation	(R/D): 28/4/2006~31/3//2009 (Three years)	Partner Country's Implementing Organization : Secretariat of State of Environment and Natural Resources (SEMARENA), Sur Futuro Foundation(FSF)
	(Extension): 1/4/2009-31/3/2010 (one year)	Supporting Organization in Japan : Forestry Agency, Ministry of Agriculture, Forestry and Fisheries
Related Cooperation Project :		N/A
1 Background of the Project In the 1940's, some 70% of the national land of the Dominican Republic was covered by forests. According to the Forest Resource Survey by the SEMARENA, the forest coverage had dropped to as low as 14% during the 1980s, and 28% in 1997, due to commercial felling, development of ranches and farmland and forest fires, although it slightly recovered to 32% in 2003. Also in the upper area of the Sabana Yegua Dam, steep slopes have been converted to farmland by poor farmers. The resulting progress of soil erosion has been causing the severe deposition of sediment in the dam. The participatory watershed management project aimed at stopping watershed devastation because of poverty and facilitating forest restoration and soil conservation compatible with the local as well as national needs. Under such condition, the technical cooperation project, the Sustainable Watershed Management Project in the Upper Area of the Sabana Yegua Dam (hereinafter referred to as 'the Project'), has been implemented since April 2006, based on the R/D including the Project Master Plan. In July 2007, JICA's Consultation Study Team reviewed the achievement of the project activities and made a recommendation on revision of PDM, then the revised PDM (Annex 1, hereinafter referred to as 'PDM Version 2') was finally agreed with definitions of terms and indicators in the PDM and Terms of References (hereinafter referred to as 'TOR') of each organizations in July 2007. Four (4) months prior to the Project completion, the Joint Evaluation Team (hereinafter referred to as "the Team") was formed for this Terminal evaluation. 2 Project Overview (1) Overall Goal The forest resources in the Project Area will be handled suitably by the villagers using techniques they		

assimilate through the technical support provided by the staff of FSF and SEMARENA.

(2) Project Purpose

The staff of FSF and SEMARENA will improve their technical capacity in Watershed Management and administrative capacity in project management.

(3) Outputs

1. Environmental, natural resource, and socio-economic baseline data of the Project Area will be organized.
2. Agroforestry and handy irrigation agriculture will be introduced suitably by the staff of FSF and SEMARENA with a view to enhancing their awareness of forest conservation issues in general according to the Agroforestry and Handy irrigation agriculture Annual Plan formulated in the Project.
3. It will be possible for the staff of FSF and SEMARENA to formulate a reforestation plan that addresses the needs of the villagers and to carry out activities and evaluation.
4. The system for forest fire prevention and control in the Project Area will be strengthened.

(4) Inputs (as of November 2008)

-Japanese side : (Total 69,820 (thousand) Yen) (Except for wages and travel expense for JICA experts)

Expert ;46.89 man-months of experts

Equipment*; 8,758 thousand Yen

Local cost **; 69,820 thousand Yen

Trainees received ; 8 participants

(* Not including irrigation-related cost)

(** 'Local cost' includes Equipment cost.)

-Dominican Republic's Side : (Total 9,882 (thousand) Yen)

Counterpart ; 9 counterpart personnel

Land and Facilities(including office equipment); 1,094,633 RD\$ (3,329 thousand Yen)

Local Cost*** ; 3,249,663 RD\$ (9,882 thousand Yen)

(* ***Local cost includes facilities and their maintenance cost.)

II. Evaluation Team

Members of Evaluation Team	1. Toshio OGAWA (Leader), Deputy Director General, Forestry and Nature Conservation Group, Global Environment Department, JICA 2. Takao NAGUMO (Planning and Evaluation), Program Officer, Forestry and Nature Conservation Team 2, Global Environment Department, JICA 3. Kiyoko HITSUDA (Evaluation Analysis), Consultant, Japan Development Service Inc.
Period of Evaluation; 2/11/2008~ 23/11/2008	Type of Evaluation : Terminal Evaluation

III. Results of Evaluation

1 Project Performance

(1) Outputs

-The indicator for Output 1 is completely achieved at the time of terminal evaluation.

-It will be difficult to meet the planned output of “the suitable introduction of handy irrigation agriculture by staff of the FSF” which forms part of Output 2 and the full achievement of this output is not assured. Because of the project delay due to hurricanes, however, sufficient guidance on farming associated with irrigation will not have been provided by the time of project completion.

-As for Output 3, although the planted area fell short of the indicator level as mentioned in the achievement result of Indicator 2-1, the reforestation system has been firmly established at the FSF and SEMARENA with a reliable prospect of its continuation in the coming years.

-The Project achieved all indicators of Output 4.

(2) Project Purpose

The Project purpose will have been successfully completed when it ends except the part relating to irrigated farming. However, whether or not the handy irrigation system introduced under the Project will actually contribute to forest conservation significantly depends on the outcome of irrigated farming. Therefore, the successful development of irrigated farming poses a major challenge to achieve the project purpose.

(3) Overall Goals

It is likely that the Overall goal will be successfully achieved. The villagers in the Project Area have been highly recognized the importance of reforestation, and newly assigned Minister of the SEMARENA designated reforestation activities as a Priority Issue providing solid preparation including budget required. As the FSF is operating reforestation throughout the entire upper area of the Sabana Yegua Dam with the assistance of other donors.

2 Summary of Evaluation Results

(1) Relevance

The Project can be described as a project which embodies a long-term perspective and strategy for forest policies in the Dominican Republic. Moreover, the forest restoration and poverty reduction measures conform to Japan’s aid policy from the viewpoint of “environmental conservation” for the former and “human security” for the latter. Furthermore, the Project is compatible with the environmental and development policies of the recipient country.

(2) Effectiveness

The intended outputs of the Project have been virtually achieved as the activities designed to produce certain outputs have actually produced the intended outputs except in a few cases. At the time of terminal evaluation, C/Ps can do the activities by themselves or with little support by Japanese experts, and the level of satisfaction among local residents with the services offered by the FSF and the SEMARENA has increased. However, the

effectiveness of the Project has been somewhat reduced because of the insufficient time devoted to the Project by the C/Ps from the FSF, and damage from hurricanes (Important Assumption).

(3) Efficiency

The Japanese inputs have generally been adequate in terms of the quantity, quality and timing. The C/Ps have a very high level of basic capacity. Their specialist fields are appropriate as they correspond to those of the Japanese experts except in the field of handy irrigation. However, the efficiency of the expert has been lower than expected in regard to handy irrigation, partly because of the insufficient assignment of the C/P and partly because of the withdrawal of the original plan to use a local NGO to honour the intention of the FSF. The intended outputs would have been more efficiently achieved if the above mentioned shortcomings did not exist.

(4) Impact

The villagers participating in the handy irrigation agriculture project or the agroforestry project have completely abandoned slash and burn agriculture. The motivation of farmers to conserve forests and to plant trees has been strongly enhanced through activities, including a painting contest for local primary school pupils, designed to raise their awareness of the need for reforestation and forest fire prevention. There is a good prospect of achieving the overall goal provided that no large unpredictable disaster due to a hurricane or something else strikes the area.

(5) Sustainability

As described below, the sustainability of the Project is quite high and the FSF is expected to continue to provide technical support for local residents.

- Political/administrative aspect

The newly appointed Minister for the SEMARENA is the original proposer of the National Reforestation Plan (Plan Quisqueya Verde) and he has expressed his intention of energetically promoting reforestation in the coming years, especially in the Project Area.

- Financial Aspect

The mechanism of a revolving fund has been introduced under the Project so that the FSF can continually implement the handy irrigation project. As the FSF has already implemented its own micro-credit project, its reliability and stability in terms of continual fund management are very good.

- Organizational Aspect

The FSF has a strong relationship with the SEMARENA, and it is highly plausible that the skills transferred under the Project will be firmly rooted and efficiently used by the FSF although an increase of the technical staff needed will be required for project extension.

- Technical aspect

The C/Ps for the Project have a high level of technical and project management capability because of their involvement in various projects and their capability is expected to constantly improve through their future work. Nevertheless, the technical staff of the FSF are not very familiar with the techniques of irrigated agriculture in

the dry season and further assistance will be required to ensure the sustainability of the Project.

3 . Factors promoting better sustainability and impact

(1) Factors concerning to Planning

In terms of the revolving fund which was introduced to the Project, factors capable of facilitating sustainability are that a large profit will be produced by the irrigated agriculture to pay off loans from the revolving fund, and that handy irrigation agriculture will be introduced in other villages.

(2) Factors concerning to the Implementation Process

During the early period of the Project, efficiency of various activities was low due to the insufficient communication and collaboration between C/Ps and Japanese Experts and poor C/P personnel deployment. In the second year of the Project, however, the efforts of both sides such as newly holding weekly meeting, etc. improved the situation.

4 . Factors inhibiting better sustainability and impact

(1) Factors concerning to Planning

N/A

(2) Factors concerning to the Implementation Process

The effectiveness of the Project has been somewhat reduced because of the insufficient time devoted to the Project by the FSF's C/Ps due to their concurrent involvement in other projects and also because of the transfer and temporary absence of the C/P in charge of the construction of the handy irrigation facilities.

5 . Conclusion

The Project is highly relevant in terms of consistency with the policy at national level in the Dominican Republic, with the Japanese ODA policy, and with the needs of the target area. The delay of the Project, particularly the handy irrigation agriculture project, due to hurricanes (Important Assumption) has made it difficult to provide sufficient guidance on irrigated farming (including marketing) in the dry season which constitutes an almost new farming practice for the C/Ps and villagers. Such insufficient guidance has delayed the achievement of Output 2, in turn hampering the achievement of the project purpose. In regard to impacts, positive impacts have already emerged. As the sustainability has been established in terms of policy, finance and technology, there is potential for an extremely high level of sustainability provided that the FSF continues to strengthen its technical staff.

6 . Recommendations

(1) Implementation of handy irrigation agriculture

The relevant activity under Output 2 will be extended for another one (1) year in order to strengthen the capacity of the C/P through its experience of irrigated farming in two dry seasons. For the continual development of irrigated farming, the maintenance of the facilities by members of the irrigation cooperatives will be essential. For this reason, the FSF must provide guidance for members of the cooperatives to enhance

their capacity to manage irrigation water, maintain irrigation facilities, manage finance, cultivate crops, raise funds and market agricultural products. After the termination of the Project, the FSF must provide guidance for members of the cooperatives to enhance their capacity to manage irrigation water, maintain irrigation facilities, manage finance, cultivate crops, raise funds and market agricultural products for the continual development of irrigated farming

(2) Increase of manpower

It will be necessary for the FSF to swiftly increase the number of staff members equipped with basic skills relating to handy irrigation agriculture.

(3) Revolving fund

The FSF should formulate a revolving fund recovery plan and a plan to implement new handy irrigation projects for the next 10 years by the completion of the Project. A memorandum on the use of the revolving fund should be exchanged between the FSF and the JICA Office. The FSF should continually recover the funds in an adequate manner and should re-invest the recovered funds in the handy irrigation project in accordance with the memorandum on the use of the revolving fund concluded with the JICA.

(4) Agroforestry

A soil erosion prevention method should be actively employed and ways to extend the practice and to educate farmers should be examined to facilitate the entrenchment of agroforestry to benefit many more farmers in addition to the expansion of the demonstration farms.

(5) Reforestation

While upholding the process of establishing a consensus for the reforestation project, active efforts should be made to secure reforestation sites involving large landowners to respond to the need for reforestation and to provide tending guidance at existing reforestation sites.

(6) Collaboration with other organizations to secure sufficient budget and human resources

To secure a sufficient budget and human resources, the FSF should intensify its efforts to ensure the assistance of and collaboration with other organizations, including donors, international aid organizations, private companies, local NGOs and the Dominican authorities concerned.

7. Lessons Learned

(1) Strengthening the connection between the Project objective and activities

(2) Methodology suitability

(3) Importance of communication and mutual understanding in an international cooperation project

(4) Importance of consensus and ownership sense in a participatory project

(5) Importance of appropriate material assistance

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第1章 終了時評価調査の概要

1.1 プロジェクトの概要

ドミニカ共和国の森林率は、1940年頃の約70%から、1998年には28%まで低下した。その理由は、山間地農民の焼畑耕作、商業伐採（マホガニー、マツ等）、山火事及びハリケーン被害等とされている。ドミニカ共和国の南西部の水瓶として非常に重要な役割を担っているサバナ・イエグア・ダム上流域（16.6万ha）に関しても例外でなく、貧困層の地域住民による傾斜地の無秩序な焼畑農業や山火事被害によりほとんどの森林が消失しており、ドミニカ共和国において最も荒廃が激しい地域の一つである。年々、周辺流域の水源涵養機能は低下してきており、さらに大雨やハリケーンにより土壌は流出し、ダムの貯水量の30%以上は土壌が堆積しており、下流域への用水供給及び洪水緩和といった重要な役割を果たすことが難しい状況にある。このような状況のもと、我が国は上述のサバナ・イエグア・ダム上流域（流域面積16万6千ha）を対象に、開発調査「サバナ・イエグア・ダム上流域流域管理計画」（2000年11月～2002年8月）を実施し、荒廃した流域における森林管理、アグロフォレストリー、村落開発、土壌保全、コミュニティでの組織強化等をコンポーネントするマスタープラン（15年間）を策定した。これを受けドミニカ共和国は、同計画を国家優先プログラムと位置付け、計画の実施に向けて環境・自然資源省を監理・指揮機関とし、実施機関としては大統領令によりNGOであるスール・フツーロ財団に任命し（環境・自然資源省とスール・フツーロ財団とは15年間の実施協定を締結）、限られた予算の中ではあるが同計画の一部を実施している。しかし、同財団の現地スタッフ及びそれを監督する環境・自然資源省職員の流域管理全般に関する技術力は十分でなく、モニタリング・評価を含む事業の実施体制面においても能力強化の必要性があることから、我が国は2006年4月より3年間の技術協力プロジェクトを実施している。

終了時評価時点の上位目標、プロジェクト目標、アウトプットは以下のとおり。

- 上位目標
スール・フツーロ財団及び環境・自然資源省の関係職員から技術指導を受けた地域住民が、その技術を実践することにより、プロジェクト対象地域の森林資源が適切に管理される。
- プロジェクト目標
スール・フツーロ財団及び環境・自然資源省の関係職員の流域管理に関する技術力とプロジェクトを運営するための能力が向上する。
- アウトプット
 1. 対象村落の自然環境や社会経済状況に関する情報が整理される。
 2. 対象地域において、森林保全に対する意識を向上させるためのアグロフォレストリー及び簡易灌漑農業が適切に導入される。

3. 対象住民のニーズを把握し、各村落毎の造林年次計画に沿った活動、評価が出来るようになる。
4. 対象地域において森林火災の予防・消火体制が強化される。

1.2 終了時評価調査の目的

協力期間終了を 2009 年 3 月に控え、これまで実施してきた協力活動全般（プロジェクトの実績、実施プロセス、運営管理状況等）について、計画に照らしその達成状況を整理・把握する。その結果に基づき、JICA 事業評価ガイドラインに則り、評価 5 項目の観点からプロジェクトの評価を行う。評価結果を踏まえ、協力期間終了までの活動方針、延長の必要性等を検討するとともに、将来の類似プロジェクトの形成・実施に参考となる教訓・提言を得る。以上の合意事項を協議議事録（ミニッツ）としてとりまとめ、署名・交換することを目的とする。

1.3 合同評価チームの構成

1.3.1 日本側メンバー

- (1) 団長/総括 小川 登志夫 (独) 国際協力機構 (JICA) 地球環境部 次長 兼 森林・自然環境グループ長
- (2) 協力企画 南雲 孝雄 (独) 国際協力機構 (JICA) 地球環境部 森林・自然環境グループ 森林・自然環境保全第 2 課 職員
- (3) 評価分析 檀田 木世子 株式会社 日本開発サービス 調査部 主任研究員

1.3.2 ドミニカ共和国側メンバー

- (1) Ramón Díaz Beard (総括) 環境・自然資源省(SEMARENA) 森林資源次省 技術コーディネーター
- (2) Alberto Roa スール・フツーロ財団(FSF)本部 企画評価部長
- (3) Ramón Santana スール・フツーロ財団(FSF)本部 技術コーディネーター
- (4) Pablo Herasme 経済企画開発省(SEEPyD) 国際協力次省 アジア地域協力技官

1.4 評価調査の日程

No.	月 日		団長/総括	協力企画	評価分析	官・ 宿泊	コンサルタント 宿泊	
1	11月2日	日			17:45 成田発 (C0008)→ 16:25 N.Y着			
2	11月3日	月			07:10 N.Y発 (C0743)→ 12:00 SD着 (PM)財団、環境省 (C/Pへの 評価方法の説明)、JICA事 務所			SD
3	11月4日	火			表敬、インビュ (財団本部、 環境省)			SD
4	11月5日	水			(AM)SD→PLC (PM)財団PLC表敬、インビュ			PLC
5	11月6日	木			C/Pへのインビュ			PLC
6	11月7日	金			専門家へのインビュ、サイト 視察 (Naranjos, Periquito)、資 料整理			PLC
7	11月8日	土			専門家へのインビュ、サイト 視察 (DerrumbadoとLas Lagunas)、資料整理			PLC
8	11月9日	日			17:45 成田発 (C0008)→ 16:25 N.Y着			書類作成、資料整理
9	11月10日	月	07:10 N.Y発 (C0743)→ 12:00 SD着 15:30専門家との打ち合わせ 17:00JICA事務所	書類作成、資料整理	SD	PLC		
10	11月11日	火	9:00-財団本部・環境省表敬、合 同評価委員会 (1)@財団本部-評 価のあり方、進め方、今後のス ケジュール確認等 (PM)移動 (SD→PLC) 専門家との打合せ等、団内打合せ	(AM)書類作成、資料整理 (PM)団内打合せ	PLC			
11	11月12日	水	農民グループ視察 (Naranjos、 Periquito)、C/P等によるプロ ジェクト活動報告、意見交換	書類作成	PLC			
12	11月13日	木	農民グループ視察 (Derrumbado, Las Lagunas)、 関係機関への意見聴取	書類作成	PLC			
13	11月14日	金	9:00-合同評価メンバー間の打合せ@財団PLC事務所 -現地視察のレビュー/レポート作成に係るポイントの整理、 作業スケジュール確認等 (午後)移動 (PLC→SD)		SD			
14	11月15日	土	評価レポート作成@JICA事務所		SD			
15	11月16日	日	評価レポート作成@JICA事務所		SD			
16	11月17日	月	(AM)評価レポートの作成@JICA事務所 (PM)専門家との打合せ@JICA事務所		SD			
17	11月18日	火	10:00-合同評価委員会 (2)@財団本部		SD			
18	11月19日	水	合同評価委員会 (3)@財団本部		SD			
19	11月20日	木	10:00-13:00合同調整委員会 (JCC) @Occidental de Embajador			SD		
			15:55 SD発 (AA1582)→ 19:00 J.F.K空 港着	15:00-16:00大使館報告		SD		
20	11月21日	金	11:10 ニュー アーク発 (C0009)→	13:20 SD発 (C0751)→ 16:30 N.Y着	13:20 SD発 (C0751)→ 16:30 N.Y着			
21	11月22日	土	15:10 成田着	11:10 N.Y発 (C0009)→	11:10 N.Y発 (C0009)→			
22	11月23日	日		15:10 成田着	15:10 成田着			

1.5 主要面会者

調査期間中に面会した主要メンバーは以下のとおり。

1.5.1 ドミニカ共和国側

(1)環境・自然資源省(SEMARENA) 森林資源次省

- | | |
|------------------------|------------------|
| a) Bernabe Manon Rossi | 次官 |
| b) Ramón Díaz Beard | 技術コーディネーター |
| c) Teresa Disla | 森林情報センター職員 |
| d) Carlos Silié | 企画・開発部 プロジェクト分析官 |
| e) Sol Teresa Paredes | 企画部技官 |

