スリランカ民主社会主義共和国
ワラウェ川左岸総合的灌漑・環境管理
プロジェクト準備調査報告書

平成 23 年５月
（2011年）

独立行政法人国際協力機構
農村開発部

農 村
ＪＲ
11-033

スリランカ民主社会主義共和国
ワラウェ川左岸総合的灌漑・環境管理
プロジェクト準備調査報告書

平成 23 年５月
（2011年）

独立行政法人国際協力機構
農村開発部

序　　文

独立行政法人国際協力機構は、スリランカ民主社会主義共和国ワラウェ川左岸総合的灌漑・環境管理プロジェクトにかかる協力準備調査を実施することを決定し、2010年6月13日から25日まで協力準備調査団を現地に派遣しました。

同調査団は、スリランカ民主主義共和国政府関係者と協議を行うとともに、現地調査を実施し、帰国後の国内作業を経て、ここに本報告書完成の運びとなりました。

この報告書が、今後関係者の参考資料として活用されるとともに、両国の友好親善の一層の発展に役立つことを願うものです。

終わりに、本調査にご協力とご支援をいただいた内外の関係各位に対し、心から感謝申し上げます。

平成23年5月

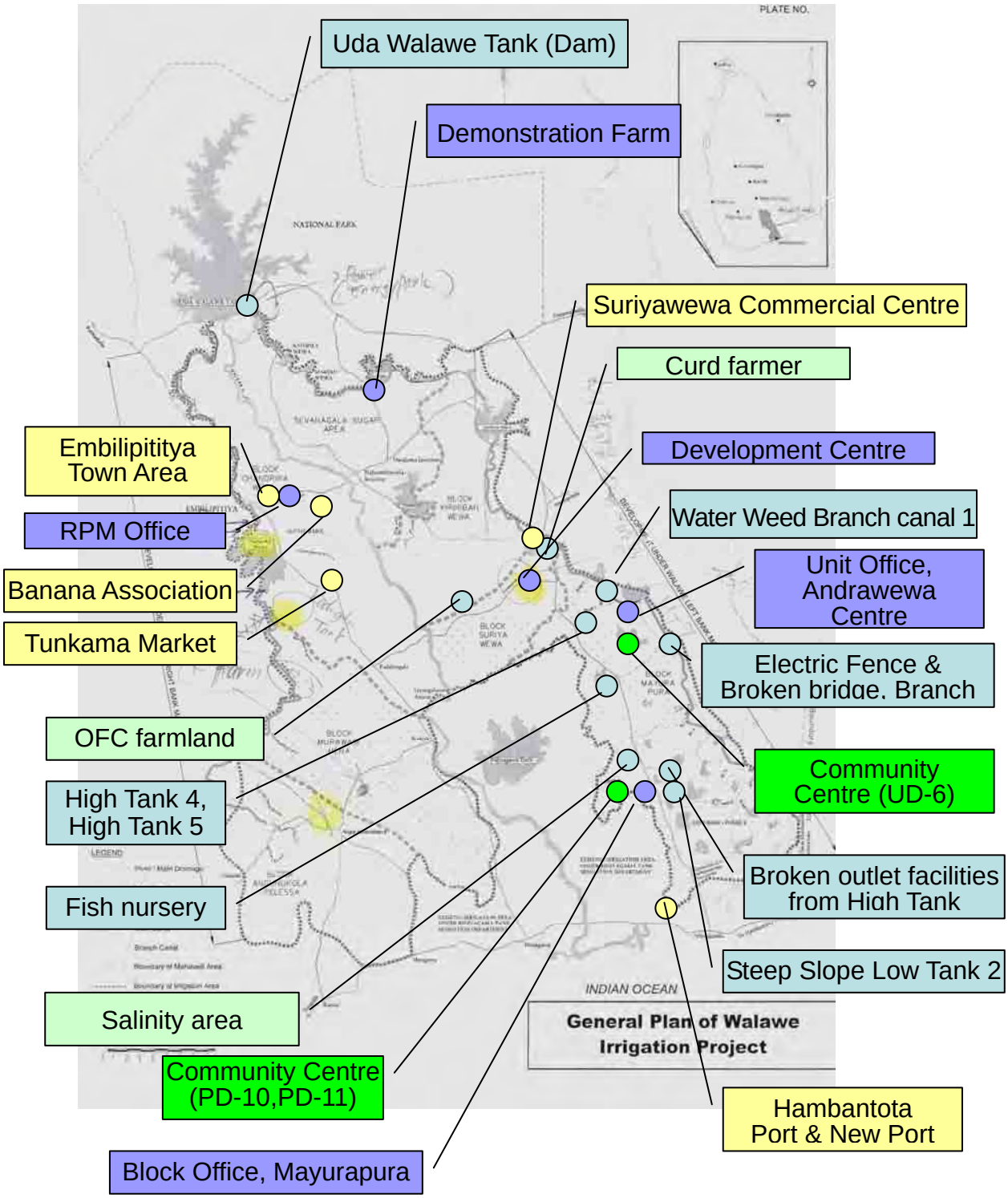
独立行政法人国際協力機構

農村開発部長　熊代　輝義

目　　次

付属資料

地　　図


Uda Walawe Tank (Dam)
Demonstration Farm
Suriyawewa Commercial Centre
Curd farmer
Development Centre
Water Weed Branch canal 1
Unit Office, Andrawewa Centre
Electric Fence & Broken bridge, Branch
Community Centre (UD-6)
Broken outlet facilities from High Tank
Steep Slope Low Tank 2
Hambantota Port & New Port
Embilipitiya Town Area
RPM Office
Banana Association
Tunkama Market
OFC farmland
High Tank 4, High Tank 5
Fish nursery
Salinity area
Community Centre (PD-10,PD-11)
Block Office, Mayurapura
PLATE NO.
NATIONAL PARK
INDIAN OCEAN
General Plan of Walawe Irrigation Project