(2)カウンターパート/環境・自然資源省(SEMARENA) 森林資源次省 パドレ・ラス・カサス事務所

- | | |
|--------------------------|---------|
| a) Obispo Valdez Montero | 森林地域担当官 |
|--------------------------|---------|

(3) スール・フツーロ財団(FSF) 本部

- | | |
|----------------------------|--------|
| a) Melba Segura De Grullón | 理事長 |
| b) Constanza Casanova | 局長 |
| c) Alberto Roa | 企画評価部長 |
| d) Ramón Santana | 自然資源部長 |

(4) カウンターパート/スール・フツーロ財団(FSF) パドレ・ラス・カサス事務所

- | | |
|-------------------------------------|----------------------|
| a) Luis Pina | 事務所長/プロジェクト・コーディネーター |
| b) Jorge De Los Santos | 造林技術者 |
| c) Milton Batista | 造林技術者 |
| d) Rafael Anibal Montilla Pimentel | 灌漑技術者 |
| e) Roberto De La Cruz De Los Santos | 地区担当技術者 |
| f) Yeison Felix | 地区担当技術者 |
| g) Eddy Manuel Del Jesus Matos | 社会プロモーター |
| h) Manuel Rosado | 社会プロモーター |

(5) 経済企画開発省(SEEPyD) 国際協力次省

- | | |
|---------------------|-----------|
| a) America Bastidas | 次官 |
| b) Pablo Herasme | アジア地域協力技官 |

1.5.2 日本側

(1) 在ドミニカ共和国日本大使館

- | | |
|-------|--------|
| 四宮 信隆 | 特命全権大使 |
| 畠田 繁実 | 二等書記官 |

(2) JICA ドミニカ共和国事務所

- | | |
|--------------|-----------|
| 池城 直 | 所長 |
| 篠山 和良 | 次長 |
| Huascar Pena | ナショナルスタッフ |

(3) 専門家チーム

増井 博明

古川 数光

チーフアドバイザー/流域管理/森林火災
灌漑農業

第2章 終了時評価調査の方法

2.1 評価設問と必要なデータ、評価指標

本評価調査は、『JICA 事業評価ガイドライン（2004年1月：改訂版）』に基づき、プロジェクト・デザイン・マトリックス(PDM)を用いた評価手法に則って実施した。2008年7月3日に署名されたPDM第2版(PDM 2)のロジックおよび指標を基に、①プロジェクトの実績、②プロジェクトの実施プロセス、③妥当性、④有効性、⑤効率性、⑥インパクト、⑥自立発展性を測る評価設問を設定し、調査に必要なデータおよび情報源を特定し、評価グリッドを作成した。

なお、上記評価項目の定義は表2-1のとおりである。

表 2-1 評価項目の定義

評価項目	JICA事業評価ガイドラインによる定義
妥当性	プロジェクトの目指している効果(プロジェクト目標や上位目標)が受益者のニーズに合致しているか、問題や課題の解決策として適切か、被援助国および日本側の政策との整合性はあるか、プロジェクトの戦略・アプローチは妥当か、公的資金であるODAで実施する必要があるかなどといった「援助プロジェクトの正当性・必要性」を問う視点。
有効性	プロジェクトの実施により、本当に受益者もしくは社会への便益がもたらされているのか(あるいはもたらされるか)を問う視点。
効率性	主にプロジェクトのコストおよび効果の關係に着目し、資源が有効に活用されているか(あるいはされるか)を問う視点。
インパクト	プロジェクト実施によりもたらされる、より長期的、間接的効果や波及効果を見る視点。この際、予期していなかった正・負の効果・影響を含む。
自立発展性	援助が終了しても、プロジェクトで発現した効果が持続しているか(あるいは持続の見込みはあるか)を問う視点。

出典：JICA 事業評価ガイドライン（2004年1月：改訂版）

2.2 データ収集、分析方法

具体的なデータ収集方法および評価手法は以下のとおり。

2.2.1 事前準備

評価に先立ち、プロジェクト関係文書（業務完了報告書及び進捗報告書を含む）に基づき、評価のデザインとして評価グリッドを作成した。この評価グリッドに基づき、専門家チームにプロジェクトの投入実績に関する情報提供を依頼し、さらに、主としてプロジェクトの実施プロセス・評価5項目に関する質問票を英語と西語で4種類（スール・フツール財団、環境・自然資源省、村落住民、日本人専門家）ずつ作成し事前配布した。時間的制約から、すべての回答を事前に回収することができず、翻訳及び回答の集計は評価分析現地入りしてからになった。

2.2.2 現地調査 1（評価分析団員先行期間；11 月 2 日～11 月 9 日）

まず、ドミニカ共和国側のプロジェクト・スタッフ及び専門家に対して、評価方法の説明を行った。次に、上記質問票の回答をもとに、実施プロセスの確認と評価 5 項目に関する補足情報を収集するために、ドミニカ共和国側の技術スタッフに対する個別インタビューおよび灌漑施設導入 4 村落におけるグループインタビューを行った。インタビューは、英語・西語の通訳の補助を得て実施した。併せて、日本人専門家へのインタビューを行った。

2.2.3 現地調査 2（調査団本隊合流後；11 月 10 日以降）

第 1 回合同評価委員会（11 月 14 日）において、評価の方法について説明を行い、出席者合意を得た上で、以後の調査を進めた。第 1 回合同評価委員会後にプロジェクト側からアウトプットごとのプレゼンを受けた後、技術スタッフへのインタビューを行った。既存資料、質問票回答、インタビュー結果、及び現地視察結果をもとに、日本側評価団が合同評価報告書案をとりまとめた。第 2 回及び第 3 回合同評価委員会の 2 日間（11 月 18 日、19 日）にわたる協議を経て、報告書案が最終化された。翌日の 11 月 20 日に開催された合同調整委員会（JCC）において、合同評価チームから評価結果を発表し、協議議事録（ミニッツ）として取りまとめ、署名・交換された。

第3章 プロジェクトの実績

3.1 投入実績

3.1.1 日本側投入

専門家の投入は評価調査時点（2008年11月）で、PDM version2に従い、以下6分野（①チーフアドバイザー/流域管理/森林火災、②参加型開発、③アグロフォレストリー、④灌漑農業、⑤GIS、⑥業務調整）において、計6名、46.89M/M（人・月）の専門家を投入した。専門家派遣実績の詳細は表3-1のとおりである。

表3-1 専門家派遣および指導科目

氏名	担当業務(分野)	期間
阿久津雄三	チーフアドバイザー/流域管理/森林火災	2006.05.01～2006.09.20
	〃	2007.01.10～2007.03.02
	〃	2007.05.07～2007.05.10
増井博明	〃	2007.06.02～2007.08.15
	〃	2008.01.08～2008.02.26
	〃	2008.06.15～2008.09.04
	参加型開発	2008.09.05～2008.11.13
	チーフアドバイザー/流域管理/森林火災	2008.11.14～2008.12.21(予定)
市川澄夫	(業務調整)	2006.05.01～2006.05.10
	アグロフォレストリー	2006.05.11～2006.07.09
	〃	2007.01.10～2007.01.24
	(業務調整)	2007.01.25～2007.02.21
	アグロフォレストリー	2007.04.26～2007.06.09
小林周一	参加型開発	2006.05.01～2006.06.14
	〃	2006.10.25～2006.12.08
	〃	2007.08.26～2008.10.24
古川数光	灌漑農業	2006.05.16～2006.08.10
	〃	2006.09.14～2006.11.02
	〃	2007.06.05～2007.08.09
	〃	2007.10.17～2007.12.24
	〃	2008.01.14～2008.02.12
	〃	2008.05.20～2008.07.20
	〃	2008.11.04～2008.12.21(予定)
宗像和規	GIS	2006.11.09～2006.12.08

また、研修員受入れに関し、本プロジェクトの投入としてのC/P研修として、2006年度に3名、2008年度に2名の計5名（表3-2 No1-5）を受入れた。2件の研修とも、研修テーマは参加型森林管理分野であり、期間は2週間弱であった。その他、本プロジェクトの開始前である2005年度には、森林管理及び農村開発に係る課題別研修にC/Pが3名参加し、また、チリ及びアルゼンチンで実施された、持続的流域管理分野の第3国研修にC/Pが4名参加した。研修員受入に係る内訳詳細は表3-2のとおりである。

表 3-2 研修員受入実績

No.	研修員氏名	組織/役職	研修期間	研修テーマ	実施国
スール・フツロー財団					
1	Ms. Evaydee P é rez Sarraf	Ex-Executive Director, FSF	2006.9.24～10.7	Sustainable Watershed Management Project in the Upper Area of Sabana Yegua Dam	日本
2	Mr. Alberto Roa Howley	Manager of Pacification and Evaluation, FSF	2008.4.13～4.27	Participatory forest management	日本
3	Mr. Luis Del Carmen Piñ a Gómez	Local Manager, FSF PLC			日本
4	Mr. Ramón Santana	Manager of Natural and Agriculture Resources, FSF	2007.2.26～3.13	Management of Forest conservation project, income generation	日本
5	Elpidio Tineo	Ex-Local Manager, FSF PLC			日本
6	Yeison Félix*	Technician of Zone(Agroforestry), FSF PLC	2008.11.24～12.19	Rehabilitation of environment for sustainable watershed management	チリ(第3国研修)
7	Jorge De Los Santos *&**	Technician of Zone(Agroforestry), FSF PLC	2005.08.21～11.19	Forest management	日本
8	Mr. Luis Del Carmen Piñ a Gómez**	Local Manager, FSF PLC	2005.11.21～12.15	Rehabilitation of environment for sustainable watershed management	チリ(第3国研修)
9	Mr. Oscar Valenzuela*	Ex-Manager of Natural and Agriculture Resources, FSF PLC	2006.11.20～12.15	Rehabilitation of environment for sustainable watershed management	チリ(第3国研修)
10	Ms. Julia McGuin**	Ex-Technician of plan, FSF PLC	2005.09.13～10.28	Training for Rural development in cooperation with JICA-NGO	日本
環境・自然資源省					
11	Mr. Obispo Valenzuela*	Resp. of Forest Zone	2006.10.09～11.24	Regional forest guard for Latin america	アルゼンチン(第3国研修)
12	Mr. Carlos Silié**	Resp. of Dept. of Pacification	2005.08.09～11.26	Sustainable forest management	日本
* 本邦で実施する課題別研修もしくは第3国研修(本プロジェクトにおける日本側投入としてカウントしない)					
**本プロジェクト前に実施された研修(本プロジェクトにおける日本側投入としてカウントしない)					

供与機材に関し、主要費目は車両2台、トラック1台、バイク3名、PC3台、GPS3台、その他周辺機器などである。機材等の使用状況、管理状況とも概ね良好である。ただ、GPS3台のうち2台は故障しているが、残りの1台を最大限に運用し、目下プロジェクト活動に大きな支障は出ていない。供与機材の詳細に関し、ミニッツ参考資料の Annex5 参照。

最後に、日本側負担のローカルコストは、これまで、約 RD\$ 22,960,000（日本円で約 69,821 千円）が支出された。主要費目は、プロジェクト管理費として現地スタッフ雇用費、現地研修費、消耗品代など、またアグロフォレストリーや環境教育等に関する資材費、灌漑関連費である。特に灌漑関連費に関しては、簡易灌漑施設を導入した 4 村落において、現地再委託による灌漑の工事や施工管理、灌漑関連資材の調達等も含まれている。詳細内訳はミニッツ参考資料の Annex8 のとおり。

3.1.2 ドミニカ共和国側投入

カウンターパート（C/P）に関し、FSF の PLC 支所の 8 名と SEMARENA の PLC 支所の 1 名の計 9 名が配置されている。C/P の詳細に関しては、ミニッツ参考資料の Annex7 のとおり。C/P は大学卒業の技術者であり、経験や技術力の観点からは申し分ない。また C/P の配置については概ね問題ないが、ただ、C/P のいくつかは他のプロジェクトを掛け持ちしており、時期によっては、多忙のため本プロジェクトへの参加が限定的になることがある。また灌漑分野の C/P について、財団側の人事の都合上、C/P が不在の時期もあり、適切な技術移転ができない時期があった。

また資機材に関し、財団はプロジェクトに対し、計画通り、事務所とその管理費が提供し、その量、質とも問題なかった。加えて、プロジェクトの活動に必要な施設及び備品が提供された。

最後にドミニカ共和国側のローカルコスト負担として、合計約 RD\$ 3,250,000（日本円で約 9,882 千円）が支出された。その主な費目は、FSF 及び SEMARENA の人件費と管理費である。詳細内訳はミニッツ参考資料の Annex8 のとおり。

3.2 活動実績

プロジェクトの活動は、PDM version2 に示されているとおり、23 の活動で構成されている。各活動の実績詳細に関しては、ミニッツ参考資料の Annex 2 Achievement Grid を参照。

3.3 アウトプットの達成状況

各アウトプットの達成状況は以下のとおり。なお達成状況の詳細は、ミニッツ参考資料の Annex 2 Achievement Grid を参照。

3.3.1 アウトプット 1：自然環境／社会経済状況に関する情報整理

アウトプット 1：

対象村落の自然環境や社会経済状況に関する情報が整理される。

指標：

対象村落の自然環境や社会経済状況に関する報告書が作成される。

プロジェクトの初年度（2006 年度）に対象 14 村落において、キーインフォーマントインタビューにより基本情報及び森林・流域管理に関する情報を把握した後、ベースライン調査や簡易灌漑農業ポテンシャル調査、アグロフォレストリー実施状況調査等を実施し、その結

果、対象村落における自然条件や社会経済条件、流域管理・森林資源関連情報、村落情報に係る報告書が作成され、成果 1 の指標は終了時評価時点までに完全に達成された。

3.3.2 アウトプット 2：森林保全に対する意識向上のためのアグロフォレストリー及び簡易灌漑農業の導入

アウトプット 2：

森林保全全般に関する意識の向上を目的として、プロジェクトにおいて作成されるアグロフォレストリー年次計画及び簡易灌漑農業年次計画に沿って、アグロフォレストリー及び簡易灌漑農業の適切な実行がスール・フツーロ財団及び環境・自然資源省の技術者により導入される。

指標：

- 2-1. 簡易灌漑農業を導入したコミュニティで森林面積が 110ha 以上増加する。
- 2-2. 焼畑を行う農家の数が 150 戸以上減少する。
- 2-3. アグロフォレストリー 50ha 以上実施される。
- 2-4. 既存のアグロフォレストリー技術マニュアルが改定される。

指標 2-1 の 110ha はプロジェクト開始後に簡易灌漑導入村落数について、プロジェクト内で非公式に議論した際に 9 箇所程度と仮定したものに対応する植林面積である。その後 2007 年 8 月の運営指導調査において対象を 4 箇所とすることを正式に確認し PDMVersion2 に反映したこと、また外部条件であるハリケーン等による灌漑事業の遅延を加味し目標数値を補正すると、2009 年 3 月末までに植林すべき計画面積は 25ha となり、37ha の実績は目標を達成していると解釈できる。

しかしながら、度重なるハリケーンによる事業の遅延により、通水が遅れており、評価時点で灌漑農業を開始していたのは Derrumbado の 1 村のみである。そのため、活動 2-10 の「簡易灌漑型農業の技術指導を行う」、および活動 2-12 の「簡易灌漑農業導入による森林保全へのインパクトを分析する」についてはプロジェクト終了までに充分実施できてないことが明らかであり、留意が必要である。簡易灌漑対象農民はほぼ完全に焼畑耕作を放棄した点を確認し、指標 2-2 は達成された。指標 2-3 のアグロフォレストリー面積は活動開始の遅れ等により 32ha と目標の 64%に留まったが、C/P はすでに必要な技術を習得しており、アグロフォレストリー技術マニュアルを活用することで、本成果の達成に支障を与えないと予測される。指標 2-4 については既存のアグロフォレストリー技術マニュアルの改訂（案）が作成されており、2009 年 3 月までに完成する見込みである。

以上のことから、本成果を構成する各活動は大方予定通り進捗しているものの、ハリケーンによる事業の遅れを原因として、プロジェクト終了までに灌漑農業における十分な営農指導を実施するには至らないため、本成果の一部である「簡易灌漑農業の適切な実行が FSF の技術者により導入される」ことは困難であり、本アウトプットの確実な達成は見込めない。

3.3.3 アウトプット 3：村落毎の造林年次計画に沿った活動、評価の実施

アウトプット 3：

スール・フツロー財団及び環境・自然資源省の技術者が、対象住民のニーズを把握し、各村落毎の植林計画に沿った活動、評価ができるようになる。

指標：

3-1. 造林計画に基づき造林が 110ha 以上実施される。

3-2. 苗木生産計画に基づき苗木が 175,000 本以上生産される。

3-3. GIS を利用した造林地管理簿が作成・更新される。

指標 3-1 に関しては指標 2-1 で述べたとおり当初設定した目標には達しなかったが、植林需要に応える SEMARENA および FSF の苗木生産システムは確立されており、今後も継続的に実施されていく見込みである。指標 3-2 および 3-3 に関しては完全に達成された。

3.3.4 アウトプット 4：森林火災の予防・消火体制強化

アウトプット 4：

対象地域において森林火災の予防・消火体制が強化される。

指標：

4-1. 住民による消防団が 4 以上結成される。

4-2. 森林火災の発生件数が、1 年目に対して 40%以上減少する。

全ての指標が達成された。消防団は簡易灌漑農業を導入した 4 村と、他の対象村落の 1 村の合計 5 村で結成され、指標 4-1 の指標を上回る成果であった。森林火災のデータは県単位ではあるものの、村落単位では存在しない点が今回の調査で判明した。しかしながら、全てのプロジェクト関係者（森林管理事務所職員、FSF の C/P、対象地域の住民）にヒアリングを行った結果、確実に森林火災が減少したと認識している。プロジェクトでのセミナー訓練実施以外にも、環境・自然資源省および FSF では国家森林火災対策予防プログラムのもと、森林火災防止セミナー、訓練を各地で毎年実施し、対象村の消防団員も多くが参加した。環境・自然資源省は特に森林火災の予防と消化に関し、特別の高い関心を持っていることから、今後もその継続が見込まれる。

3.4 プロジェクト目標の達成状況

プロジェクト目標の達成状況は以下の通りである。

プロジェクト目標：

スール・フツロー財団及び環境・自然資源省パドレ・ラス・カサス森林管理事務所の関係職員の流域管理に関する技術とプロジェクトを運営するための能力が向上する。

指標：

1. スール・フツロー財団及びパドレ・ラス・カサス森林管理事務所職員の流域管理に関する技術力とプロジェクトを運営するための能力が、プロジェクト開始時と比較して、

20%以上向上する。

2. 対象地住民のスール・フツーロ財団及びパドレ・ラス・カサス森林管理事務所の職員に対する満足度が向上する。

指標 1 に関しては、プロジェクト運営能力や流域管理技術の CD(Capacity Development)状況を把握する CD シート (*1) によれば、プロジェクト開始時の総合能力レベルが 67.1%であったのが、2008 年 10 月には 93.7%と、26.6%向上しており、指標を達成している。しかしながら、その内容をカテゴリー別に見ると、ほとんどの項目で当初 C または B 評価であったものが、A に向上しているが、「簡易灌漑の導入」に関しては 2008 年 10 月の評価時点で 14 項目中 A と B が各々 7 つとなっており、未だ十分に CD が図られていないことが明らかとなった。これは、C/P の配置が充分になされなかったことと、ハリケーンによって灌漑通水が遅れ、その結果、灌漑農業の実践の機会を逸したことによると思われる。

指標 2 に関しては、財団および森林管理事務所の全ての活動に対する住民の満足度は、簡易灌漑農業組合員から、新たな灌漑農業に関する営農（市場戦略を含む）についての不安と継続支援を強く要請された以外は、対象地域の事業受益農民からほぼ 100%満足との回答を得た。灌漑農業については、上記指標 1 のとおり、未だ実践していない部分であり、満足度が低いのは当然の結果と判断される。

以上から、本プロジェクトは終了時点で灌漑農業関連部分（アウトプット 2 の一部）を除き、ほぼプロジェクト目標を達成するものと考えられる。しかし、本プロジェクトで導入した簡易灌漑システムが地域の森林保全に寄与するかは、これら営農指導の成否に大きく委ねられており、プロジェクト目標達成への大きな課題となっている。したがって、灌漑営農技術については今後 2 回程度の乾季（12～翌年 4 月頃）を経る事で、必要な技術移転が完了すると想定されることから、1 年の協力延長を行うことで、本プロジェクト目標が達成されると見込まれる。

*1 CD シートとは、本プロジェクトの実施に必要な C/P の各能力を「知識」、「技能」および「態度」に分類し、それぞれについて評点（A～C）をつけ、CD の度合いを測るツール。評点は日本人専門家リーダーとドミニカ共和国側のプロジェクトコーディネーターが中心となり毎年度末に実施。

3.5 上位目標の達成の見込み

上位目標：

スール・フツーロ財団及び環境・自然資源省の関係職員から技術指導を受けた地域住民が、その技術を実践することにより、プロジェクト対象地域（Padre Las Casas の 14 村落）の森林資源が適切に管理される。

指標：

2014 年までに対象地域の森林面積が 3%増加する。

本プロジェクトで簡易灌漑農業を導入したのは 4 村、他方、アグロフォレストリーを導入したのは 11 村（重複 2 村）であるが、財団ではすでに同様の目的を持つ他のプロジェクトに

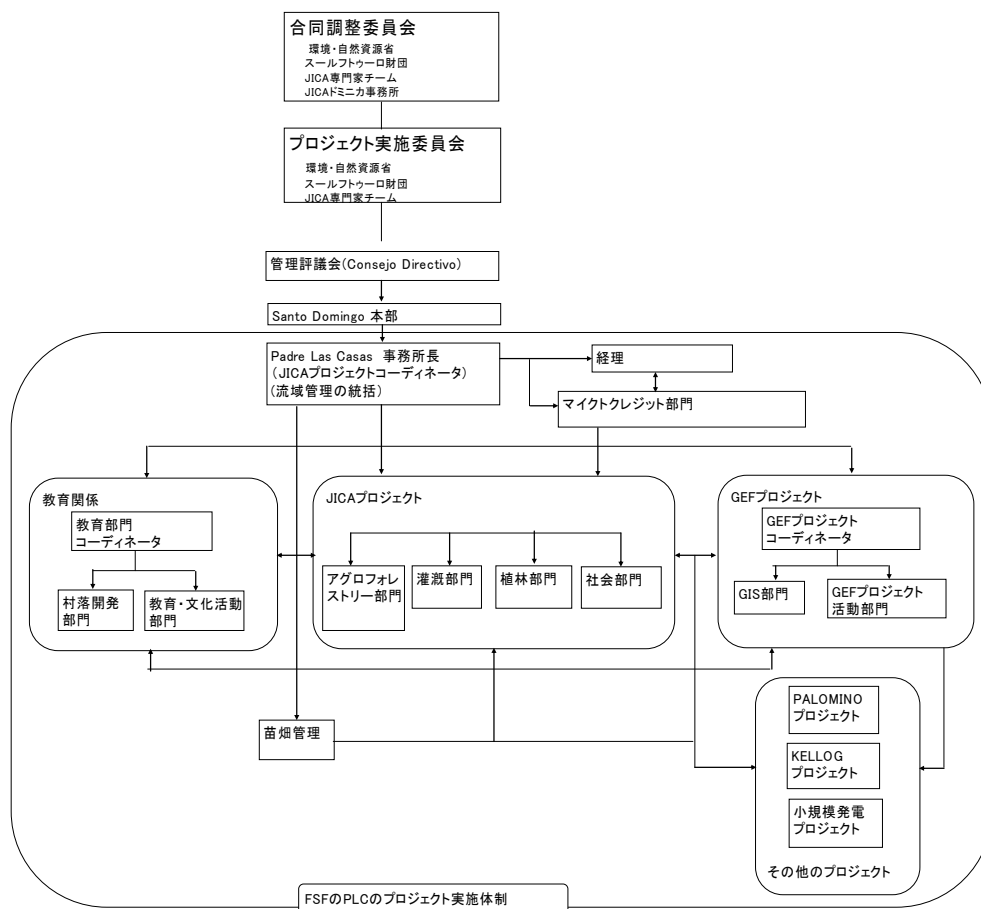
よる支援も行っており、本プロジェクトの正のインパクトが確認できず。ベースライン調査（2006年）によれば、対象地域の面積 12,272ha の内、森林面積は 1,912ha である。植林面積だけで見ると、2006 年から 2008 年にかけてプロジェクトおよび FSF が他のドナーで対象地域に植林した面積 68ha(1,081 タレア)は既に森林面積 3.6%増に寄与したことになる。今後、FSF および SEMARENA によって植林地の維持管理を行うとともに、既存の森林の現状（増減）を確認する必要がある（2 時点の衛星情報を比較しても植林木が判定できるのはある程度成長したする 10 年程度であろうから、現状では困難）。

現地住民の植林意識は高いうえ、新任の環境・自然資源省大臣が植林を第一優先戦略として掲げ、実施のための予算増加を含めた実質的な準備を開始している。さらに、FSF も他のドナーの支援も含めてサバナ・イエグア・ダム上流域全域で植林活動を継続している（対象地域周辺では JICA 以外に 3 つのプロジェクトを実施している）ことから、上位目標達成への途上にあることは確実であると言える。

3.6 プロジェクトの実施体制

2006 年 4 月のプロジェクト開始以降、表 3-3 の実施体制にてプロジェクトを展開している。Project Director は SEMARENA 森林資源次省の次官が務め、プロジェクトの合同調整委員会を主催する。また Project Manager は FSF 本部の局長が勤め、プロジェクト全般の運営と技術面での責任を負う。本プロジェクトはパドレ・ラス・カサス市を対象としており、FSF 本部のあるサントドミンゴ市から車で 3 時間程度の離れた地域で実施されているため、特に現場に近い FSF の PLC 支所長の Project Coordinator の役割が大変重要である。一方、日本側の専門家チーフアドバイザーは専門家チームの総括を行うとともに、FSF の PLC 支所および SEMARENA の PLC 支所の C/P に対し必要な提言助言を実施し、技術支援を行った。プロジェクトの実施体制は以下の表 3-3 のとおりである。

表 3-3 プロジェクトの実施体制



3.7 プロジェクト実施プロセス

効果的にプロジェクトを実施するための決定機関として、2005年9月に署名されたR/Dの中で、合同調整委員会（Joint Coordinating Committee; JCC）を少なくとも年1回以上開催することと定められた。実際には、2006年度2回、2007年度2回、2008年度1回の計5回開催された。

プロジェクト当初は、Project Coordinatorの多忙により、日本人専門家とのコミュニケーションが不十分であり、しばしば円滑なプロジェクト運営が阻害されるケースが見られたが、2007年7月の運営指導調査を通じ、週例会議の実施等の提言を行い、プロジェクトにおいて毎週金曜日の週例会議の実施に加え、積極的な情報共有と意見交換を図った結果、少しずつ日本人専門家とC/P間の意思疎通が改善し、円滑なプロジェクト運営に貢献した。

第4章 調査結果

4.1 評価5項目による評価結果

評価5項目による評価結果は以下のとおり。なお、詳細結果については、ミニッツの添付資料 Annex 3 Terminal Evaluation Grid of the Project を参照されたい。

4.1.1 妥当性

以下の評価結果より、プロジェクトの妥当性は極めて高いと判断される。

焼畑や度重なるハリケーンによる被害で荒廃の進むサバナ・イエグア・ダム上流域の持続的流域管理は国家優先事項であり、その一部を担う本プロジェクトは、ドミニカ共和国の森林政策の長期的展望や戦略を体現したプロジェクトといえる。さらに、森林回復は「環境保全」、貧困削減対策は「人間の安全保障」の視点から、日本の援助方針とも整合している。実施 C/P 機関であるスール・フツーロ財団は、プロジェクト対象 14 村が含まれるサバナ・イエグア・ダム上流域の持続的流域管理を国から委託されている。財団職員及び森林火災防止関係を担当している環境・自然資源省パドレ・ラス・カサス森林管理事務所の関係職員の流域管理に係わる技術および事業運営能力向上へのニーズは非常に高く、ターゲットグループの選定は適切であるとともに、ドミニカ共和国の環境分野の開発課題に対応する戦略としても適切だった。

プロジェクトの主な活動としては対象 4 村落に簡易灌漑施設を作り、住民の生計向上に資する見返りとして、焼畑をやめ、灌漑面積の 3 倍の植林を住民に求めるという手法をとった。そして、こうした活動の OJT を通して C/P の流域管理技術およびプロジェクト運営管理能力の向上を図ることを目的とした。住民の間で灌漑敷設への要求は非常に高く、アプローチとしても適切であった。

植林の必要性はいまや現地住民も理解しており、アグロフォレストリーの利用も国家および地域の要請に合致している。また、環境・自然資源省の地域森林管理事務所と提携した森林火災の予防・消火体制の強化は国家政策や地域のニーズに適合し、非常に適切であった。

4.1.2 有効性

以下の評価結果より、一部を除き、プロジェクトは概ね有効であると判断される。

本プロジェクトはアウトプット産出のための活動と、それにより達成されたアウトプットにより一部を除きプロジェクト目標をほぼ達成した。プロジェクト目標の指標で定義された C/P 職員 9 名（環境・自然資源省森林管理事務所員 1 名およびスール・フツーロ財団 8 名）は、プロジェクトを通じて流域管理に関する技術とプロジェクトを運営するための能力を向上させた。C/P および日本人専門家の評価によると、C/P 全員が簡易灌漑敷設以外の設定された項目について能力を向上させ、プロジェクト実施前ではできなかった、あるいは専門家の関与がある程度ないとできなかったことが、プロジェクト終了後には専門家のサポートなし、あるいは少ない関与でできるようになった。環境・自然資源省はスール・フツーロ財団が当該プロジェクトを通じて技術・運営能力を向上させたことを評価し、今後も本プロジェクトに係わる活動を継続するとしている。対象地住民の両機関に対する満足度も高まっている。

プロジェクト目標の達成は2年目以降の日本側とドミニカ共和国側の努力で、一定の成果が見られてきた。しかしながら、本プロジェクトにおいて多数を占めるスール・フツーロ財団のC/Pが、その他のプロジェクトとの兼任により当該プロジェクトに十分な時間をさけなかったり、簡易灌漑施設に係わるC/Pが交代あるいは一時期不在となったりしたことが有効性を減じる一因となった。さらに、度重なるハリケーンの影響（外部条件）で特に簡易灌漑事業が遅延したため、C/Pおよび住民にとっても経験の少ない乾季の灌漑営農指導（マーケティングを含む）が充分できなくなったことから、アウトプット2の発現に遅れをもたらし、それがプロジェクトの目標達成を阻害する要因となった。

4.1.3 効率性

以下の評価結果より、一部を除き、プロジェクトは概ね効率的に実施されている。

プロジェクト前半においては、専門家とドミニカ共和国側とのコミュニケーションと連携が不十分であったため、人員配置が適切なタイミングで行われず活動が効率的に行われない面があった。しかしながら、プロジェクト開始2年目には、両国側の運営改善にかかわる努力で状況は大幅に改善された。終了時評価時までには、中間評価で変更された活動は概ねスケジュールどおりに行われた。日本側の投入は、量、質、あるいは派遣のタイミングに関しては、専門家の常駐を望む意見もあったが概ね適切と判断される。しかし、簡易灌漑については当初想定していたローカル NGO の活用が FSF の意向により出来なくなったことと、十分な C/P の配置がなされなかったことにより、灌漑担当専門家活動の効率性が低下した。C/P の基礎能力は非常に高く、専門分野も灌漑分野を除き日本人専門家に対応してほぼ適切であったが、灌漑担当 C/P に関してはその設置規模からして2名の配置が必要であった。活動が多忙でOJTを中心としたものであり、座学が不足していた。これらが実現されていればより効率的な成果の達成が可能であったと思われる。

4.1.4 インパクト（予測）

評価結果より、以下のとおり、正のインパクトと負のインパクトの両方が予測される。

プロジェクト活動は他の支援組織の関心も呼び、副次効果として、森林消防隊のプロジェクト対象地域以外での結成に加え、FSFは既に新たなアグロフォレストリーデモファームの設置や簡易灌漑の導入および土壌保全研修所の改修といった関連支援取り付けを実現し流域内での事業の拡大を図っている。C/P および対象地域の住民からの聞き取りによれば、簡易灌漑敷設に伴い対象村落に組織された灌漑組合により、組合員は政府機関や銀行、あるいは NGO の支援を受けやすくなった。また、プロジェクトによる灌漑工事を目の当たりにして、個人で灌漑敷設を試みる農民も現れている。簡易灌漑事業やアグロフォレストリー参加農民は完全に焼畑を放棄しており、さらに森林火災防止に関する普及・啓発で、対象地区の小学校をターゲットに絵画コンクールを定期的に催し、地域住民間での植林・防災に対する認識を高める等の活動により、農民の森林保全、植林に対する動機付けは一層高まっており、今後ハリケーン等の予期できぬ大災害がなければ、上位目標は達成される見込みである。外部条件である自然災害以外に、上位目標の達成を阻害する要因として、簡易灌漑適地の農民は限られることから、同一村落や周辺地域で受益者に対する不満が懸念される。このため受益農民の中には、水源により近い高地の貧困度の高い住民への何らかの支援を要請する者

もいる。こうした状況を踏まえ、関係地域の住民を何らかの形で広くプロジェクトに巻き込んでいく活動の工夫が求められる。

4.1.5 自立発展性（見込み）

以下より、自立発展性はきわめて高く、FSF による住民への技術支援は継続される見込みである。

(1) 政治・行政面

現環境・自然資源省大臣は国家植林計画（the Plan Nacional Quisqueya Verde）の発案者であり、今後植林を全国的に、特にプロジェクト対象地域で強力に推し進めていく意向を表明している。国家植林計画推進のための資金を国内外から期待し、来年度の SEMARENA の植林予算も増加する事を期待している。この方針に従い、スール・フツーロ財団との協力関係を強化する意向である。

(2) 財務的側面

本プロジェクトでは、財団が簡易灌漑事業を持続的に展開できるように、プロジェクトで投入した灌漑の資材費相当分を受益メンバーが財団に返済することによって、新たな事業資金を確保するリボルビングの仕組みを導入した。財団はこれまでも独自にマイクロクレジット事業を実施しており、資金の継続的な管理、運用面に於いても信頼性、安定性は高い。他方、灌漑受益農民は、返済義務を負うこととなる。農民からの聞き取りによれば、これまでも住宅建設資金や教育資金等、同程度の借金と返済は経験しており、今回の負債も重荷ではないとのことであったが、金利等を含む返済条件の設定と回収については、農民に過度の負荷がかからないような配慮が必要である。

また、大統領令および協定合意書に従って環境・自然資源省はスール・フツーロ財団に今後9年間の予算措置を予定している。さらに、財団はサバナ・イエグア・ダム上流域の持続的流域管理事業の実施資金を国際機関や民間企業等からも積極的に調達しており、環境保全にかかわる世界の潮流や政府方針とあいまって、今後その予算は増加すると予想される。

(3) 組織的側面

スール・フツーロ財団は環境・自然資源省や農業省との強い繋がりを持ち、これらの省から必要に応じて技術者の出向を得ている。そのため、省庁との連携活動もよく調整され問題なく行うことができる。さらに、技術力を備えた C/P の安定雇用も財団方針であり、プロジェクトにより移転された技術の定着と効率的活用が見込まれるが、更なる展開を進めるためには、ニーズに合わせた技術職員の増員が必要である。

(4) 技術的側面

スール・フツロー財団のプロジェクトの多くはサバナ・イエグア・ダム上流域の持続的流域管理と関連性があり、C/P は様々なプロジェクト任務の兼任により、当プロジェクトで習得した能力を活用するとともに、更に業務の中でその能力を高めていくと見込まれる。ただし、市場戦略を踏まえた乾季の灌漑営農技術については経験が乏しいことから、自立発展性を確実なものとするためには更なる支援が必要である。

一方で、地域住民の技術・事業運営管理能力は下記のようにいまだ発展途上にあり、財団および環境・自然資源省の継続的支援が必要である。

a) 簡易灌漑施設の維持管理

灌漑農業組合は簡易灌漑施設の設置工事を通じて組織能力を向上させたが、今後は水利用管理能力、維持管理能力、財務能力、栽培技術力、資金調達力、生産物販売能力などをさらに備える必要がある。

b) 簡易灌漑農業技術

簡易灌漑の導入により市場を視野に入れた集約農業が可能となるが、住民にその経験は無く、栽培技術や市場戦略を含めた作付・出荷技術および農家経営についての指導が今後重要となる。

c) アグロフォレストリー

集約農業が実現すれば焼畑から定置農業へ移行するため、農地の土壌保全対策はさらに重要となる。アグロフォレストリーが定着するためには、住民に便益をもたらすと理解されることが不可欠である。現在はすでに能力ややる気の高い農民を選択してデモファームを整備し、コアとなる農民を育てつつ周辺の関心のある農民への自然波及を狙ったアプローチであるが、今後はデモファームでの OJT に、より多くの住民を積極的に巻き込み、その中からやる気のある人材を育てていくような、開かれた普及活動が求められる。

d) 植林

プロジェクトを通じて住民参加による植林事業に必要な合意形成プロセスは確立されつつあり、引き続き継続される見込みである。今後は大土地所有者からの植林用地の確保、樹種ニーズへの対応、啓発などを継続的に行うとともに、既存の植林地の保育指導も必要となる。

e) 森林火災防止活動

灌漑農業組合メンバーを中心とした森林火災消防団をはじめとする地域住民は、森林火災防止や住民参加による初期消火の重要性を認識しており、活動は継続的に行われると考えられる。しかしながら、定期的な講習・訓練活動によりその技術更新のための支援を続ける必要がある。

(5) プロジェクトの自立発展性に影響を与える要因

灌漑水を用いての集約農業経営から利益が生み出され、リボルビングファンドが返済され、他村へ簡易灌漑農業が導入されれば事業の継続性への大きな促進要因となる。一方で、プロジェクト期間中に被ったようなハリケーンをはじめとした自然災害が頻発すれば、事業の継続性は阻害される。

4.2 貢献・阻害要因の総合的検証

4.2.1 計画内容に関するもの

本案件の上位目標達成に必要な植林は、地域住民によってそれだけではインセンティブになりにくく、本プロジェクトにおいては、対象4村落に簡易灌漑施設を作り、住民の生計向上に資する見返りとして、焼畑をやめ、灌漑面積の3倍の植林を住民に求めるという手法をとった。住民の間で灌漑敷設への要求は非常に高いため、本手法を採用したアプローチは適切であり、貢献要因と言える。また、本プロジェクトでは、財団が簡易灌漑事業を持続的に展開できるように、プロジェクトで投入した灌漑の資材費相当分を受益メンバーが財団に返済することによって、新たな事業資金を確保する「リボルビングファンド」の仕組みを導入した。財団はこれまでも独自にマイクロクレジット事業を実施しており、資金の継続的な管理、運用面に於いても信頼性、安定性は高く、このような仕組みは財務面の自立発展性の観点からは有効な一手段といえる。ただ、「リボルビングファンド」を継続的に展開するには、灌漑施設が導入された村落メンバーが灌漑水を利用した灌漑農業により収入を増やし、リボルビングファンドの条件に従って、財団へ返済していくことが前提条件となる。灌漑農業関連（アウトプット2の一部）に関しては、まだ本格的な営農指導まで至っておらず、今後の重要な課題となる。