スリランカ事務所との協力準備調査の打合せ
（JICA Sri Lanka Office）

灌漑水資源管理省及びマハヴェリ庁表敬
（Mahaweli Authority of Sri Lanka）

ワラウェ事務所概要説明
（Uda Walawe RPM Office）

円借款事業で作成された営農パンフレット16種
（Uda Walawe RPM Office）

ダムの中央管理システム
（Uda Walawe Tank）

ダムの放流路
（Low Bank Main Channel from Uda Walawe Tank）

サトウキビ栽培地域での2次水路
（C7, Sevanagala sugar area）

デモンストレーション農場のバナナ苗
（Demonstration Farm in Mabaraluwewa, Sevanagala sugar area）

市場にバナナを下ろす農民
（Suriyawewa Commercial Centre）

バナナ卸売市場（曜日で取り扱い品目が異なる）
（Suriyawewa Commercial Centre）

房につく実の本数が示されるApple Banana
（Suriyawewa Commercial Centre）

卸売市場に隣接する小売市場での野菜、香辛料販売（Suriyawewa Commercial Centre）

市場で売られているカード（水牛のヨーグルト）
（Suriyawewa Commercial Centre）

トラック荷台で売られているカード
（Suriyawewa Commercial Centre）

トタン屋根の下で水牛の乳を加熱するカード農家
（Suriyawewa town, Suriyawewa Block）

網戸のついたカード熟成棚
（Suriyawewa town, Suriyawewa Block）

カード農家への聞き取り
（Suriyawewa town, Suriyawewa Block）

オクラ畑
（OFC area, near Tank 7, Suriyawewa Block）

Suriyawewa Blockで聞き取りに集まった農民組織
（Development Centre, Suriyawera Block）

Suriyawewa Blockのオフィサーへの聞き取り
（Development Centre, Suriyawera Block）

まばらに農家が集まってきた夕方の卸売市場
（Tunkama Market, Changrawewa Block）

公共の卸売市場に夕方バナナを運ぶ農家
（Tunkama Market, Changrawewa Block）

FAOの支援でできた農民組織の卸売市場
（Tunkama Market, Changrawewa Block）

農民組織の卸売市場でのヤムイモの選別
（Tunkama Market, Changrawewa Block）

入植者が始めたバナナチップス
（Habararuwewa, Kiribawewa Block）

ブロック事務所にある営農パンフレットの撮影
（Block Office, Mayurupura Block）

Mayurapura Blockの農民組織への聞き取り
（Block Office, Mayurapura Block）

Mayurapura Blockのオフィサーへの聞き取り
（Block Office, Mayurapura Block）

塩害の出ている農地
（near LT-5 Unit 2, Mayurapura）

農民組織が運営する淡水養殖池
（near LT-3, Unit 3, Mayurupura Block）

貯水池への導水路底部の洗掘（near High Tank 4, connecting to LT1, Mayurapura Block）

貯水池につながる急傾斜の農道
（next to LT-2, Mayurapura Block）

1次水路に生える藻と空芯菜
（Branch Canal-1, Suriyawewa Block）

貯水池に生えるアシと、道路として使われている余水吐（High Tank, Mayurapura Block）

支線土水路の侵食
（Branch Canal-2, Mayurapura Block）

幹線土水路で水浴びする水牛
（Branch Canal-2, Mayurapura Block）

幹線水路に架かる橋の崩壊部と、傾いた動物防除電気柵（Branch Canal-2, Mayurapura Block）

農業資材販売所の液体及び固体肥料
（Suriyawewa Town）

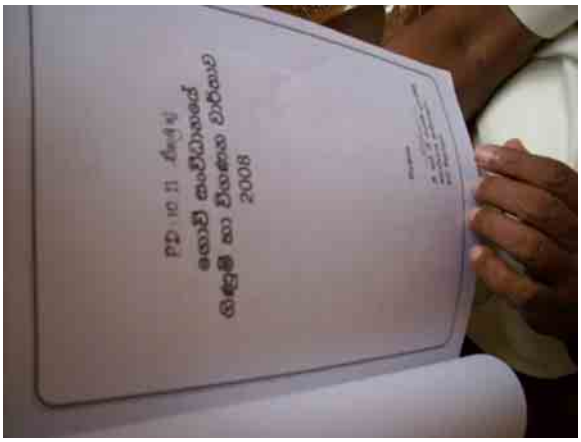
乾物販売所の豆類と香辛料
（Embilipitiya town）

乾物販売所での品目ごとの販売価格
（Embilipitiya town）

ユニット事務所で研修に利用される角部屋
（Andarawewa unit, Mayurapura block）

農民組織への聞き取り
（PD-10, PU-11, Unit 2, Mayurapura Block）

農民組織で作成している銀行口座の通帳
（UD-10,11, Unit 2, Mayurapura Block）



外部監査員による農民組織の監査報告
（UD-10,11, Unit 2, Mayurapura Block）

共同出荷場として利用されているコミュニティセンター（UD-6,Unit 1, Mayurapura Block）

コミュニティセンターでの農民組織の掲示物
（UD-6,Unit 1, Mayurapura Block）

バナナ共同組合への聞き取り

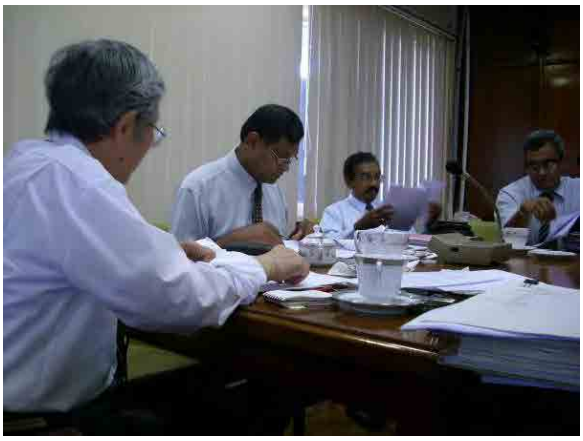
一面のバナナ畑

バナナ協同組合の会計

バナナ協同組合の扱う有機肥料

間引きされたバナナ

末端水路の草刈をする農民



灌漑水資源管理省への報告

略 語 一 覧

略　語	正式名	日本語
AO	Agriculture Officer	農業改良普及員
CAP	Community Action Plans	コミュニティ行動計画
C/P	Counterpart	カウンターパート
DAD	Depeartment of Agrarian Development	農業省農業開発局
DOA	Department of Agriculture	（農業省）農業局
DOI	Department of Irrigation	農業省灌漑局
EA	Engineering Assistant	技術アシスタント
ERD	External Resources Department	（財務・計画省）対外援助局
FA	Field Assistant	農業改良普及員（末端の普及員）
FO	Farmers Organization	農民組合
GDP	Gross Domestic Product	国内総生産
IE	Irrigation Engineer	灌漑技師
ID	Irrigation Department	灌漑水資源管理省灌漑局
IPNS	Integrated Plant Nutrition System	総合的植物栄養体系システム
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
MASL	Mahaweli Authority of Sri Lanka	マハヴェリ庁
MIWRM	Ministry of Agriculture and Cooperatives	灌漑水資源管理省
MOA	Ministry of Agriculture	農業省
MOU	Memorandum of Understanding	協定書、覚書
NGO	Non-Governmental Organization	非政府組織
OJT	On-the-Job Training	実地研修
PCM	Project Cycle Management	プロジェクト・サイクル・マネジメント
PO	Plan of Operations	活動計画表
PPP	Public Private Partnership	官民パートナーシップ
SAPROF	Special Assistance for Project Formation	案件形成促進調査
SMO	Subject Matter Officer	専門技術員
TO	Technical Officer	技官