4.2.2 実施プロセスに関するもの

プロジェクト前半においては、専門家とドミニカ共和国側とのコミュニケーションと連携が不十分であったため、人員配置が適切なタイミングで行われず活動が効率的に行われない面があった。しかしながら、プロジェクト開始2年目には、週例会議の実施等、両国側の運営改善にかかわる努力で状況は大幅に改善された。終了時評価時までには、中間評価で変更された活動は概ねスケジュールどおりに行われた。

一方、阻害要因としては、財団側の事情で特に灌漑農業分野のC/Pが交代あるいは一時期不在となったり、また灌漑施設の設置に関し、当初想定していたローカルNGOの活用がFSFの意向により出来なくなったことが原因で、灌漑農業に係る技術指導が効果的に実施できなかった。さらに、度重なるハリケーンの影響（外部条件）で特に簡易灌漑事業が遅延したため、C/Pおよび住民にとっても経験の少ない乾季の灌漑営農指導（マーケティングを含む）が充分できなくなったことから、アウトプット2の発現に遅れをもたらし、それがプロジェクトの目標達成を阻害する要因となった。

4.3 結論

本プロジェクトは、国家レベルの政策および日本のODA政策、対象地域のニーズの観点から妥当性が極めて高い。またプロジェクト・デザインの観点から、実施C/P機関であるス

ール・フツロー財団は、サバナ・イエグア・ダム上流域の持続的流域管理を国から委託された NGO であり、プロジェクトの継続性からも、ターゲットグループの選定は適切であった。しかし、有効性については、度重なるハリケーンの影響（外部条件）で特に簡易灌漑事業が遅延したため、C/P および住民にとっても経験の少ない乾季の灌漑営農指導（マーケティングを含む）が充分できなくなったことから、アウトプット 2 の発現に遅れをもたらし、それがプロジェクトの目標達成を阻害する要因となった。

効率性については、プロジェクト前半においては、専門家とドミニカ共和国側とのコミュニケーションと連携が不十分であったため、人員配置が適切なタイミングで行われず活動が効率的に行われない面があった。しかしながら、プロジェクト開始 2 年目以降の、両国側の運営改善にかかわる努力で状況は大幅に改善され、効率性は確保された。

インパクトについては、すでに FSF が流域内でプロジェクトの経験を生かした新たな活動を展開し始めたり、住民の環境保全に対する意識が向上するなど正のインパクトが発現している。

また、環境・自然資源省及び FSF の自立発展性については、政策面、財政面、技術面において確保されており、FSF が技術職員の増員に更に努めるのであれば、自立発展性は極めて高いと考える。

第5章 提言・教訓

5.1 提言

これまでの評価結果を踏まえ、評価チームはプロジェクト目標を確実に達成すべく、以下の提言を行う。

5.1.1 プロジェクト終了までの提言

(1) 簡易灌漑農業の実施

簡易灌漑施設を導入した4村落において、灌漑の維持管理能力強化および市場戦略を含めた灌漑営農技術習得のため、乾季における簡易灌漑農業を実施すること。このために、アウトプット2の当該部分の活動について1年間の延長を行い、この間の乾季2回の灌漑営農指導を通じてC/Pの能力を強化すること。

(2) 人員の増員

FSFはC/P、特に基礎的技能を有した簡易灌漑農業分野の職員を速やかに増員すること。

(3) リボルビングファンド

JICAは4村落の簡易灌漑事業資材費として合計10,027,000ペソを支出した。この経費は今後、各灌漑受益者がFSFとの契約に基づき利子を加えて全額FSFに返済される。

このため、FSFは本資金を計画的、効果的に運用するため、プロジェクト終了までに今後10年間のリボルビングファンド回収計画と回収資金による新たな簡易灌漑事業の実施計画案を策定し、FSFとJICA事務所の間で、「リボルビング資金の活用に関する覚書」を取り交わすこと。

(4) 灌漑施設の安全管理

Las Lagunasに設置した貯水池の周囲に、水難事故を防止するための防護柵や看板を早急に設置すること。

(5) アグロフォレストリー

アグロフォレストリーについては、特に土壌浸食を防止させる手法をより積極的に取り入れること。

5.1.2 プロジェクト終了後への提言

(1) 簡易灌漑農業

今後も継続的に灌漑農業を展開していくためには、灌漑農業組合のメンバーによる灌漑施設の維持管理が必要である。そのためには、財団は灌漑メンバーに対し、灌漑水の利用管理能力や灌漑施設の維持管理能力、財務能力、栽培技術力、資金調達力、農産物販売能力等の向上を目指した指導を行うこと。

(2) アグロフォレストリー

アグロフォレストリーが定着し、より多くの農民に裨益するように、デモファームの拡大に加え、普及啓発の方法を検討すること。

(3) 植林

植林事業に関する住民との合意形成プロセスを継承しつつ、今後も継続的に植林が実施されるために、大土地所有者を巻き込んだ植林用地の確保と植林ニーズへの対応、既存の植林地の保育指導を行うこと。

(4) 森林火災防止活動

住民の森林火災防止のための技術が更新されるよう、定期的な講習や訓練活動を行うこと。また森林火災防止は流域全体で取り組む活動であるため、プロジェクト対象村落以外へ活動を拡大すること。

(5) モニタリング

上記(1)～(4)の各事業の状況や植林の状況を把握するために適切な頻度でモニタリングを行うこと。

5.1.3 供与機材の維持管理

環境・自然資源省と FSF はそれぞれ、日本側から供与された機材を適切に維持管理し、その有効活用を図ること。

5.1.4 環境・自然資源省のFSFへの支援

環境・自然資源省は引き続き政策面、資金配賦や人的支援等で、FSF の活動を支援すること。

5.1.5 リボリングファンド

FSF は JICA との「リボリング資金の活用に関する覚書」に基づき、適切な資金回収と灌漑事業への再投資を継続的に行うこと。

5.1.6 更なる予算と人員の確保を目指した他機関との連携

FSF は流域におけるプロジェクトの活動を展開するために、更なる予算と人員の確保に努めること。そのためには既に実施しているように、他ドナーや G E F 等の国際機関、ケロッグ財団等の民間企業、ローカル NGO 等の他の関係機関からの支援取り付けや連携を強化するとともに、各事業が流域全体の保全のために、効果的、有機的に結びつくように配慮すること。

5.2 教訓

5.2.1 プロジェクト目標と活動の関連性の強化

プロジェクト目標が C/P の流域管理に関する CD であり、そのためのツールとしてアグロフォレストリーや簡易灌漑農業が導入され、さらにそれをインセンティブとして植林や森林火災防止活動を行った。CD は OJT を中心に行ない、概ね目標値に近い達成度であったが、各専門技術の習得には講義形式の理論に関する研修がより多く行われていればより効率的だったのではないかと思われる。

5.2.2 インセンティブ事業の手段としての適切性

対象村落において、住民の主体性を引き出しながら簡易灌漑農業やアグロフォレストリーの導入をインセンティブとして植林活動や焼畑放棄を合意形成するアプローチは、地域住民による自然資源管理の具体的な手法として効果的な戦略である。

5.2.3 国際協力プロジェクトでのコミュニケーションと相互理解の重要性

C/P 側と日本人専門家側で、構想、進め方、灌漑やアグロフォレストリーの規模、実施方法等、多くの面で意見の相違があった。特に、立ち上げ時には C/P と十分協議し実態調査を行い共通認識の上に基本構想を固めることが重要である。

5.2.4 参加型プロジェクトにおける合意形成、オーナーシップの重要性

合意形成はされていても、合意後住民からは様々な要求が行われたり、参加住民が少なかったりした。これは、住民との合意形成、参加意識・オーナーシップが醸成していなかったことが原因で、それらに時間をより注ぐ必要があった。また、意識の醸成は、多くの投入をしたからと言って得られるものでもなく、ある程度の時間が必要である。従って、プロジェクトスケジュールには柔軟性があることが望ましい。

5.2.5 適切な物質的援助の重要性

村落住民を対象とした他のプロジェクトにおいて、過剰な物質的援助を行った結果、住民の多くは援助慣れをしていたが、適正な物質的援助を行った本プロジェクトを通じ、対象住民の主体性が醸成された。以上の経験より、住民に対する過剰な物質的援助は、自立発展性に負の影響を及ぼすと言え、プロジェクトデザインの段階では、住民自身が自らの問題に気づき、問題を解決する能力の向上を視野に入れつつ、また発展の方向性やそのためのプロセスを考えることが重要である。

付 属 資 料

1. ミニッツ（協議議事録）（英文・西文）
2. 評価グリッド（和文）
3. CD(Capacity Development) シートおよび集計結果
4. 村落視察時の住民からのヒアリング結果
5. PDM (Project Design Matrix) Version 2
6. 植林にかかる環境・自然資源省とスール・フツーロ財団との間の協力合意書
7. スール・フツーロ財団と灌漑メンバー間との契約書（Naranjos 村落）
8. 灌漑生産組合の規定(Periquito 村落)

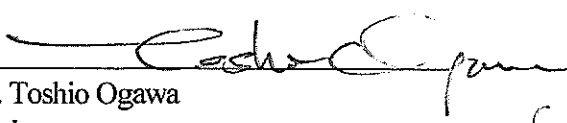
**MINUTES OF MEETING
BETWEEN THE JAPANESE TERMINAL EVALUATION TEAM
OF THE JAPAN INTERNATIONAL COOPERATION AGENCY
AND THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF THE DOMINICAN
REPUBLIC ON JAPANESE TECHNICAL COOPERATION
FOR
THE SUSTAINABLE WATERSHED MANAGEMENT PROJECT IN THE UPPER AREA
OF THE SABANA YEGUA DAM IN THE DOMINICAN REPUBLIC**

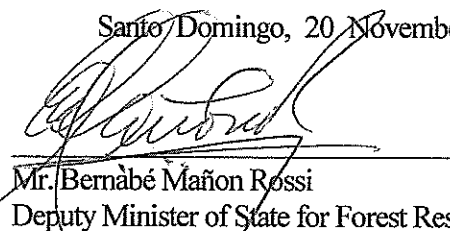
The Japanese Terminal Evaluation Team (hereinafter referred to as 'the Japanese Team') organized by the Japan International Cooperation Agency (hereinafter referred to as 'JICA'), headed by Mr. Toshio Ogawa, visited the Dominican Republic from 3 November to 20 November, 2008, for the purpose of conducting a terminal evaluation of the Sustainable Watershed Management Project in the upper area of the Sabana Yegua Dam (hereinafter referred to as "the Project").

This evaluation was conducted by forming the Joint Evaluation Team (hereinafter referred to as "the Team") between the Japanese Team and the Dominican Terminal Evaluation Team. As a result of a series of surveys, site visits and discussions, the Team agreed to forward to respective authorities an Evaluation Report, which is referred to in the attached here to.

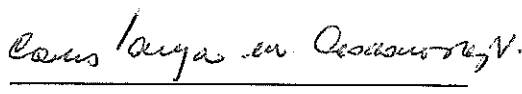
Done in duplicate in Spanish and English, each text is equally authentic. In case of any divergence of interpretation, the English text shall prevail.

Santo Domingo, 20 November, 2008


Mr. Toshio Ogawa
Leader
Japanese Terminal Evaluation Team
Japan International Cooperation Agency
Japan


Mr. Bernabé Mañón Rossi
Deputy Minister of State for Forest Resources.
Ministry of State of Environment and Natural
Resources


Ms. América Bastidas
Subsecretary of State for International Cooperation
Secretariat of State of Economy, Planning and
Development
Dominican Republic


Ms. Constanza Casasnovas
Executive Director
Sur Futuro Foundation

**REPORT ON THE JOINT EVALUATION
OF
THE SUSTAINABLE WATERSHED MANAGEMENT PROJECT
IN THE UPPER AREA OF THE SABANA YEGUA DAM**

1. Introduction

The Sustainable Watershed Management Project in the Upper Area of the Sabana Yegua Dam (hereinafter referred to as “the Project”) started in April 2006, and Japan International Cooperation Agency (hereinafter referred to as “JICA”) will cooperate until March 2009, with Ministry of Environment and Natural Resources (hereinafter referred to as ‘SEMARENA’) and Sur Futuro Foundation (hereinafter referred to as ‘FSF’). Four (4) months prior to the Project completion, the Joint Evaluation Team (hereinafter referred to as “the Team”) was formed for this Terminal evaluation.

1-1.Objectives of the Evaluation

The evaluation activities were performed with the objectives as follows:

- (1) to conduct a comprehensive evaluation of the achievements of the Project in accordance with the original plan described in the Record of Discussion, signed on Nov. 30, 2005 (hereinafter referred to as “R/D”) and the revised Project Design Matrix (PDM) in the Minute of Meetings on Aug. 1, 2007;
- (2) to verify the achievements at the completion of the Project from the viewpoint of implementation process and five (5) evaluation criteria (explained later in this document); and
- (3) to make recommendations and lessons learnt on the Project for future project activities.

1-2. Members of the Joint Evaluation Team

The Team consists of the following members.

(1) Japanese members

(a) Toshio OGAWA (Leader)

Deputy Director General, Forestry and Nature Conservation Group, Global Environment
Department, JICA

(b) Takao NAGUMO (Planning and Evaluation)

Program Officer, Forestry and Nature Conservation Team 2, Global Environment
Department, JICA

(c) Kiyoko HITSUDA (Evaluation Analysis)
Consultant, Japan Development Service Inc.

(2) Dominican Republic members

- (a) Ramón Díaz Beard;
Technical Coordinator, Vice-secretary of Forest Resource Department, SEMARENA
- (b) Teresa Disla
Assistant of Vice-secretary of Forest Resource Department, SEMARENA
- (c) Carlos Silié
Project Analyst, Vice-secretary of Planning and Development Deptment, SEMARENA
- (d) Sol Teresa Paredes
Technical Stuff of National Program of Environmental Services, SEMARENA
- (e) Alberto Roa
Director of the Planning Section, FSF
- (f) Ramón Santana
Director of Natural Resources and Agriculture, FSF
- (g) Pablo Herasme
Technical Stuff of Coopetation with Asian Countries, Vice-Secretary of International Cooperation, Ministry of Economy, Planning, and Development (SEEPyD)

The detailed schedule of the terminal evaluation study is attached as Annex 11.

2. Outline of the Project

In the 1940's, some 70% of the national land of the Dominican Republic was covered by forests. According to the Forest Resource Survey by the SEMARENA, the forest coverage had dropped to as low as 14% during the 1980s, and 28% in 1997, due to commercial felling, development of ranches and farmland and forest fires, although it slightly recovered to 32% in 2003. Also in the upper area of the Sabana Yegua Dam, steep slopes have been converted to farmland by poor farmers. The resulting progress of soil erosion has been causing the severe deposition of sediment in the dam. The participatory watershed management project aimed at stopping watershed devastation because of poverty and facilitating forest restoration and soil conservation compatible with the local as well as national needs. Under such condition, the technical cooperation project, the Sustainable Watershed Management Project in the Upper Area of the Sabana Yegua Dam (hereinafter referred to as 'the

Project'), has been implemented since April 2006, based on the R/D including the Project Master Plan.

In July 2007, JICA's Consultation Study Team reviewed the achievement of the project activities and made a recommendation on revision of PDM, then the revised PDM (Annex 1, hereinafter referred to as 'PDM Version 2') was finally agreed with definitions of terms and indicators in the PDM and Terms of References (hereinafter referred to as 'TOR') of each organizations in July 2007.

As indicated in PDM version 2, the Project purpose is 'The staff of the FSF and the SEMARENA will improve their technical capacity in Watershed Management and administrative capacity in project management'. Furthermore, the overall goal of the Project is 'The forest resources in the Project Area will be handled suitably by the villagers using techniques that they assimilate through the technical support provided by the staff of FSF and SEMARENA'.

The outputs of the Project confirmed in PDM version 2 are:

- (1) Environmental, natural resource, and socio-economic baseline data of the Project Area will be organized,
- (2) Agroforestry and handy irrigation agriculture will be introduced suitably by the staff of FSF and SEMARENA with a view to enhancing their awareness of forest conservation issues in general according to the Agroforestry and Handy irrigation agriculture Annual Plan formulated in the Project; and
- (3) It will be possible for the staff of FSF and SEMARENA to formulate a reforestation plan that addresses the needs of the villagers and to carry out activities and evaluation.

3. Methodology of Evaluation

3-1. Process and Methodology of Evaluation

The Terminal evaluation was carried out by the Team consisting of both from Japanese and Dominican Republic sides whose members can be found in aforementioned "1-2. Members of the Joint Evaluation Team". In the first step of the evaluation, the Team reviewed the progress of the activities, the achievements of the Outputs, and the probability to attain the Project Purpose and the Overall Goal of the Project with reference to PDM version 2 (Annex 1).

Simultaneously, the present situation was analyzed and evaluated based on the five (5) criteria for evaluation, i.e. "Relevance", "Effectiveness", "Efficiency", "Impact", and "Sustainability", which are found in 3-2 below. In the process, achievement grid and evaluation grid, which are found in

Annex 2 and 3 respectively, were filled in with the information collected through review of the Project reports and other related documents, interviews with the counterpart personnel (hereinafter referred to as 'C/Ps'), JICA experts and officers in charge from C/P organizations, and villagers in the target area visited during site observation.

3-2. Five (5) Criteria of Evaluation for Analysis

(1) Relevance:

Relevance of the Project is reviewed as the validity of the Project purpose and overall goal in connection with the policies of Dominican Republic, especially on rural development and environment conservation, the needs of the C/P organizations, and needs of the local communities. Simultaneously, correlation with JICA policies was also confirmed in the process.

(2) Effectiveness:

Effectiveness is assessed by evaluating the extent to which the Project has achieved or will achieve the purpose as a result of attaining outputs, by the end of the Project.

(3) Efficiency:

Efficiency of the Project implementation is analyzed by reviewing correlation between inputs and outputs. In the process, timing, quality and quantity of inputs, linkage and /or duplication between the Project and those of other donor organizations were reviewed.

(4) Impact:

Impacts of the Project activities are identified by focusing both on positive and/or negative, direct and indirect impacts caused or to be caused by the Project, which had not been originally expected in the Project plan.

(5) Sustainability:

Sustainability of the Project is evaluated on political, administrative, organizational, financial, and technical aspects with consideration of the extent to which the achievement of the Project will be sustained and expanded after the assistance period.



4. Project Performance and Implementation Process

4-1. Accomplishment of the Project

Accomplishment of the Project was measured in terms of inputs, activities, outputs, the Project purpose, and Overall goal. The results are shown in **Annex 2 Achievement Grid**.

4-2. Inputs

(1) Japanese side

(a) Experts

Forty six point eighty nine (46.89) man-months of experts in total, as of November 2008, have been dispatched in the following fields:

- Chief advisor/watershed management/forest fires
- Agroforestry
- Participatory development
- Irrigated agriculture
- GIS
- Coordination of project activities

The detailed list of Japanese experts is contained in **Annex 4**.

(b) Provision of machinery and equipment

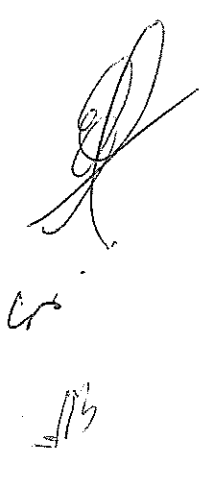
Machinery and equipment listed in Annex 5 have been provided as major item as of November 2008.

(c) Training of Dominican Republic counterpart personnel

Five (5) of Dominican Republic C/Ps have participated in short-term training in Japan, and three (3) in the third countries as listed in **Annex 6**. In total two training courses were held in the field of the sustainable watershed management and the forest management by participatory development method.

(d) Operational cost of the Project

The Japanese side has provided approximately ¥69,820,000 (except employment cost for Japanese experts) for the operation of the Project as of the end of March 2009, as in **Annex 8**.



(2) Dominican Republic side

(a) Assignment of C/Ps

Total number of nine (9) counterpart personnel, target for capacity development evaluation, are assigned for the Project as of November 2008. List of the C/Ps is shown in **Annex 7**.

(b) Budgetary allocation (Local cost)

Dominican Republic side (FSF and SEMARENA) has allocated approximately RD\$ 3,249,663 for the Project by the end of November 2008, as in **Annex 8**.

(c) Provision of land, building and facilities

The FSF provided the project office located in the municipality of Padre Las Casas, and its maintenance cost. In addition, facilities and equipment necessary for the Project activities were provided by Dominican Republic side.

4-3. Activities

Activities consist of twenty (20) subjects as indicated in the PDM, Version 2. The progress of the activities can be found in **Annex 2 Achievement Grid**:

4-4. Outputs

Accomplishment of each output is as follows. Details are described in **Annex 2 Achievement Grid**:

Output 1: Environmental, natural resource, and socio-economic baseline data of the Project Area will be organized.
Verifiable Indicators: Prepare a report on environmental, natural resources and socioeconomic conditions of the communities involved in the project.

Following the baseline survey, a report on the natural environment and socioeconomic conditions of the target villages was prepared. Therefore, the indicator for Output 1 is completely achieved at the time of terminal evaluation.

Output 2:

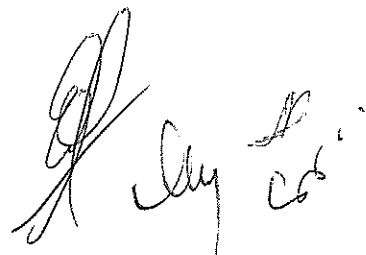
Agroforestry and handy irrigation agriculture will be introduced suitably by the staff of FSF and SEMARENA with a view to enhancing their awareness of forest conservation issues in general according to the Agroforestry and Handy irrigation agriculture Annual Plan formulated in the Project.

Verifiable Indicators:

- 2-1. The forest area in the communities that adopt the handy irrigation system will increase by more than 110 ha.
- 2-2. The number of farmers who practice slash-and-burn agriculture will be reduced by more than 150 families.
- 2-3. Agroforestry will be practiced on more than 50 ha.
- 2-4. Existing technical manuals of agroforestry will be revised.

The area of 110 ha under Indicator 2-1 is the planting area corresponding to the assumed number of villages which would introduce the handy irrigation system after the commencement of the Project when the unofficial discussions took place within the Project. Based on the subsequent confirmation by the Consultation Study Team in August, 2007 that the target number of villages was four and the necessary correction of the target area in view of the delay of the irrigation project because of hurricanes, the planned area for planting by the end of March, 2009, was 25 ha. The actual outcome of 37 ha exceeded the target. The project delay due to a series of hurricanes delayed the channelling of water into the irrigation system. At the time of evaluation, handy irrigation agriculture had only commenced in the village of Derrumbado. It is likely that Activity 2-10 "to provide technical assistance on handy irrigation agriculture utilising the revolving fund" and Activity 2-12 "to analyse the impacts of the introduction of agroforestry and handy irrigation agriculture on forest conservation" will not have been sufficiently implemented by the time of project completion and this likelihood must be noted.

The farmers subject to handy irrigation agriculture have almost completely abandoned slash and burn agriculture, achieving Indicator 2-2. The area of newly introduced agroforestry (Indicator 2-3) was 32 ha, which was 64% of the target, due to the delayed start of the relevant activity and other reasons. Nevertheless, the C/Ps have already mastered the required skills and it is inferred that the target can be achieved in due course with the use of the agroforestry technical manual. In regard to Indicator 2-4, the draft revision of the existing agroforestry technical manual has been prepared and will be finalised by the end of March, 2009.

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Based on the above observations, most of the activities designed to achieve Output 2 under the Project have been progressing as planned. Because of the project delay due to hurricanes, however, sufficient guidance on farming associated with irrigation will not have been provided by the time of project completion. Consequently, it will be difficult to meet the planned output of “the suitable introduction of handy irrigation agriculture by staff of the FSF” which forms part of Output 2 and the full achievement of this output is not assured.

Output 3:

It will be possible for the staff of FSF and SEMARENA to formulate a reforestation plan that addresses the needs of the villagers and to carry out activities and evaluation.

Verifiable Indicators:

- 3-1. More than 110 ha will be reforested under the Reforestation Annual Plan.
- 3-2. More than 175,000 fruit tree seedlings will be produced under the Seedling Production Plan.
- 3-3. Reforested Area Inventory will be prepared and updated using GIS.

As for Indicator 3-1, although the planted area fell short of the indicator level as mentioned in the achievement result of Indicator 2-1, the reforestation system has been firmly established at the FSF and SEMARENA with a reliable prospect of its continuation in the coming years. The Project completely achieved Indicator 3-2 and 3-3.

Output 4:

The system for forest fire prevention and control in the Project Area will be strengthened.

Verifiable Indicators:

- 4-1. More than 4 forest fire control units made up of local residents will be formed.
- 4-2. The action number of forest fire control units will increase by 40 % (compared with the number during the first year of the Project).

The Project achieved all indicators. In the four villages where handy irrigation agriculture was introduced, a voluntary forest fire control unit has been formed and the unit members have now abandoned slash and burn agriculture. Moreover, the unit has been formed in another village involved in the Project, too, though installation of irrigation system is not planned there. Although reliable statistical data of each community are not available (the SEMARNA has been collecting the data by province), all personnel related (the SEMARENA officers in charge, the C/Ps of FSF, villagers in the target areas) believe that the number of forest fires in the targeted fourteen (14)

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villages has definitely decreased. In addition to the seminar and training under the Project, the SEMARENA and the FSF conducted forest fire prevention seminars and training in various villages each year based on the National Fire Prevention Program, and many members of the volunteer units participated. These seminars and training are expected to continue in the coming years.

4-5. Project purpose

Accomplishments of the Project purpose are as follows:

Project Purpose: The staff of FSF and SEMARENA will improve their technical capacity in Watershed Management and administrative capacity in project management.
Verifiable Indicators: 1. The technical capacities in watershed management and the project administration capacities of the technicians working in the FSF and the SEMARENA will be improved by 20 % (compared with their levels before project execution). 2. The satisfaction of local residents with the services offered by the technicians of the FSF and the SEMARENA will increase.

In regard to Indicator 1, data on the CD sheet*, which is designed to clarify the situation of CD relating to the project management capacity and watershed management skills, show that the general capacity level has improved by 27% from 67% at the start of the Project to 94% in October, 2008, achieving the target for this indicator. By category, the evaluation result for almost all items has improved from the C or B rank to the A rank. In the category of “the introduction of handy irrigation”, however, seven items are ranked A and seven items are ranked B at the time of the evaluation in October, 2008, suggesting insufficient CD achievement in this category. This probably reflects the facts that the assignment of C/Ps to this task was insufficient and that opportunities to actually implement irrigated farming were lost because the water conveyance to the irrigation channels was delayed due to hurricanes.

In regard to Indicator 2, villagers benefiting from the Project throughout the Project Area are found to be almost 100% satisfied with the activities of the FSF and the forest office. The exception to this general picture is concern regarding new irrigated farming (including the marketing strategy) among members of the irrigation cooperatives. This has led to a strong demand for continued assistance. As described in connection with Indicator 1 above, irrigated farming has not yet been implemented and the low level of satisfaction is judged to be natural.

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Based on the above evaluation results, the purpose and outputs of the Project will have been successfully completed when it ends except the part relating to irrigated farming (part of Output 2). However, whether or not the handy irrigation system introduced under the Project will actually contribute to forest conservation significantly depends on the outcome of irrigated farming. Therefore, the successful development of irrigated farming poses a major challenge to achieve the project purpose. As it is inferred that the necessary transfer of skills relating to irrigated farming will have been completed through the practice farming in two dry seasons, extension of the assistance for one year should enable the achievement of the project purpose.

* The CD sheet is a tool designed to determine the level of CD progress by means of classifying the capacities required for a C/P to implement the Project into “knowledge”, “skill” and “attitude” and the grading of each aspect from A to C. Grading is primarily conducted by the leader of the Japanese team of experts and the Project Coordinator on the Dominican Republic side at the end of each year.

4-6. Overall Goal

Accomplishments of the Overall goal are as follows:

Overall goal: The forest resources in the Project Area will be handled suitably by the villagers using techniques they assimilate through the technical support provided by the staff of FSF and SEMARENA.
Verifiable Indicators: By 2014, the percentage of the forest area in the Project Area will increase by 3 %.

Handy irrigation agriculture and agroforestry were introduced at four villages and 11 villages respectively (of which two villages were also involved in the handy irrigation agriculture) under the Project, and the FSF has been supporting them by other projects with the similar objectives. The Baseline Survey (2006) established that forests cover 1,912 ha of the overall land area of 12,272 ha in the Project Area. The newly planted area of 68 ha (1,081 tareas) under the Project and by the FSF under other donors means an increase of the forest area of 3.6% within the Project Area. It is still necessary to manage the forest and to monitor the variations of the forest area by the SEMARENA and the FSF (it is currently difficult because even comparison between the satellite images of two different time points cannot be expected to produce tangible data as planted trees and it only becomes recognisable when they are more than 10 years old).

The villagers in the Project Area have been highly recognized the importance of reforestation, and newly assigned Minister of the SEMARENA designated reforestation activities as a Priority Issue providing solid preparation including budget required. As the FSF is operating reforestation throughout the entire upper area of the Sabana Yegua Dam with the assistance of donors (3 projects other than JICA's are under operation). Therefore, it is likely that the super goal will be successfully achieved.

5. Results of Evaluation

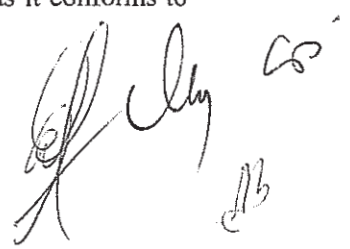
Details are described in Annex 3 Terminal Evaluation Grid of the Project.

5-1. Relevance

Sustainable watershed management in the upper area of Sabana Yegua Dam where the devastation of forests is progressing due to slash and burn agriculture and damage caused by a succession of hurricanes is a national priority. The Project, which is part of the required response to this priority, can be described as a project which embodies a long-term perspective and strategy for forest policies in the Dominican Republic.

Moreover, the forest restoration and poverty reduction measures conform to Japan's aid policy from the viewpoint of "environmental conservation" for the former and "human security" for the latter. The FSF which is designated as a C/P organization of the Project has been entrusted to conduct sustainable watershed management in the upper area of the Sabana Yegua Dam by the SEMARENA. The target groups was also adequately decided since there is a very strong need among the FSF staff as well as staff of the Padre Las Casas Forest Office of the SEMARENA who are in charge of forest fire prevention, for improvement of the technical and administration capacity to efficiently conduct watershed management. Furthermore, the Project is compatible with the environmental and development policies of the recipient country.

The main approach of the Project is to construct handy irrigation facilities in four (4) target villages with the request to villagers planting trees by three times the irrigated area while abandoning slash and burn agriculture in return for improvement of their livelihood due to irrigation. Through OJT during these activities, the intention is to improve the watershed management and project management capacity of the C/Ps. As the demand among villagers for an irrigation system is very strong, the employed approach is judged to be appropriate. Local people now understand the necessity for reforestation while the introduction of agroforestry matches the national and local needs. Moreover, strengthening of the forest fire prevention and extinguishing system in collaboration with the forest office of the SEMARENA has been very appropriate as it conforms to the national policy as well as local need.

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5-2. Efficiency

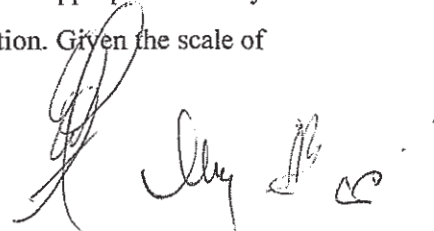
The intended outputs of the Project have been virtually achieved as the activities designed to produce certain outputs have actually produced the intended outputs except in a few cases. Nine C/Ps (one from the forest office of the SEMARENA and eight from the FSF) have improved their watershed management and project management capacity as intended. According to their self-evaluation by C/Ps and evaluation made by Japanese experts before and after the Project, almost all of them improved their capacity for all items. At the time of terminal evaluation, they can do the activities by themselves or with little support by Japanese experts. The SEMARENA values the fact that the FSF is now equipped with better technical and administrative capacity for the Project and will continue the Project or similar projects. The level of satisfaction among local residents with the services offered by the FSF and the SEMARENA has increased.

Through the conscious efforts of both countries from the second year onwards, the purpose of the Project has been satisfactorily achieved. However, the effectiveness of the Project has been somewhat reduced because of the insufficient time devoted to the Project by the C/Ps from the FSF due to their concurrent involvement in other projects and also because of the transfer and temporary absence of the C/P in charge of the construction of the handy irrigation facilities. The delay of the project activities, particularly the work to install the handy irrigation facilities, due to hurricanes (an external condition) meant that the guidance on irrigated agriculture in the dry season, which is an unfamiliar farming practice for both the C/Ps and villagers, could not be fully provided, delaying the successful emergence of Output 2. In turn, this has hampered the successful achievement of the purpose of the Project.

5-3. Effectiveness

During the early period of the Project, the insufficient communication and collaboration between the Japanese experts and the Dominican Republic side meant that the timing of the personnel deployment was not necessarily ideal, resulting in the low efficiency of various activities. In the second year of the Project, however, the efforts of both countries substantially improved the situation. It is expected that the activities for which the implementation schedule was rearranged at the interim evaluation will have been completed by the terminal evaluation as scheduled. The Japanese inputs have generally been adequate in terms of the quantity, quality and timing. The efficiency of the expert has been lower than expected in regard to handy irrigation, partly because of the insufficient assignment of the C/P and partly because of the withdrawal of the original plan to use a local NGO to honour the intention of the FSF.

The C/Ps have a very high level of basic capacity. Their specialist fields are appropriate as they correspond to those of the Japanese experts except in the field of handy irrigation. Given the scale of



the facilities to be installed, two C/Ps should have been assigned to the field of irrigation. The training of the C/Ps has mainly been in the form of OJT because of their busy work schedule, and more classroom teaching would have been preferable. The intended outputs would have been more efficiently achieved if these shortcomings did not exist.

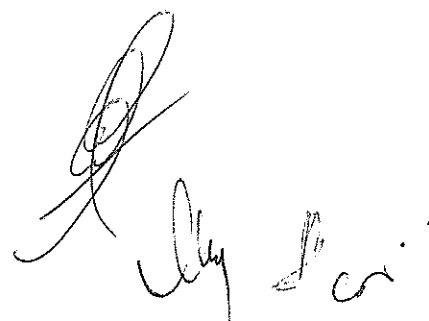
5-4. Impacts

The activities under the Project are generating strong interest on the part of other aid organizations. The FSF has already secured some pledges for assistance, including the introduction of new agroforestry demonstration farms, introduction of the handy irrigation system and refurbishment of the soil conservation training centre, and is planning to extend the Project throughout the watershed. According to the results of interviews with the C/Ps and villagers, the establishment of irrigation cooperatives in the target villages after the installation of the handy irrigation facilities has made it easier for cooperative members to receive assistance from the government, banks and NGOs. Some farmers have even attempted to introduce their own irrigation system after witnessing the irrigation work under the Project. The villagers participating in the handy irrigation agriculture project or the agroforestry project have completely abandoned slash and burn agriculture. The motivation of farmers to conserve forests and to plant trees has been strongly enhanced through activities, including a painting contest for local primary school pupils, designed to raise their awareness of the need for reforestation and forest fire prevention. There is a good prospect of achieving the overall goal provided that no large unpredictable disaster due to a hurricane or something else strikes the area.

Apart from natural disasters which are external conditions, there is concern that local discontent of the residents in the target villages and neighbouring villages could constitute a factor which hampers the achievement of the overall goal because of the limited number of farmers who farm land which is suitable for handy irrigation agriculture. For this reason, some of the benefiting farmers have made a request for some type of assistance for poorer inhabitants of the highland near the headwater area. In view of this circumstance, an activity or activities which would involve broader inhabitants of the Project Area is desirable.

5-5. Sustainability

As described below, the sustainability of the Project is quite high and the FSF is expected to continue to provide technical support for local residents.

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(1) Political/administrative aspect

The newly appointed Minister for the SEMARENA is the original proposer of the National Reforestation Plan (Plan Quisqueya Verde) and he has expressed his intention of energetically promoting reforestation in the coming years, especially in the Project Area. The SEMARENA intends to obtain the national and international financial support for further implementation of the National Reforestation Plan, and expects an increase of the next year budget of the SEMARENA. In accordance with such publicly expressed commitment, there is every chance that the FSF, which has been involved in many reforestation projects, will be increasingly used by the government.

(2) Financial Aspect

The mechanism of a revolving fund has been introduced under the Project so that the FSF can continually implement the handy irrigation project. This mechanism means that the benefiting members of the irrigation cooperatives repay an amount equivalent to the cost of the equipment and material inputs of the Project to the FSF to provide funding for new work. As the FSF has already implemented its own micro-credit project, its reliability and stability in terms of continual fund management are very good.

Meanwhile, the farmers benefiting from the new handy irrigation facilities are liable for repayment. According to the results of interviews with farmers, they have experienced a similar level of borrowing and subsequent repayment in the form of housing loans and/or education loans and the forthcoming debt associated with the handy irrigation system will not pose a heavy burden. Nevertheless, careful consideration should be given to the repayment conditions, including the interest rate, to ensure steady repayment without causing an excessive burden for farmers.

Budget allocation to the FSF by the government is made in accordance with the relevant Presidential Decree and the agreement for coming nine (9) years. Moreover, the FSF has been actively raising funds for sustainable watershed management in the upper area of Sabana Yegua Dam from international organizations and private enterprises. The overall budget size for this work is expected to steadily increase in the coming years given the global trend of environmental conservation and relevant government policies.

(3) Organizational Aspect

The FSF has a strong relationship with the SEMARENA and the Ministry of Agriculture and has been able to secure specially assigned staff members from these ministries when necessary. Because of this, the collaboration with government offices is well coordinated. It is highly plausible that the skills transferred under the Project will be firmly rooted and efficiently used by the FSF although an increase of the technical staff needed will be required for project extension.

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(4) Technical aspect Technical Aspect

Most of the projects of the FSF are linked to sustainable watershed management in the upper area of the Sabana Yegua Dam. The C/Ps for the Project have a high level of technical and project management capability because of their involvement in various projects and their capability is expected to constantly improve through their future work. Nevertheless, the technical staff of the FSF are not very familiar with the techniques of irrigated agriculture in the dry season and further assistance will be required to ensure the sustainability of the Project.

Meanwhile, the technical skills and project management capacity of villager are still in the process of development as described below, requiring the continued assistance of the SEMARENA and the FSF.

1) Maintenance of handy irrigation facilities

The organizational capacity of these cooperatives has improved since their involvement in the work to construct the handy irrigation facilities. It is essential for them to develop water use management ability, maintenance ability, financial management ability, technical ability for proper cultivation, fund raising capacity and marketing capacity.