第１章　調査の概要

１－１　調査団派遣の背景

スリランカ民主社会主義共和国（以下、「スリランカ」と記す）における農業セクターは、GDPの12%を占め、人口の32%が農業関連の業務に従事し、総人口の70%以上が農村部に住む、重要セクターに位置づけられる。特に南部地域の乾燥地域においては、乾期の水不足解消、農業インフラ整備、作物多様化の促進等が貧困解決に向けた課題であり、これまで建設された多くの灌漑施設の適切な維持管理も重要な課題となっている。

スリランカ南部においては円借款案件「ワラウェ川左岸灌漑改修拡張計画事業」（WLBP）（1995～2008年）」にて整備された6,250haの灌漑農地の新規開発と既存地区2,900haの灌漑施設の改修に関連した円借款附帯プロジェクトとして、灌漑水資源管理省・マハヴェリ開発庁（マハヴェリ庁）から要請された案件である。上述のWLBPでは、住民移転や住宅整備に遅れが生じ、当初計画した8,650世帯のうち5,661世帯までが案件終了時までに入植したものの、本調査時点でも入植は続いている。本案件は、WLBPの対象地域に対し、同事業の開発効果を増大させることをめざして、既存開発地区の施設運用実態の調査及び最適な維持管理計画の策定と体制整備、予防保全手法の導入による将来的な施設維持管理コストの低減、及びマハヴェリ庁を通じた農家・農民組織への営農指導などの技術支援を行うことを目的として要請された。

しかしながら、内容が多岐にわたり、マハヴェリ庁、灌漑水資源管理省、農業省等、関連省庁が複数にかかわると想定され、連携体制の調整に難しさが伴うことが懸念された。このため、本調査は要請背景及び実施・協力体制構築等を含め、必要な情報の収集・分析を行い、プロジェクトの再検討を行うことを目的として実施した。

１－２　調査の目的

スリランカの灌漑、環境管理分野にかかる国家計画及び法制度、実施機関、維持管理体制、要請サイト状況などの基礎情報を収集し、スリランカの灌漑、環境管理分野のニーズ及び課題を確認するとともに、要請内容を再検討のうえで、実施可能性を検討する。

同時に、スリランカの灌漑農業開発の課題の整理への助言を行う。

１－３　団員構成

担当分野	氏　名	所　　属
総括	金森　秀行	JICA国際協力専門員
調査企画	赤石　布美子	JICA農村開発部水田地帯第二課 職員

１－４　調査日程

調査：2010年6月13日から6月25日まで

月日	曜	時間	内　容
6/13	日	11:30 17:40 22:35 23:45	成田発（SQ637） Changi着 Changi発（SQ468） Colombo着
6/14	月	9:40 11:00	JICAスリランカ事務所との打合せ 灌漑水資源管理省・マハヴェリ庁表敬 元WLBPマネジャー聞き取り
6/15	火	AM PM	Colombo > Embilipitiya マハヴェリ庁ウダ・ワラウェ事務所との打合せ ダム、1次水路、2次水路視察
6/16	水	AM PM	Mayurapuraブロック事務所聞き取り 3次水路、末端水路視察 ユニット事務所聞き取り 農民組織聞き取り
6/17	木		3次水路、末端水路視察 ユニット事務所聞き取り 農民組織聞き取り
6/18	金		3次水路、末端水路視察 ユニット事務所聞き取り 農民組織聞き取り
6/19	土	AM PM	South CAP専門家への聞き取り 書類作成
6/20	日		書類作成
6/21	月	AM	マハヴェリ庁ウダ・ワラウェ事務所とのAide Memoire検討 Embilipitiya > Colombo
6/22	火	AM PM	JICAスリランカ事務所との打合せ Aide Memoire案修正 灌漑水資源管理省・マハヴェリ庁へAide Memoire案提示
6/23	水	9:30	灌漑水資源管理省・マハヴェリ庁へのAide Memoire案説明 Aide Memoire案　修正
6/24	木	9:00 11:30 14:00	灌漑水資源管理省・マハヴェリ庁へのAide Memoire手交 在スリランカ日本大使館報告 JICAスリランカ事務所報告 JICAスリランカ事務所とのプログラムの方向性検討
6/25	金	1:00 7:30 9:40 17:35	Colombo発（SQ469） Changi着 Changi発（SQ012） 成田着