2) Handuy irrigation agriculture-related Technologies

The introduction of handy irrigation has made high investment and high income type farming possible. In the coming years, guidance on farming household management will become important along with guidance on cultivation techniques, marketing research, and post-harvest technique because the local residents have not experienced working on them.

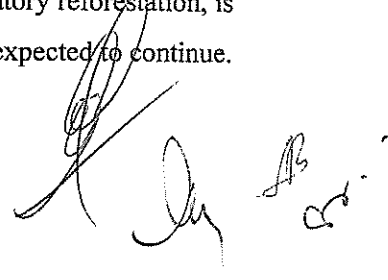
3) Agroforestry

The shift from slash and burn agriculture to continual farming on the same land, the application of soil conservation measures will be further required. What is required to settle the agroforestry is to make villagers recognize the benefits of new farming practices.

The approach currently adopted aims at creating a natural spin-off effect among farmers in the surrounding area by means of developing core farmers through the selection of highly motivated farmers to start demonstration farms. In the coming years, a more open approach for extension will be required in that many more local farmers will be encouraged to participate in OJT at the demonstration farmers with a view to fostering committed farmers.

4) Reforestation :

The consensus building process, which is an essential part of participatory reforestation, is being established since their involvement in the Project, and the effort is expected to continue.



Continual activities should be made in the coming years to secure planting sites, to respond to the reforestation need and to provide education as well as the guidance on tending work at the planted sites.

5) Forest fire prevention

The voluntary forest fire control units of which the members are primarily drawn from the irrigation agriculture cooperatives are fully aware of the importance of forest fire prevention and initial fire fighting with the participation of villagers. The activities of these units should continue as long as technical assistance on regular guidance and training practice of the forest fire prevention is continually provided.

(5) Factors affecting the sustainability of the Project

Factors capable of facilitating sustainability are that a large profit will be produced by the irrigated agriculture to pay off loans from the revolving fund, and that handy irrigation agriculture will be introduced in other villages. On the other hand, the continuity of the Project will be disrupted if there is a series of natural disasters, such as hurricanes which were actually experienced during the project period

5-6. Conclusion

The Project is highly relevant in terms of consistency with the policy at national level in the Dominican Republic, with the Japanese ODA policy, and with the needs of the target area. In terms of the Project design, selection of C/P organizations is relevant in terms of continuous activities required in relation to the Project.

In regard to effectiveness, the delay of the Project, particularly the handy irrigation agriculture project, due to hurricanes (an external condition) has made it difficult to provide sufficient guidance on irrigated farming (including marketing) in the dry season which constitutes an almost new farming practice for the C/Ps and villagers. Such insufficient guidance has delayed the achievement of Output 2, in turn hampering the achievement of the project purpose.

In regard to efficiency, the communication and collaboration between the experts and the Dominican Republic side were insufficient in the first half of the project period, resulting in the lack of the timely deployment of personnel. This led to inefficient activities in some cases. However, the conscious efforts of both parties in the second year onwards of the Project to improve the project management have considerably improved the situation and the efficiency of the Project has been secured.

In regard to impacts, positive impacts have already emerged. These include new activities by the FSF in the watershed based on its experience with the Project and a raised level of awareness on the part of residents of environmental conservation issues.

As the sustainability has been established in terms of policy, finance and technology, there is potential for an extremely high level of sustainability provided that the FSF continues to strengthen its technical staff.

6. Recommendations

Based on the results of evaluation, the Team concretely suggests the following measures in order to assure achievement of the Project Purpose.

6-1. Measures to be taken by the completion of the Project

(1) Implementation of handy irrigation agriculture

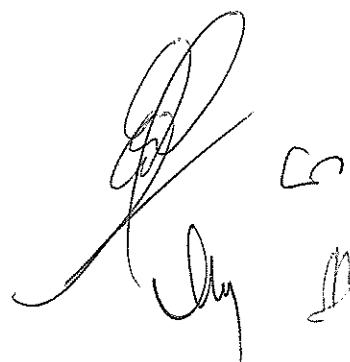
Handy irrigation agriculture in the dry season will be implemented in four villages where the relevant facilities have been constructed. The purposes are to strengthen the local maintenance capacity for the irrigation system and to teach irrigated farming skills, including a marketing strategy, to villagers. The relevant activity under Output 2 will be extended for another year in order to strengthen the capacity of the C/P through its experience of irrigated farming in two dry seasons.

(2) Increase of manpower

It will be necessary for the FSF to swiftly increase the number of staff members equipped with basic skills relating to handy irrigation agriculture.

(3) Revolving fund

The JICA has provided RD\$ 10,027,000 in total for installation of handy irrigation system in four (4) villages. All of this expenditure will be paid back to the FSF with interest based on the contract between the FSF and the beneficiaries of the irrigation system. Therefore, for the purpose of efficient and deliberate fund operation, the FSF should formulate a revolving fund recovery plan and a plan to implement new handy irrigation projects for the next 10 years by the completion of the Project. A memorandum on the use of the revolving fund should be exchanged between the FSF and the JICA Office.

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(4) Safety management of irrigation facilities

Protective fencing and warning signs should be erected around the new reservoir at Las Lagunas to prevent water accidents.

(5) Agroforestry

In regard to agroforestry, a soil erosion prevention method should be actively employed.

6-2. Measures to be taken after the termination of the Project

6-2-1. Continuation of each activity

In order to complement the Project Purpose, the following further efforts should be done by FSF and SEMARENA.

(1) Handy Irrigation Agriculture

For the continual development of irrigated farming, the maintenance of the facilities by members of the irrigation cooperatives will be essential. For this reason, the FSF must provide guidance for members of the cooperatives to enhance their capacity to manage irrigation water, maintain irrigation facilities, manage finance, cultivate crops, raise funds and market agricultural products.

(2) Agroforestry

In addition to the expansion of the demonstration farms, ways to extend the practice and to educate farmers should be examined to facilitate the entrenchment of agroforestry to benefit many more farmers.

(3) Reforestation

While upholding the process of establishing a consensus for the reforestation project, active efforts should be made to secure reforestation sites involving large landowners to respond to the need for reforestation and to provide tending guidance at existing reforestation sites.

(4) Forest fire prevention and control

Lectures and practical training should be regularly provided to renew the forest fire prevention and control skills of local residents. As forest fire prevention is a watershed-wide activity, efforts should be made to extend this activity to villages which are not targeted by the Project.

(5) Monitoring

Monitoring should be carried out with adequate frequency to grasp the advance of the above mentioned Project activities (1) to (4), and that of reforestation.

6-2-2. Maintenance of equipment provided by Japan

The SEMARENA and the FSF should adequately maintain the equipment provided by Japan to ensure its effective as well as efficient use.

6-2-3. Assistance by the SEMARENA for the FSF

The SEMARENA should continue to provide assistance for the FSF in terms of policy, funding and manpower.

6-2-4. Revolving fund

The FSF should continually recover the funds in an adequate manner and should re-invest the recovered funds in the handy irrigation project in accordance with the memorandum on the use of the revolving fund concluded with the JICA.

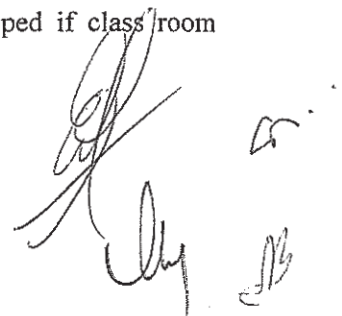
6-2-5. Collaboration with other organizations to secure sufficient budget and human resources

To further extend the project-related activities in the watershed, the FSF should try to secure a sufficient budget and human resources. To do this, the FSF should intensify its efforts to ensure the assistance of and collaboration with other organizations, including donors, international aid organizations, private companies, local NGOs and the Dominican authorities concerned as it has already been doing. Moreover, the FSF should ensure the effective and organic linkage of all projects for the conservation of the entire watershed.

7. Lessons Learnt

7-1. Strengthening the connection between the Project objective and activities

The objective of the project is capacity development of C/Ps in sustainable watershed conservation management, and to attain this, the project focused on agroforestry and handy irrigation agriculture to motivate the rural residents in the Project Area. Based on these activities, activities on reforestation and forest fire prevention were carried out. The capacity of C/Ps has been largely developed through OJT. However, it could have been more effectively developed if class room lecture had been provided.



7-2. Methodology suitability

Agroforestry and handy irrigation agriculture have been introduced in the project villages as a tool to motivate villagers to participate through their own initiative in reforestation activities and to abandon the slash and burn agriculture. This has been an effective methodology for the management of natural resources by the villagers themselves.

7-3. Importance of communication and mutual understanding in an international cooperation project

During the project execution there were some varied opinions in different aspects between the Japanese experts and C/Ps. They were mainly related to: planning, dimension of the irrigation system and agroforestry, and methodology of execution. Especially during the project formulation stage, it is important to make a basic design based on the consensus of both parties after a sufficient deliberation and a study on the target issue.

7-4. Importance of consensus and ownership sense in a participatory project

Although the consensus among villagers was reached beforehand, there were occasions when some villagers expressed additional demands, or when the Project had less participation in the activities. It could be attributed to the insufficient promotion of the importance of establishing a consensus, and insufficient villagers' awareness on the partnership and ownership towards the project. More time should have been spent in the process to form them. The promotion of awareness could not be attained just by providing many inputs, but a longer period may be necessary to achieve it. Thus, flexibility in the Project calendar activities is required.

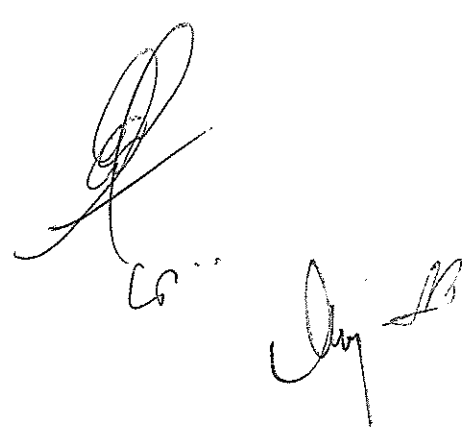
7-5. Importance of appropriate material assistance

The villagers of the target villages sometime appeared to be blasé about aid because of the excessive material assistance of other projects. However, their leadership role has been built up through material assistance of an adequate level under the Project. Such experience suggests that excessive material assistance for villagers has a negative impact on project sustainability. Careful consideration of the desirable direction for development and the process to achieve the intended development at the project design stage is crucial while setting the sights on how to improve the ability of villagers to understand and solve their own problems without external assistance.

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== List of Attachments ==

- Annex 1: Project Design Matrix (PDM) Version 2
- Annex 2: Achievement Grid
- Annex 3-1: Evaluation Grid; Verification of Performance
- Annex 3-2: Evaluation Grid; Verification of Implementation Results
- Annex 3-3: Evaluation Grid; Five Evaluation Criteria
- Annex 4: List of Dispatched Japanese Experts
- Annex 5: List of Equipment and Machinery Provided by Japan
- Annex 6: List of C/Ps Trained in Japan and the third countries
- Annex 7: List of persons concerned (Including the C/Ps)
- Annex 8: Local cost
- Annex 9: Project Implementation Structure Chart
- Annex 10: Summary of CD sheets
- Annex 11: Detailed Schedule of Terminal Evaluation

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Project Design Matrix (PDM) Ver.2

ANNEX 1
August 1, 2007

Project Title: Sustainable Watershed Management Project in the Upper Area of the Sabana Yegua Dam

Target Area : 14 villages in municipal of Padre Las Casas

Target Groups: Staff of the Sur Futuro Foundation (FSF) and Secretariat of State of Environment and Natural Resource (SEMARN)

Beneficiaries: Local citizens in the Project area--about 8,000 villagers

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Super Goal Through the implementation of Watershed Management with local community participation, the life standard of villagers in the upper watershed of Sabana Yegua Dam will be improved and the forest resources will be managed adequately in the area.	1.By 2019, the forest area in the upper watershed of Sabana Yegua Dam will be increased to 55 %. 2.By 2019, the level of income of the local residents in the upper watershed of Sabana Yegua Dam will be increased by 20 %	Aerial photographs (taken by satellite)	
Overall Goal The forest resources in the Project area will be handled suitably by the villagers using techniques they assimilate through the technical support provided by the staff of FSF and SEMARN.	By 2014, the forest area in the Project area will increase by 3 %.	Aerial photographs (taken by satellite)	
Project Purpose The staff of FSF and SEMARN will improve their technical capacity in Watershed Management and administrative capacity in project management.	1. The technical capacities in watershed management and the project administration capacities of the technicians working in the FSF and the SEMARN will be improved by 20 % (compared with their levels before project execution). 2. The satisfaction of local residents with the services offered by the technicians of the FSF and the SEMARN will increase.	1.Capacity Development Sheet (CD Sheet) 2.Interviews with people in the target areas	
Outputs 1. Environmental, natural resource, and socio-economic baseline data of the project area will be organized. 2. Agroforestry and handy irrigation agriculture will be introduced suitably by the staff of FSF and SEMARN with a view to enhancing their awareness of forest conservation issues in general according to the Agroforestry and Handy irrigation agriculture Annual Plan formulated in the Project. 3. It will be possible for the staff of FSF and SEMARN to formulate a reforestation plan that addresses the needs of the villagers and to carry out activities and evaluation. 4. The system for forest fire prevention and control in the Project area will be strengthened.	1. Prepare a report on environmental, natural resources and socioeconomic conditions of the communities involved in the project. 2-1.The forest area in the communities that adopt the handy irrigation system will increase by more than 110 ha. 2-2.The number of farmers who practice slash-and-burn agriculture will be reduced by more than 150 families. 2-3.Agroforestry will be practiced on more than 50 ha. 2-4.Existing technical manuals of agroforestry will be revised. 3-1.More than 110 ha will be reforested under the Reforestation Annual Plan 3-2.More than 175,000 fruit tree seedlings will be produced under the Seedling Production Plan. 3-3.Reforested Area Inventory will be prepared and updated using GIS. 4-1. More than 4 forest fire control units made up of local residents will be formed. 4-2. The action number of forest fire control units will increase by 40 % (compared with the number during the first year of the Project).	1. Study report 2-1.Project Progress Report 2-2.Interviews with the people in the target areas 2-3.Project Progress Report 2-4.Project Progress Report 3-1.Project Progress Report 3-2.Project Progress Report 3-3.Project Progress Report 4-1.Final Progress Report 4-2.Final Progress Report	

Activities	Inputs	<Japanese Side>	
1-1. To analyze and identify the conditions of natural resources and the socioeconomic situation of the 14 target villages. 1-2. To organize of categories of practices, problems, and initiatives taken by the beneficiaries (those who benefit from watershed management). 2-1. To analyze agroforestry systems that can be introduced in the project area. 2-2. To conduct choice of target villagers and setting of demonstration sites for agroforestry through dialogue with the villagers. 2-3. To formulate agroforestry annual plan through dialogue with the villagers. 2-4. To provide technical assistance on agroforestry. 2-5. To obtain seedlings of fruit trees. 2-6. To revise the agroforestry technical manual. 2-7. To identify the areas with high potential for the practice of handy irrigation agriculture. 2-8. To formulate handy irrigation agriculture annual plan through dialogue with the villagers. 2-9. To facilitate consensus-building efforts among the parties involve in handy irrigation agriculture for forest conservation and to organize the irrigation groups. 2-10. To provide technical assistance on handy irrigation agriculture utilizing the revolving fund. 2-11. To prepare a manual for handy irrigation agriculture. 2-12. To analyze the impacts of the introduction of agroforestry and handy irrigation agriculture on forest conservation. 3-1. To formulate a reforestation annual plan in each village based on the needs of the villagers. 3-2. To produce and distribute plants after formulating the Seedlings Production Plan according to the Reforestation Plan. 3-3. To provide training activities for the villagers on reforestation techniques. 3-4. To monitor the reforested areas and manage the monitored data using GIS/GPS. 3-5. To promote the enlightenment and education of forestry conservation. 4-1. To analyze the frequency and causes of forest fires, as well as control systems for forests in the Project area. 4-2. To organize voluntary forest fire control units and to coordinate with the Forest Regional Office of Padre Las Casas in order to strengthen the forest fire control system. 4-3. To provide technical training to the voluntary forest fire control units. 4-4. To carry out promotional and educational activities on forest fire prevention.	<Dominican Republic Side> 1. Assignment of the C/P in every field 2. Assignment of support personnel 3. Assignment of local operation budget 4. Provision of a project office 5. Arrangement of office furniture, utilities, and communication facilities 6. Provision of facilities or necessary permissions for project implementation.	<Japanese Side> 1. Dispatch the experts: chief advisor / watershed management/forest fire, Participatory development/community organization/agroforestry, Handy irrigation agriculture, GIS 2. Provision of equipment: GIS/GPS, forest fire control equipment, communication facilities, vehicles, motorbikes 3. C/P training (including other countries): about two counterparts per year, as required	1. Dominican C/P will not be changed frequently. 2. The consignment contract concluded by the SEMARNs with the FSF will continue for 15 years or more. 3. Abnormal weather will not occur.

Annex 2: Achievement Grid

Annex 2

Project Title: The Sustainable Watershed Management Project in the Upper Area of the Sabana Yegua Dam

Evaluation Date: November, 2008, Terminal Evaluation

● Achievement of Inputs

Item	Plan and Actual		Dominican Side																									
1. Human Resource (Experts)	Japanese Side		According to Record of discussion, the following personnel were planned to assign: 1. Secretariat of State of National Resource and Environment - Project Director - Technicians of Project 2. Sur Futuro Foundation - Project Manager - Project Coordinator - Technical Counterparts 3. Administrative and supporting personnel - Secretary of the Project - Driver(s) - Other supporting staff The above mentioned personnel were assigned by Dominican side. The total number of nine (9) counterpart personnel targeted for capacity development is assigned in the following areas for the Project as of November 2008. 1. Project Coordinator 2. Reforestation 3. Irrigation 4. Agroforestry 5. Social Development The list of the C/Ps is shown in Annex7.																									
	The Japanese experts in the following areas have been dispatched in accordance with the revised PDM: - Chief advisor / watershed management/forest fire - Participatory development/community organization - Agroforestry - Handy irrigation agriculture - GIS - Coordinator The total M/M for the Japanese experts is 46.89, including the estimate for the third year. The fields of the experts were the same as the plan. Compared to the plan, the total M/M in JFY 2007 and 2008 was increased. Especially, the M/M of the expert in the field of handy irrigation agriculture was added to recover the delay of construction for the handy irrigation system(*) . <u>Japanese experts' assignment volume</u> <table><tr><th rowspan="2"></th><th colspan="2">JFY/(**)2006</th><th colspan="2">JFY2007</th><th colspan="2">JFY2008</th></tr><tr><th>Plan</th><th>Actual</th><th>Plan</th><th>Actual</th><th>Plan</th><th>Actual (Estimate)</th></tr><tr><td>Persons/ Times</td><td>9</td><td>9</td><td>8</td><td>8</td><td>10</td><td>8</td></tr><tr><td>Total M/M</td><td>17.74</td><td>20.73</td><td>12.16</td><td>14.66</td><td>9.67</td><td>11.50</td></tr></table> (*) Huge Hurricane hit on the Project site on 30 Oct., 2007. (**) JFY=Japanese Fiscal Year				JFY/(**)2006		JFY2007		JFY2008		Plan	Actual	Plan	Actual	Plan	Actual (Estimate)	Persons/ Times	9	9	8	8	10	8	Total M/M	17.74	20.73	12.16	14.66
	JFY/(**)2006		JFY2007		JFY2008																							
	Plan	Actual	Plan	Actual	Plan	Actual (Estimate)																						
Persons/ Times	9	9	8	8	10	8																						
Total M/M	17.74	20.73	12.16	14.66	9.67	11.50																						

付属資料 1

Item	Plan and Actual															
	Japanese Side		Dominican Side													
2. Counterpart Training in Japan	Counterpart training courses in Japan were implemented in the field and period as planned. In total, 5 personnel of the Dominican side participated. <u>Number of counterpart personnel for training</u> <table><tr><td></td><td>JFY2006</td><td>JFY 2007</td><td>JFY 2008</td></tr><tr><td></td><td>Actual</td><td>Actual</td><td>Actual</td></tr><tr><td>Participatory Forest management</td><td>3</td><td>0</td><td>2</td></tr></table> JFY=Japanese Fiscal Year			JFY2006	JFY 2007	JFY 2008		Actual	Actual	Actual	Participatory Forest management	3	0	2		
	JFY2006	JFY 2007	JFY 2008													
	Actual	Actual	Actual													
Participatory Forest management	3	0	2													
3. Equipment	As described in the plan, necessary machinery and equipment were provided for activities. The amount and list of equipment such as GIS/GPS, forest fire control equipment, communication facilities, vehicles, motorbikes granted by the Japanese side were indicated in Annex 5 . In addition, the Japanese side provided equipment for handy irrigation system for irrigation members in 4 communities Almost all equipment are frequently used and well-managed except for; - 2 of 3 GPS were broken because GPSs are frequently used and fragile.		As described in the plan, necessary office equipment for the Project provided by the Dominican side.													
4. Land, Buildings, Facilities			The following were inputs by Sur Futuro Foundation(FSF) ; - FSF provided the project office located in the municipality of Padre Las Casas, and its administration cost. - Facilities and equipment necessary for the Project activities such as office furniture, utilities, and communication facilities were provided													
5. Local Cost	The Japanese side provided local cost necessary for the Project activities as in ANNEX 8 .		The Dominican side allocated the cost for the Project as in ANNEX 8 .													