１－５　調査結果の概要

本調査では、灌漑水資源管理省、マハヴェリ庁及びマハヴェリ庁ウダ・ワラウェ事務所との協議、農家組織への聞き取り調査、現地での関連施設の視察を通じ、要請された「ワラウェ川左岸灌漑・環境管理プロジェクト」の背景と中心課題及びプロジェクト実施体制について確認した。現地の状況を踏まえ、JICAスリランカ事務所とともにプロジェクトの構想を検討した。

プロジェクトの構想としては、スリランカへ「予防保全」の新しい概念を取り入れた維持管理システムの導入を行い、マハヴェリ開発庁が同モデルを生かして、全国展開することを基本的な概念とすることとし、現在、案件形成促進調査（Special Assistance for Project Formation：SAPROF）が行われているモラガハカンダ円借款におけるソフトコンポーネントとの関係も、整理する必要があることが確認された。

１－５－１　情報収集

（1）プロジェクト実施の背景にかかる基礎情報

以下の情報を収集した。（詳細は、第2章、第3章及び付属資料1 Aide Memoire参照）。

・スリランカの社会情勢
・対象セクター・サブセクターの状況
・スリランカ政府の開発戦略
・過去・現在実施されている対象分野関連援助事業
・対象開発課題とその現状

（2）対象課題にかかる制度的枠組み

マハヴェリ庁及びマハヴェリ庁のウダ・ワラウェ地区の出先機関以下の情報を収集し、付属資料1 Aide Memoireに取りまとめた。

以下に、マハヴェリ庁のウダ・ワラウェ地区の出先機関について、特記すべき事項を次に挙げる。

1）Local事務所は、現地事務所（Resident Project Manager’s office：RPM office）、Block事務所、Unit事務所の三階層からなる。

2）職員の研修予算は下記のように2007年以降に激減している。現地の聞き取り調査でも、Block&Unit事務所では、3年以内に研修を受講した現地スタッフは、Suriyawewa blockでは8名中の2名（25%）、Mayurapura Blockでは24名中の5名（21%）である。円借款の研修に参加したのは、Mayurapura Blockでは24名中の3名（約13%）であった。

表１－１　過去5年間における研修予算

Fisical Year	Amount from regular budget（Million Rs）
2006	12.90
2007	138.65
2008	70.26
2009	21.75

出所：MASL, May 2010

（3）水管理システムと農民組合（Farmers Organization：FO）

水管理システムと農民組合についての情報を収集し、付属資料1 Aide Memoireに取りまとめた。Aide Memoireに詳細を示すが、特記すべき事項を次に挙げる。

幹線水路と視線水路はマハヴェリ庁が管理し、FOはD-canal（3次水路）とF-canal（末端水路）を管理する。対象FO数と管理移管が終了した（2nd Agreement締結）数を表１－２に示した（詳細（３－１－４（5）灌漑管理移管プログラム参照）。FOへの管理移管率は60÷136＝44%と遅れている。2010年中には移管を完了する計画である。

表１－２　灌漑管理移管の進捗状況

Area	No. of FO	Registered under 2000 Agrarian service act	1st Agreement	2nd Agreement
Left Bank	136	73		60
Right Bank	137	117		128
Total	273	190	0	188

出所：MASL at the end of May, 2010

3）FOの水利費に徴収率はほぼ100%であるが、最近に整備が終わったMayurapura地区は少し低い。

4）水管理組織はFOだけで日本の土地改良連合に類似した組織はないが、FOの上部にUnitレベル・Blockレベル・ProjectレベルのCoordination committeeがある。

5）FOは日本の土地改良区と同様に施設維持管理と水管理を担当するが、それだけではなく、水稲への政府補助肥料の配布・村落開発事業・信用事業及びその他組合員間のさまざまの問題解決にあたる。よって、水利費の徴収率が100%近いから組織が堅実ではなく、これらさまざまな活動についても考慮してFOの活動を評価すべきであるとマハヴェリ庁は説明している。

6）FOのCommittee memberは奉仕活動であるために無給であり、毎年改選される。

7）集まった農民全員に入植者の導入研修に参加した人数を尋ねたところ、Suriyawewa blockでは（24 FOの）31名中の13名（43%）、Mayurapura Blockでは（26 FOの）39名中の20名（51%）であった。その理由は次のとおりであった。

① 研修の召集があったときは入植直後の多忙な時期で参加できなかった（FOからの聞き取り）。

② FOの代表者が受講したが毎年改選されるので、現地調査で召集したFO代表のなかに研修を受講しなかった農家がいた（RPM事務所での聞き取り）。

③ マハヴェリ庁の職員の異動で連絡が不十分であった（FOからの聞き取り）。

④ 研修の主なプログラムは2007年と2008年の2年間に集中したので、期間が短かった（RPM事務所での聞き取り）。

⑤ 30～40%の農家は円借款事業実施中に入植できなかった（コロンボでのMASL本部での聞き取り）。

（4）普及システム

普及システムについての情報を収集し、付属資料1 Aide Memoireに取りまとめた。

Aide Memoireに詳細を示すが、特記すべき事項を次に挙げる。

1）日本の2004年度までのシステムと同様に専門技術員（Subject matter officer）と農業改良普及員（Agricultural Officer：AOとField Assistant, FA）からなり、普及方法もT&Vシステム（Training and Visit, ここでは普及員の研修及び普及員による訪問指導）である。

2）FA（末端の普及員）1人当たりの担当農家数平均489戸と、潤沢な普及員の配置である。くわえて、すべてがオートバイで普及活動を行っている。ただし、業務の約40％は肥料配布などの普及以外の業務に費やされている。それでも普及員数はT&Vシステムには比較的十分な数であると考えられる。

3）上述のように職員全体の研修予算が減少しているため、普及員の能力強化研修受講者が少ない。

（5）流　通

流通システムについての情報を収集し、付属資料1 Aide Memoireに取りまとめた。

Aide Memoireに詳細を示すが、特記すべき事項と加筆すべき事項を次に挙げる。

1）流通の中心はPolaと呼ばれる公共の卸売・小売市場で、ワラウェ地域に16カ所ある。16カ所のうち14カ所は卸売・小売兼用で、1カ所が卸売り専用、1カ所が小売専用である。政府が所有し、1年間の契約で民間に管理委託している。

2）FOが管理する集配所が1カ所ある。

3）その他、村のなかに農民グループ・農家・農家の後継者もしくは仲介業者が開設している集配所がある。

4）これら集配所に仲介業者が来て農家から買い付けて市場へ販売される。仲介業者の最も多くはコロンボから来る。

5）中国が港建設中で将来の市場と思われるHambantotaについてRPM事務所で聞き取りしたが、バナナなどの生産地が近いので市場として有望ではないと回答した。

6）農民グループのなかには自ら集配所を経営して利益を上げているFOがある。現地調査では右岸のBanana associationと左岸のCollection centerを訪問した。いずれも流通以外のFOの組織活動が活発であった。マハヴェリ庁の希望は、FOの市場・流通能力の強化によってコメ以外の作物（バナナなどの）の栽培を増やし、かつ組織力を高めたいと考えている。

7）円借款で実施した研修に参加して加工技術を学んで販売している新規入植者（ただし、土地を持っていない）の聞き取り調査をした。研修では15名が受講したが営業に結びつけたのは1名だけであった。他の14名は土地を持っている農家の主婦や後継者であった。

8）JICAがHambantotaで実施している技術協力プロジェクト「南部地域の村落生活向上プロジェクト（South CAP）」の流通戦略について専門家に聞き取りしたところ、次の回答であった。

① 流通に関して、対象グループは33世帯でRegisterされた団体になっている。もう2団体を実施しようとSuriyawewa Divisionで進めている。

② 農家の交渉能力が低いので仲介業者（Middleman）を選定して交渉にあたってもらう方向で実施している。
③ 実践につながるマーケティングとしてリスクを負ってやるという農家はなかなかいない。
④ 食品加工について研修を受けることは歓迎するものの、マーケットに生かす人は限られている。

１－５－２　開発課題の分析

（1）対象開発課題

現地で約50名の職員と対象FOの50 FO（全体の37%）から問題の聞き取り調査して、類似の問題を整理して24の問題を抽出し、それらを用いて問題分析を行った。この分析結果の問題は大きく以下の3つに整理された（詳細は第4章及び付属資料1 Aide Memoire参照）。