● Achievement of Activities

付属

Activities	Results	Source of Info.												
	The Joint Coordinating Committee (JCC) has a role of decision making for effective project implementation. The functions are; a) Discuss and decide overall strategies in the management and coordination of the Project , b)Review and endorse the annual plan of the Project; c)Monitor and evaluate the progress of the Project, and d)Make decisions relevant to the overall management of the Project. ■ The number of the Joint Coordinating Committee(JCC) held <table border="1"> <thead> <tr> <th></th><th>JY2006</th><th>2007</th><th>2008</th></tr> </thead> <tbody> <tr> <td>Plan</td><td>At least once a year</td><td>At least once a year</td><td>At least once a year</td></tr> <tr> <td>Actual</td><td>2 times</td><td>2 times</td><td>once(Nov. 2008)</td></tr> </tbody> </table>		JY2006	2007	2008	Plan	At least once a year	At least once a year	At least once a year	Actual	2 times	2 times	once(Nov. 2008)	• An Annual Plan of the Project • Annual Reports of the Project
	JY2006	2007	2008											
Plan	At least once a year	At least once a year	At least once a year											
Actual	2 times	2 times	once(Nov. 2008)											
1-1.To analyze and identify the conditions of natural resources and the socioeconomic situation of the 14 target villages. 1-2. To organize of categories of practices, problems, and initiatives taken by the beneficiaries (those who benefit from watershed management).	Surveys of natural resources and socioeconomic situation were conducted by the Project as the plan in Jy2006. ■ List of information and Data collected by the surveys <table border="1"> <thead> <tr> <th>Contents</th><th>Detail</th></tr> </thead> <tbody> <tr> <td>Natural condition</td><td>Climate, Soil, Topography, Waters, Vegetation</td></tr> <tr> <td>Socio-economic condition</td><td>Economic condition, Industry, Infrastructure, Community organization, Market,, Population, Land use and land tenure, Living condition</td></tr> <tr> <td>Watershed management, forest resources, etc.</td><td>Watershed management activity of inhabitants, Use of forest resources, Situation of agricultural management, custom, Law, etc.</td></tr> <tr> <td>Information about village</td><td>General information of village, Activity of production, Principal problems of village, Condition of forest, Countermeasure of forest fire, External support</td></tr> </tbody> </table>	Contents	Detail	Natural condition	Climate, Soil, Topography, Waters, Vegetation	Socio-economic condition	Economic condition, Industry, Infrastructure, Community organization, Market,, Population, Land use and land tenure, Living condition	Watershed management, forest resources, etc.	Watershed management activity of inhabitants, Use of forest resources, Situation of agricultural management, custom, Law, etc.	Information about village	General information of village, Activity of production, Principal problems of village, Condition of forest, Countermeasure of forest fire, External support	(ditto)		
Contents	Detail													
Natural condition	Climate, Soil, Topography, Waters, Vegetation													
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Information about village	General information of village, Activity of production, Principal problems of village, Condition of forest, Countermeasure of forest fire, External support													
2-1.To analyzes agroforestry systems that can be introduced in the project area. 2-2.To conduct choice of target villagers and setting of demonstration sites for agroforestry through dialogue with the villagers. 2-3.To formulate agroforestry annual plan through dialogue with the villagers. 2-4.To provide technical assistance on agroforestry. 2-5.To obtain seedlings of fruit trees. 2-6.To revise the agroforestry technical manual. 2-7.To identify the areas with high potential for the practice of handy irrigation agriculture.	【Agroforestry】 ■ Number of demonstration site introducing agroforestry <table border="1"> <thead> <tr> <th></th><th>JY2006</th><th>2007</th><th>2008</th></tr> </thead> <tbody> <tr> <td>Number of demonstration site</td><td>10 sites</td><td>10 sites</td><td>10 sites</td></tr> </tbody> </table> *Average area of a agroforestry site is about 17 Tarea		JY2006	2007	2008	Number of demonstration site	10 sites	10 sites	10 sites	(ditto)				
	JY2006	2007	2008											
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Activities	Results	Source of Info.																																																				
2-8. To formulate handy irrigation agriculture annual plan through dialogue with the villagers. 2-9. To facilitate consensus-building efforts among the parties involve in handy irrigation agriculture for forest conservation and to organize the irrigation groups. 2-10. To provide technical assistance on handy irrigation agriculture utilizing the revolving fund. 2-11. To prepare a manual for handy irrigation agriculture. 2-12. To analyze the impacts of the introduction of agroforestry and handy irrigation agriculture on forest conservation.	【Handy Irrigation Agriculture】 ■ Present Condition of Handy Irrigation system(As of November 2008) <table><tr><th>Condition of Handy Irrigation system</th><th>Naranjos</th><th>Periquito</th><th>Derrumbado</th><th>Las Lagunas</th><th>Total</th></tr><tr><td>Handy Irrigation system was completed at the end of July.</td><td>30</td><td>30</td><td>32</td><td>34</td><td>126</td></tr><tr><td>No. of Members</td><td>295</td><td>275</td><td>267</td><td>309</td><td>1146</td></tr><tr><td>Total Irrigation area(Tarea)</td><td></td><td></td><td></td><td></td><td></td></tr></table> ■ Equipment purchase cost of Handy Irrigation system for revolving fund <table><tr><th>Community</th><th>For Naranjos</th><th>For Periquito</th><th>For Derrumbado</th><th>For Las Lagunas</th><th>Total</th></tr><tr><td>Equipment purchase cost(*)</td><td>3,182,349</td><td>2,630,264</td><td>1,424,895</td><td>2,790,000</td><td>10,027,000</td></tr></table> *Unit; RD\$ ■ Condition of revolving fund <table><tr><th>Target repayment</th><th>of Materials of irrigation</th></tr><tr><td>Period of grace</td><td>for 2 years</td></tr><tr><td>Period of repayment</td><td>Naranjos for 7 years</td></tr><tr><td></td><td>Periquito for 7 years</td></tr><tr><td></td><td>Derrumbado for 4 years</td></tr><tr><td></td><td>Las Lagunas (Not determined)</td></tr><tr><td>Interest</td><td>7% interest per year</td></tr><tr><td>Others</td><td>If members can repay in period of grace, there is no add interest, interest is added only to balance. The payment is started from 3 years, and interest is added to the balance at that time.</td></tr></table>	Condition of Handy Irrigation system	Naranjos	Periquito	Derrumbado	Las Lagunas	Total	Handy Irrigation system was completed at the end of July.	30	30	32	34	126	No. of Members	295	275	267	309	1146	Total Irrigation area(Tarea)						Community	For Naranjos	For Periquito	For Derrumbado	For Las Lagunas	Total	Equipment purchase cost(*)	3,182,349	2,630,264	1,424,895	2,790,000	10,027,000	Target repayment	of Materials of irrigation	Period of grace	for 2 years	Period of repayment	Naranjos for 7 years		Periquito for 7 years		Derrumbado for 4 years		Las Lagunas (Not determined)	Interest	7% interest per year	Others	If members can repay in period of grace, there is no add interest, interest is added only to balance. The payment is started from 3 years, and interest is added to the balance at that time.	
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3-1. To formulate a reforestation annual plan in each village based on the needs of the villagers . 3-2. To produce and distribute plants after formulating the Seedlings Production Plan according to the Reforestation Plan. 3-3. To provide training activities for the villagers on reforestation techniques. 3-4. To monitor the reforested areas and manage the monitored data using GIS/GPS. 3-5. To promote the enlightenment and education of forestry conservation.	【Reforestation】 Regarding the reforestation plan, reforestation was planning to be started from JY 2007 when handy irrigation system was completed. But team counted area of reforestation from September 2008 due to delay of introducing handy irrigation system ■ The latest reforestation plan (As of Nov, 2008) <table><tr><th rowspan="2">Community</th><th colspan="2">JY2008</th><th colspan="2">JY2009</th><th colspan="2">Jy2010</th><th colspan="2">2011</th><th rowspan="2">Total area (Tarea)</th></tr><tr><th>Sep.</th><th></th><th>Apr.</th><th>Sep.</th><th>Apr.</th><th>Oct.</th><th>Apr.</th><th>Oct.</th></tr><tr><td>Periquito</td><td>150</td><td></td><td>150</td><td>150</td><td>150</td><td>150</td><td>150</td><td>—</td><td>900</td></tr><tr><td>Naranjos</td><td>150</td><td></td><td>150</td><td>150</td><td>150</td><td>150</td><td>150</td><td>—</td><td>900</td></tr><tr><td>Derrumbado</td><td>100</td><td></td><td>100</td><td>100</td><td>100</td><td>100</td><td>100</td><td>—</td><td>600</td></tr><tr><td>Las Lagunas</td><td>—</td><td></td><td>150</td><td>150</td><td>150</td><td>150</td><td>150</td><td>150</td><td>900</td></tr><tr><td>Total</td><td>400</td><td></td><td colspan="2">1,100</td><td colspan="2">1,100</td><td colspan="2">700</td><td>3,300</td></tr></table> ■ Achievement of reforestation (in 4 communities where irrigation system was introduced/are to be introduced) <table><tr><th>Community</th><th>JY2007</th><th>JY2008</th><th>Total (JY2007+2008)</th></tr><tr><td>Periquito</td><td>150</td><td>78</td><td>228</td></tr><tr><td>Naranjos</td><td>200</td><td>42</td><td>242</td></tr><tr><td>Derrumbado</td><td>0</td><td>58</td><td>58</td></tr><tr><td>Las Lagunas</td><td>0</td><td>60</td><td>60</td></tr><tr><td>Total</td><td>350</td><td>238</td><td>588</td></tr></table> *Unit; Tarea	Community	JY2008		JY2009		Jy2010		2011		Total area (Tarea)	Sep.		Apr.	Sep.	Apr.	Oct.	Apr.	Oct.	Periquito	150		150	150	150	150	150	—	900	Naranjos	150		150	150	150	150	150	—	900	Derrumbado	100		100	100	100	100	100	—	600	Las Lagunas	—		150	150	150	150	150	150	900	Total	400		1,100		1,100		700		3,300	Community	JY2007	JY2008	Total (JY2007+2008)	Periquito	150	78	228	Naranjos	200	42	242	Derrumbado	0	58	58	Las Lagunas	0	60	60	Total	350	238	588	(ditto)
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Activities	Results	Source of Info.																
4-1.To analyze the frequency and causes of forest fires, as well as control systems for forests in the Project area. 4-2.To organize voluntary forest fire control units and to coordinate with the Forest Regional Office of Padre Las Casas in order to strengthen the forest fire control system. 4-3.To provide technical training to the voluntary forest fire control units. 4-4.To carry out promotional and educational activities on forest fire prevention.	■ Training for forest fire control unit <table><tr><th></th><th>Remarks</th></tr><tr><td>JY2006</td><td>Training was Implemented on February 2007 in 3 communities(Naranjos, Periquito, Derrumbado)</td></tr><tr><td>JY2007</td><td>Training was Implemented on January 2008 in Las Lagunas. About 50 people participated.</td></tr><tr><td>Jy2008</td><td>Training was Implemented on October 2008 in Las Lagunas.</td></tr></table> ■ public Awareness and Environmental education <table><tr><th></th><th>Remarks</th></tr><tr><td>JY2006</td><td>Held the painting contest in elementary schools in 3 communities(Naranjos, Periquito, Derrumbado)(February 2007)</td></tr><tr><td>JY2007</td><td>Held the painting contest in elementary schools in 2 communities (Las Lagunas and Cana de Castilla)(February 2008). About 160 people participated.</td></tr><tr><td>Jy2008</td><td>Held the painting contest in elementary schools in 2 communities (Siemba andMeseta)(from Sep. to Nov. 2008)</td></tr></table>		Remarks	JY2006	Training was Implemented on February 2007 in 3 communities(Naranjos, Periquito, Derrumbado)	JY2007	Training was Implemented on January 2008 in Las Lagunas. About 50 people participated.	Jy2008	Training was Implemented on October 2008 in Las Lagunas.		Remarks	JY2006	Held the painting contest in elementary schools in 3 communities(Naranjos, Periquito, Derrumbado)(February 2007)	JY2007	Held the painting contest in elementary schools in 2 communities (Las Lagunas and Cana de Castilla)(February 2008). About 160 people participated.	Jy2008	Held the painting contest in elementary schools in 2 communities (Siemba andMeseta)(from Sep. to Nov. 2008)	(ditto)
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Annex 3-1: Evaluation Grid
Project Title: Sustainable Watershed Management Project in the Upper Area of the Sabana Yegua Dam
Evaluation Date: November 2008, Terminal Evaluation

• **Verification of Performance**

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Categories	Questions for Evaluation Purpose			Findings
	Primary Question	Code	Secondary Question	
5	Is there any prospect of achieving the super goal?	1	Are the villagers in the project area (14 villages) using the techniques taught by the FSF?	Expert's opinion C/P's opinion (FSF) Local residents of project area
		2	Indicator: Has the forest in the project area increased?	Expert's opinion C/P's opinion (FSF) Local residents of project area
	Has the project purpose been achieved?	3	Indicator 1: Has the technical capacity and the watershed management and project administration capacity of the FSF and SEMARENA technicians improved?	CD sheet* survey results C/P's opinion (FSF) Staff in charge and technicians of SEMARENA *The CD sheet extensively covers the watershed management techniques/capacity and the project administration capacity)
		4	Indicator 2: Has the level of satisfaction among local residents with the services offered by the FSF and SEMARENA technicians increased?	Expert's opinion C/P's opinion (FSF) Local residents of project area
Verification of Performance				
- Handy irrigation agriculture was introduced to 4 villages, and agro-forestry to 11 villages. - The Project had their technologies/techniques taught being put into practice by all the target villages. - Within the 4 villages, 5.6 ha (588 taresas) reforested, and in 14 villages, there were 68 ha (1,081 taresas) reforested (2006 to 2008). - Although the forest area is inferred to have slightly increased, there is currently no way of verifying this. - The capacity of the Project has improved by 27% especially in the capability of project management and administration capacity, but it should be still improved in the each specific knowledge and skill as mentioned below. It is considered the margin for further improvement in their capability is not very big as the FSF recruited fairly capable experts to start with. In short, the target appears to have been set too high. - Construction of irrigation system: Technological transference of JICA was done, and also the Project hired a specialized personnel of Ocoa. Other technicians of the foundation have learned this technique. - The revolving fund investment: It was done but the FSF is now awaiting the investment recovery because it has two years grace period, and it has still not began to execute itself. The program that is going to handle that fund through microcredit is already working for 4 years. - Agriculture under handy irrigation: It has started due to installation of irrigation system. The technical capacity of C/Ps for it should be improved. - Agroforestry: Agroforestry has increased. The seedling production of vegetables has already began in Periquito. Technical assistance and inputs for agriculture were provided to the villagers. - Fire Prevention: It is coordinated by SEMARENA. Villagers capacity have increased due to knowledge acquisition and experience. The project trained and equipped villagers for fire prevention, where the FSF staff played an active role. The SEMARENA technicians were also active trainers. - Reforestation: An agreement with the villagers has been obtained. Selection of areas for reforestation has been achieved. - The project has increased villager's knowledge on fire prevention and confidence. - The level of satisfaction regarding the FSF and the forestry office has improved in all activities provided throughout the project area. Nevertheless, they highly require the technical assistance on handy irrigation agriculture and marketing that they have not experienced, because it has just started at the time of final evaluation.				

Categories	Questions for Evaluation Purpose		Findings
	Primary Question	Secondary Question	
5	Have the intended outputs been produced as planned ?	5 How have the C/P organizations involved themselves in the Project implementation?	Expert's opinion C/P's opinion (FSF)
		6 Outcome 1: Was a report on the natural environment and socioeconomic conditions of the target villages prepared?	Expert's opinion C/P's opinion (FSF)
		7 Outcome 2: Were the annual agro-forestry and annual handy irrigation agriculture plans formulated, which then led to the actual implementation of agro-forestry and handy irrigation agriculture in the target villages?	Expert's opinion C/P's opinion (FSF)
		8 Outcome 3: Can activities and evaluation be performed in line with the planting plan which is based on the actual needs of the target villages?	Expert's opinion C/P's opinion (FSF)
		9 Outcome 4: Has the system for forest fire prevention and control in the project area been strengthened?	Expert's opinion Staff in charge and technicians of SEMARENA
		10 Has technology transfer to the C/Ps been successfully conducted?	C/P's opinion (FSF)
			Several projects are working in the zone at the same time, so that personnel efficiency may be maximized.
			Following the baseline survey, a report on the natural environment and socioeconomic conditions of the target villages was prepared.
			While the qualitative targets of the activities were met, the quantitative targets were not fully achieved presumably because they were too high to start with. - Agro-forestry, reforestation and forest fire prevention were implemented almost as planned, but handy irrigation agriculture has started at the time of final evaluation because of delay of the installation of the irrigation system by hurricanes. - In regard to handy irrigation agriculture, irrigation facilities were introduced and agricultural guidance was provided even though they still fall short of perfection. - Revolving fund operation in three villages commenced on the 30 th of September, 2008. Because of the grace period of two years, the outcome will be determined by the performance in the coming years. - It is certain that reforestation and agro-forestry will be continued by the C/P organization. - Although the planted area fell short of the indicator level, the reforestation system has been firmly established at the FSF with a reliable prospect of its continuation in the coming years.
			- In the four villages where handy irrigation agriculture was introduced, a voluntary forest fire control unit has been formed and the unit members have now abandoned slash and burn agriculture. Moreover, the unit has been formed in another village involved in the Project, too, though irrigation system is not planned to install. - The officers in charge recognize that the number of forest fires has definitely decreased through their field activities. In addition to the seminars and trainings conducted under the Project, SEMARENA also conducted forest fire prevention seminars and trainings in various villages each year and many members of the volunteer units participated. - These seminars and training are expected to continue in the coming years. - The performance was excellent in every field.