問題－1：水田化による水資源の不足
問題－2：水利用効率の低下
問題－3：水供給効率の低下

（2）優先順位

要望調査で挙げられた4項目の問題の間の優先順位についてマハヴェリ庁から聞き取った結果は次のとおりである。

優先順位－1：非水稲作物の市場流通価値を増すための価値連鎖（バリューチェーン）機能の不備
優先順位－2：非水稲作物の導入と比較的複雑な灌漑施設にかかる水管理維持管理研修に係る職員と農家の研修訓練の不足
優先順位－3：効果的水管理・施設維持管理を確保する組織整備の不適切
優先順位－4：水管理・非化石燃料駆動の農業機械の活用による環境管理の考慮の欠落

これらを上述の問題分析と併せて討議した結果、優先順位－1は問題－1に適合し、優先順位－2&3は優先順位－3に適合すること、優先順位－2は問題－1と2に関係することを確認した。また、環境問題について、現地調査では塩害・雑草の繁茂が環境問題としてあげられて問題系図に含めたが、要請書であげられたほかの問題は現地調査では確認できなかったので含めなかったことを説明して、理解された。

１－５－３　プロジェクト戦略にかかる考察

（1）実施可能性の検討

プロジェクト・サイクル・マネジメント（Project Cycle Management：PCM）によれば、目的系図のなかからプロジェクトして適正なアプローチもしくはアプローチの組み合わせを選択することが次の段階として求められる、といわれている。目的系図を作成したところ、3つの中アプローチと5つの小アプローチがあり、その実施可能性について、中課題単位で検討を行った。

プロジェクトの選択について、スリランカ側の優先順位－1が第1中課題の水田化の抑制にあることから、これ単独か他の中課題を組み合わせるかで3つの代替案を検討した。

表１－３　代替案

代替案No.	プロジェクト名（仮）	プロジェクト目標	成　　果	関係する中課題No.
1	非水稲作物振興プロジェクト	農家の水田化が抑制される	（1）非水稲作物の市場流通価値の向上がなされる。	1
			（2）FOの営業能力が強化される。	
2	総合的灌漑農業管理計画	非水稲作物を中心とした灌漑農業が振興される	（1）非水稲作物の市場加工が振興される。	1
			（2）FOの維持管理能力が強化される。	2
3	総合的灌漑農業管理保全計画	灌漑農業の持続性が確保される	（1）非水稲作物の市場加工が振興される。	1
			（2）ワラウェ左岸地域の維持管理能力が強化される。	2&3

１－５－４　その他考慮事項

（1）先行実施されたWLBPとの関係

先行実施されたWLBPに対して本件は研修の補完と発展という位置づけになる。具体的には次のようである。

1）質的面では、流通加工研修の発展と維持管理における予防保全の導入がある。第1の流通加工は、WLBPでは流通については展示程度の研修だけであったので4P（Product, Price, Place, Promotion）を含む体系的な研修として内容を充実すること、加工も加工方法と原料作物・果物にかかる内容を充実することがあげられる。維持管理については、予防保全を導入することはWLBP研修の発展になる。

2）量的面では、補完になる。すなわち、FOメンバー及びマハヴェリ庁で研修を受講していない農家・職員が多い。理由は、入植直後の多忙・FO代表の改選による交代・連絡不十分・期間の短さ・入植の遅れである。これらのうち、入植直後の多忙・FO代表の改選による交代を除く他の理由はスリランカ側が解決できたことである。FO代表の改選による交代については、改選後もマハヴェリ庁職員がフォローアップ研修を実施すべきことであり、そのために職員研修も実施された。しかし、入植直後の多忙については考慮すべきと考える。すなわち、入植直後は家の建築・家族の移動と生活の定着など多忙を極めており、家族的なことが研修よりも優先されたことは考慮すべきと考える。

なお、マハヴェリ庁職員が実施すべきWLBPのフォローアップ研修についてマハヴェリ庁から聞き取りしたところ、研修予算獲得に努めているとのことで、そのことはAide Memoireに含めた。

（2）対スリランカ灌漑セクターの全体的な課題との関係

類似案件としては、技術協力プロジェクト「乾燥地域の灌漑農業における総合的環境管理能力向上計画」（ICIM）と円借款「モラガハカンダ開発事業」（モラガハカンダ）のソフ