5 Categories	Questions for Evaluation Purpose		Information Source	Findings
	Primary Question	Code	Secondary Question	
	Was adequate technical guidance provided from JICA experts to the Dominican C/Ps to assist activities?	11	C/P's opinion (FSF)	- The workshops: After performing activities their level of consciousness on the importance of the project activities had risen. The lessons learned enabled the villagers to identify themselves with the project. - The methodology: The importance of the registry of data, has been learned. - The reforestation planning: The selection of trees took place jointly with the local technicians. The planning of raising seedlings with another partner (Plan Sierra), and with SEMARENA has also been achieved. - The seedling nursery houses have capacity to produce 4 million of seedling per year. - Implementation of the plantation: The local technicians could perform well. - Maintenance of seedlings: This theme was well known by the C/Ps. - Forest fire: The Japanese experts taught them using the participatory approach methodology. The fire prevention was done altogether by SEMARENA and Japanese experts. - - The level of awareness has been elevated through painting contest (idea suggested by the Japanese expert), and some discussion on fire prevention. - Agriculture under handy irrigation: The Japanese experts made the design the sites suited for handy irrigation agriculture, but the cropping has just started. Technical support for it by a Japanese expert is indispensable together with skilling-up of market research. - Planning and installation of irrigation systems The learned techniques from Japanese experts were actually being applied. - With the knowledge on installation, operation and maintenance of handy irrigation learned from the Japanese experts, the establishment of agriculture under handy irrigation has begun. - Revolving fund: The idea arose during the plan formulation, but the scheme commenced on 30th September, 2008 in three villages. The technical assistance using the fund will be provided outside the project period in reference of the FSF's experience in micro credit implementation. - Agro-forestry: The FSF did not have much experience in this matter. The irrigation is needed to successfully execute agro-forestry in areas where there is no irrigation system, so water can be stored. - The establishment of demonstration lots also arose with that idea. - The monitoring method was improved by the Japanese expert. - The GPS tool was already known, but with the additional training from the Japanese expert, the GIS system was fortified. It is capable now for them to teach others. - Additional training of forest fire prevention was received from SEMAREN through the Project activities, and C/Ps are more capable. - The experts were dispatched as planned. - During the project period of three years, six Japanese experts were dispatched to cover eight fields (chief advisor/watershed management/forest fires, agro-forestry, participatory development, irrigated agriculture, GIS and coordination of project activities). - The total man-month was 46.89
	Were the inputs made as planned?	12	Expert's opinion	- Dispatch of experts.

5 Categories	Questions for Evaluation Purpose		Information Source	Findings
	Primary Question	Secondary Question		
	13	Actual input of Japan's funding.	JICA headquarters office	Total cost in 3 years: JP¥ 69,821,000 (RD\$ 2296,000) * Personnel expenditure for Japanese experts is not included.
	14	Performance of equipment input by the Japanese side	Expert's opinion	- All of the inputs were provided as planned. - Three (3) vehicles, one motorcycle, and most of the office equipment, including communication equipment, were provided soon after the commencement of the Project.
	15	Training of C/Ps in Japan	Expert's opinion	- During the training period of three years, three (3) C/Ps were sent to Japan. - The course duration was as short as 14 days. - The actual result fell short of the original plan of up to two trainees a year.
	16	Establishment of JCC	Experts/JICA Dominican Republic Office	- The JCC was established as planned and two meetings were held in both the first year and second year. - The meeting in the third year will be held when the project completion evaluation will be completed.
	17	Establishment of Support Committee in Japan	Experts/JICA Headquarters	Although the support committee in Japan has not been established, constant support has been provided by the JICA's Global Environment Department.
	18	Allocation of the C/Ps (FSF and SEMARENA)	Expert's opinion	- Nine (9) C/Ps are assigned by the FSF to four Japanese experts as planned (one for project manager, one for project coordinator, one for irrigation, two for agro-forestry, two for reforestation and two for participatory development.) - Additional support has been also provided by many technicians in other departments of the FSF. - One (1) forest officer from the Padre las Casas Office of the SEMARENA is assigned as a C/P (replaced halfway through) and additional support is provided by the officers in charge at the SEMARENA Headquarters and the branch office in Azua.
	19	Arrangement of support personnel (for project operations, secretary and drivers)	Experts	As there was no support personnel provided by the FSF, personnel were employed under the project budget.
	20	Payment of the personnel cost for the C/Ps	Expert's opinion C/P's opinion (FSF)	Paid as planned. It was totally covered by FSF.
	21	Provision of equipment and facilities necessary to conduct the project activities	Expert's opinion C/P's opinion (FSF)	- Provision of materials and equipment were done as planned. - Equipment and facilities were adequate, and the Padre de las Casas office was equipped by JICA
	22	Payment of local costs	Expert's opinion C/P's opinion (FSF)	Paid as planned. It is paid by FSF.

Annex 3-2: Evaluation Grid
Project Title: Sustainable Watershed Management Project in the Upper Area of the Sabana Yegua Dam
Evaluation Date: November 2008, Terminal Evaluation

● **Verification of Implementation Results**

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Categories	Questions for Evaluation Purpose		Information Source	Findings
	Primary Question	Code		
Verification of Implementation Process	Preparations for project activities	23	Were the activities implemented as planned?	Expert's opinion C/P's opinion (FSF) - Resident Participation: Because of the haste to achieve the plan and the larger than expected scale of irrigation in the first year, the amount of repair/reinforcement work in the second year increased, delaying the overall implementation schedule. The participation of villagers in the repair/reinforcement work was not fully sufficient in some cases, suggesting the need to allocate more time for the establishment of a consensus with villagers and the building of preparedness for participation and ownership on the part of villagers. - Natural Disasters: The project area was directly hit by two major hurricanes (October and December, 2007) which caused extensive damage. Although the damage to the irrigation facilities introduced by the Project was not extensive, it was necessary to postpone various project activities for approximately three months because of the urgency of the hurricane damage-related rehabilitation work. - The technology transfer primarily based on OJT was appropriate. It would have been better if more time had been available for training in Japan and the Dominican Republic.
		24	Was the technology transfer method appropriate?	Expert's opinion C/P's opinion (FSF)
		25	Were there any problems regarding the project management system (in connection with the monitoring mechanism, decision-making process, C/Ps, JICA Dominican Republic Office, responsible desk at the JICA Headquarters and intra-project communication mechanism)?	Expert's opinion C/P's opinion (FSF) - As the construction of the handy irrigation facilities was directly managed by means of participation, there were always problems relating to labour management, material control and fund management. Ideally, a full-time expert(s) should have been stationed with the other experts being assigned in accordance with the field demand for them. - There used to be problems in communication between both sides at the beginning, but the weekly meeting with Japanese and Dominican Republic C/Ps greatly facilitates mutual communication from the second year, and project activities.
		26	Is the awareness of the Project among the implementing body and C/Ps high?	Expert's opinion C/P's opinion (FSF) - The level of understanding of the Project among the FSF staff in general and the technicians, including the C/Ps, in particular is quite high. - They share the common goal of establishing sustainable watershed management in the upper area of the Sabana Yegua Dam and their activities are marked by a strong commitment and excellent ability.
		27	Were suitable C/Ps assigned?	Expert's opinion C/P's opinion (FSF) The allocation of Dominican Republic C/Ps : - The C/Ps assigned were almost suited. It could have been better however, had there been two C/Ps in charge of irrigation because of the large scale of work in building the irrigation facilities. - There were times when the C/Ps were unavailable due to their switching over and other reasons, and their absence was covered by the employed technicians. The allocation of Japanese C/Ps: - Their expertise properly matched with the project needs; however, their period of stay was

Categories	Questions for Evaluation Purpose		Information Source	Findings
	Primary Question	Secondary Question		
5	28	Were the level of participation in the Project and awareness of the Project among the target groups and related organizations high?	Expert's opinion	shorter than what was desired. C/P Organization: - The FSF which implemented the Project is an NGO. Its level of understanding of the Project is very high as it has been entrusted to conduct sustainable watershed management in the upper area of the Sabana Yegua Dam by the SEMARENA. - However, as the FSF was required to raise the funds by itself, the C/Ps assigned to the Project had other jobs to do. - Nevertheless, their dedication to the Project was evident. Local Villagers: - There are very high expectations among local villagers for economic assistance under the Project. - In two villages where the irrigation facilities were built in the first year or second year, the participation of villagers was insufficient on some occasions because of the lack of a full consensus, preparedness for participation and ownership. - In villages where the same facilities were built in the third year, however, there was a high level of understanding of the Project, partly because the C/Ps have learned vital lessons in the previous two years (resulting in enhancement of their capacity) and partly because of strong leadership and a sense of responsibility on the part of irrigation union leaders. The villagers: - They have participated in all of the project activities. - Limited by their resources, the villagers from very poor communities however, could not fully participate in the project activities. - It is possible to affirm that villagers' participation has increased with time, not only in the construction of the agriculture system but also in the other components. The irrigation committee: - It attended and collaborated well in the project activities. - The project is well known among institutions that have presence in the region. Negative factors: - Dominican C/Ps were highly occupied assigned with a few projects. - Multiplier effect based on the diversity of the Japanese experts was not utilized because of their single stay most of time. - Installation of irrigation facilities required major efforts of the project personnel. - Natural disaster prevented the project activities. - The organizational part is crucial, if it is well done, work advances smoothly and rapidly. - It is hard to visit the communities in rainy season. - Short stay of Japanese experts. - Language problem between Japanese and Republic Dominican C/Ps. Positive factors: - Successful transfer of technology by the Japanese experts and C/Ps to the community. - Seeking the consensus of the villagers and involving them in a participatory approach
		What factors affected the emergence of problems in the project implementation process and the achievement of the project effects?	Expert's opinion C/P's opinion (FSF)	

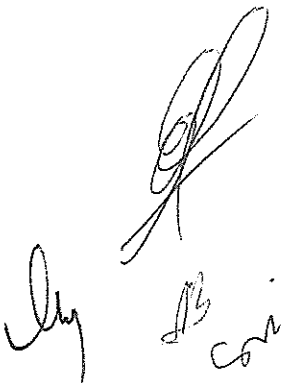
Categories	Questions for Evaluation Purpose			Findings
	Primary Question	Code	Secondary Question	Information Source
5	Output 1 : Has the base line data on the natural environment and socioeconomic situation of the target villages been organized?	30	Activity 1-1: Were the environmental and social conditions of the communities involved in the project identified and analyzed at the planned time?	were very good approaches (this could serve as basic experience for the success of the next projects). - High responsibility of community leaders. Executed as planned
			Activity 1-2: Were the information of local residents' practices, obstacles, and initiatives regarding watershed management well reviewed at the planned time?	- At the beginning of the project, information per village was collected as planned. The proceeding activities executed were then designed to confront the environmental problems found in the collected information placed in the data base.
	Output 2 : Were agroforestry and irrigation agriculture suitably introduced to enhance the awareness of forest conservation issues in general by the FSF and SEMARENA technicians in accordance with the annual agroforestry plan and annual handy irrigation agriculture plan formulated under	31		- Executed as planned
		32	Activity 2-1: Were agroforestry systems suitable for the project area analyzed on schedule?	- It is being complemented with another project. The FSF made a study to identify sustainable productive systems, finding the sustainable agro-forestry system among them. - Although some time was required to coordinate opinions with the C/Ps, agreement was finally reached.
		33	Activity 2-2: Were the target villagers and demonstration sites for agroforestry selected through dialogue with the villagers on schedule?	- It was done through consensus. - The fact that the C/Ps had detailed knowledge of the project area was quite helpful.
		34	Activity 2-3: Was the annual plan forming agroforestry prepared through dialogue with the villagers on schedule?	- A person was hired to achieve to form an annual plan. - Even though the demand by villagers for assistance was strong, local voices were coordinated so that the local demands would be met within the project budget.
		35		- When the Japanese experts were stationed in the Dominican Republic, the locations of the demonstration farms for agroforestry were determined and guidance was provided on the technical assistance to be provided for the demonstration farms. - Partly because of the multiple assignments of the C/Ps, it was not easy for them to provide

Categories	Questions for Evaluation Purpose		Information Source	Findings
	Primary Question	Secondary Question		
5	the Project ?	Activity 2-4: Was the technical guidance regarding agroforestry implemented on schedule?		detailed guidance for the 30 strong demonstration farms, some of which are located in remote areas. - The C/Ps should have been given more time to devote themselves to the Project and more technicians should have been assigned. - It would have been better if more assistance for villagers had been possible.
		Activity 2-5: Were seedlings of fruit trees obtained on schedule?	Expert's opinion C/P's opinion (FSF)	- Seedlings of avocado and lemon, etc. were obtained as planned. - There is a fruit-trees seedling nursery already, and so far the project has no problems with seedling supply.
		Activity 2-6: Was the technical manual for agroforestry preparation revised on schedule?	Expert's opinion C/P's opinion (FSF)	- Successfully revised and the work for further revision is currently in progress.
		Activity 2-7: Were areas with high potential for the practice of Handy Irrigation Agriculture identified on schedule?	Expert's opinion C/P's opinion (FSF)	- Identified as planned
		Activity 2-8: Was an annual implementation plan for Handy Irrigation Agriculture prepared through dialogue with the villagers on schedule?	Expert's opinion C/P's opinion (FSF)	- Villagers agreed to formulate a plan and an annual plan was formulated.
		Activity 2-9: Was consensus-building among the parties involve in handy irrigation agriculture for forest conservation made, and was organized the irrigation groups on schedule?	Expert's opinion C/P's opinion (FSF)	Irrigation committees were formed in accordance with the annual plan. - However, various demands were made even after the commencement of the work and the coordination of these demands was rather difficult. - More time should have been allocated to achieving a full consensus, preparedness for participation and ownership on the part of villagers.
		Activity 2-10: Was it provided the technical assistance on Handy Irrigation Agriculture by use of the revolving fund?	Expert's opinion C C/P's opinion (FSF)	- Even though the agricultural assistance has started, sufficient completion cannot be expected within the project period. Continuous assistance on is highly required together with enforcement of market research skill - The revolving fund scheme commenced on 30 th September, 2008 in three villages. - Because of the grace period of two years, the due date for the first repayment will be 30 th September, 2011. - As such, technical assistance using the revolving fund will be provided outside the project

5 Categories	Questions for Evaluation Purpose			Information Source	Findings
	Primary Question	Code	Secondary Question		
Output 3 : Are the FSF and SEMARENA technicians now capable of conducting activities and evaluation in line with the reforestation plan for each village based on a proper understanding of the needs of the target villagers ?			Activity 2-11: Were technical manuals for Handy Irrigation Agriculture prepared on schedule?	Expert's opinion C/P's opinion (FSF)	period. - Agricultural assistance using irrigation water will be a must in the coming years. Revised and the work for further revision is currently in progress.
		42	Activity 2-12: Were the impacts of the introduction of agroforestry and Handy Irrigation Agriculture on forest conservation analyzed on schedule?	Expert's opinion C/P's opinion (FSF)	- Analyzed as planned. - But it is needed for at least 5 years to evaluate the impacts in the targeted communities, and in the irrigation systems, at least 3 years.
		43	Activity 3-1: Were annual reforestation plans for each village prepared based on their requirement on schedule?	Expert's opinion C/P's opinion (FSF)	- The villagers agreed to plant seedlings in an area three times larger than the irrigated area. - Area reforested by 4 irrigation committees are completed as planned. - The system for continual reforestation was established.
		44	Activity 3-2: Was a Seedlings Production Plan, in accordance with the Reforestation Plan, prepared, and were seedlings produced and distributed on schedule?	Expert's opinion C/P's opinion (FSF)	- The seedlings were produced and distributed in accordance with the reforestation plan. - The Project plan aimed at planting over an area of 110 ha, but only 37 ha were planted. Nevertheless, more than 100 % of the achievement has realized in four villages where the irrigation system was provided. - The reasons for the failure in the accomplishment of the plan were; a) at Derrumbado Village earmarked for planting in the first year, actual planting did not take place because of the lack of a consensus despite the formulation of the reforestation plan, b) permits for planting were not obtained because all of the target land was privately owned, c) the participation of villagers in the planting work was insufficient at times, d) planting was restricted to the rainy season and e) autumn planting was disrupted by hurricanes. - The reforestation activity has been done continuously in the target villages.
		45	Activity 3-3: Was guidance on reforestation technology imparted to the targeted villagers on schedule?	Expert's opinion C/P's opinion (FSF)	Almost, done. - At some of the planting sites, guidance on "careful planting" was not sufficiently provided because of the steep slope.
		46	Activity 3-4: was the reforested areas	Expert's opinion C/P's opinion (FSF)	
		47			

5 Categories	Questions for Evaluation Purpose		Information Source	Findings
	Primary Question	Secondary Question		
Output 4 : Has the system for forest fire prevention and control in the project area been strengthened? Progress of the planned activities under the Project		monitored using GIS/GPS, and the monitored data was utilized for reforestation on schedule?		- A GIS manual has been prepared and the C/Ps have mastered the use of GIS.
		Activity 3-5: Was awareness and education activities on forestry conservation promoted on schedule?	Expert's opinion C/P's opinion (FSF)	- A system was established to provide education on the environment at primary schools and to organize a painting competition featuring "forest fire" and "reforestation" as the themes. - Such education and competition are expected to take place every year at primary schools in various parts of the country in turn.
		Activity 4-1: Were the frequency and causes of forest fires, as well as control systems for forests, in the Project area analyzed on schedule?	Expert's opinion C/P's opinion (FSF) Staff in charge and technicians of SEMARENA	Analysed as planned. - Because the available statistics on forest fires are based on large administrative units, an interview survey was conducted with SEMARENA staff responsible for forests to obtain more localised information for analysis.
		Activity 4-2: Were forest fire control units, made up of local residents, formed and the system for forest fire prevention strengthened with the collaboration of the Forest Regional Office of Padre Las Casas?	Expert's opinion C/P's opinion (FSF) Staff in charge and technicians of SEMARENA	Organized as planned.
		Activity 4-3: Was technical training to the voluntary forest fire control units provided on schedule?	Expert's opinion C/P's opinion (FSF) Staff in charge and technicians of SEMARENA	Provided as planned.
		Activity 4-4: Were promotional and educational activities on forest fire prevention carried out on schedule?	Expert's opinion C/P's opinion (FSF) Staff in charge and technicians of SEMARENA	- These activities were completed as planned even though the timing for implementation had to be rearranged for some because of hurricanes.
		How smooth were the consultations between the Japanese side and the	Expert's opinion C/P's opinion (FSF)	- Occasional communication difficulties were experienced up to halfway through the second year. - Consultations became much smoother once the regular weekly planning meetings between

Categories	Questions for Evaluation Purpose			Information Source	Findings
	Primary Question	Code	Secondary Question		
			Dominican side?		the Japanese side and the FSF commenced.
		54	Was sufficient cooperation from the C/P organization for the activities?	Expert's opinion C/P's opinion (FSF)	- Both the C/Ps and the Japanese team of experts found some difficulties in the first two years. The third year passed fairly smoothly as the previous difficulties had been overcome.
		55	Were the activities progressed well or not?	Expert's opinion C/P's opinion (FSF)	There were some difficulties as follows: - When the activities started, more energy than originally planned had to be diverted to the construction of the irrigation facilities, the scale of which had become much larger than originally planned to reflect the opinions of the C/Ps and the findings of the field survey. - For this reason, at the interim meeting of the JCC, the PDM was altered on the initiative of the Study Team to reduce the number of target villages for handy irrigation from nine to four (accordingly, the number of target villages for the formation of a voluntary forest fire control unit, too). - Even though the planned facilities were successfully constructed in all of the four target villages, completion was delayed because of the lengthy repair/reinforcement work of the irrigation facilities and adverse impacts of hurricanes. - Moreover, the scale of the irrigation facilities increased because the water source was further away than was originally assumed.



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