トコンポーネントがある。これらは、水利組織強化・営農改善・加工流通・維持管理・研修と類似の内容を含む。

本件のこれら2案件との相違については以下のように考える。

① ICIMは貧困対策にかかる灌漑農業モデルといえる。すなわち、小規模農家を対象とし、灌漑関係は末端水路の改修を主とし、流通加工ではFO以下の小グループでの加工を中心とした活動をしている。それに対して本件は経済開発にかかる灌漑農業モデルといえる。すなわち、ある程度（0.8ha～1.0ha）の規模の農家を対象とし、灌漑関係では基幹施設からの末端に至るシステム全体をとらえ、流通加工はFO単位もしくはFO集団による規模の大きなものを念頭においている。このことはマハヴェリ庁との協議でも、ICIMは小規模開発である点が異なると説明された。

② モラガハカンダのソフトコンポーネントはFOの設立強化・農業普及・流通加工・研修がその内容でWLBPのソフトコンポーネントと同様な質量になると思われる。そこには前述のWLBPと本件の質的比較であげた、重厚な加工流通研修の実施と維持管理における予防保全が本件の特長である。本件で育成したFO・職員は整備したモラガハカンダのソフトコンポーネントの研修に活用が期待される。

なお、技術協力プロジェクトでマハヴェリ庁へ移転した開発モデルを全国に広めるのは研修によることになる。しかし、現状として研修予算が減額されていることから、調査団としては上述のように研修予算獲得に努力していることだけを確認した。

(3) 本案件の位置づけについてのスリランカ事務所とスリランカ日本大使館の意向

1) スリランカ事務所の意向

① 本案件は、現在の技術協力プロジェクト「乾燥地域の灌漑農業における総合的環境管理能力向上計画」（ICIM）の後継案件として位置づけられる。

② コンポーネントとしては、先方の優先度の最も高い、①稲以外の作物に関する営農と農業サービスを案件の中心コンポーネントとすることが想定されるが、③灌漑施設の維持管理（ハード、ソフト面）を含めるか、規模感、案件開始時期は要検討事項である。

③ 農漁村・地方開発の方向性に関して事務所では、灌漑開発と作物多様化に焦点をあて、灌漑案件は本案件にて技術協力を最後とし、有償（ソフトコンポーネント含む）に絞ることを検討中である。

2) スリランカ日本大使館の意向

① 今回Problem Treeで指摘された稲以外の作物から稲への転作、灌漑施設の維持管理（ソフト、ハード面）のすべてに対応する案件にできれば望ましい。

② 規模感としては現在のICIM程度が望ましい。

③ 灌漑施設の維持管理（ハード面）は重要と考える。

(4) ポジションペーパー・プログラム作成への助言

前述の対スリランカ灌漑セクターの全体的な課題との関係は、プログラムのなかで整理

されることが理想的である。そこでスリランカ事務所から作成中の農漁村・地方開発プログラム案の説明を受け、今後の課題整理へ次の助言を行った。

1）農漁村・地方開発のプログラムの検討にあたり、現在多くの課題（5課題：灌漑開発、作物多様化、畜産、コミュニティ開発、漁業）に対応する内容となっているところ、その絞り込みをする必要がある。

2）「包括性・公平性・出口戦略」というキーワードで根拠と将来計画を明確にする必要がある。

3）紛争影響地域住民生活・社会環境改善プログラム（北部・東部支援）にも関連案件が含まれることが想定されるところ、それも併わせて検討すべきと考えられる。

スリランカ事務所からは7月第3週のプログラム調整会議にて再度検討することが伝えられた。

第２章　要請の背景

２－１　スリランカ国の社会情勢

スリランカは、近年6%を超える経済成長率を記録している。2009年には、北部地域での紛争や世界経済危機のような、負のインパクトといえる事情があったものの、3.5%の経済成長を達成した。このような状況から、1人当たりの国内総生産（Gross Domestic Product : GDP）も2000年には914米ドルであったが、2009年には2,053米ドルへと著しく上昇している。

一方、農業生産性は、ほぼ自給を達成しているコメを除き、それほど変わっていない。輸出に関していえば、2009年の増加率は工業製品の輸出は75%となったが、農産品は24%にとどまった。

農産物の輸出については、1970年代には外貨獲得の最大の品目であり、すべての輸出品のうち、24%（うち、紅茶 17%）が農産物によって占められていた。

このように、コメやそれ以外の作物からなる国内農業セクターのGDPに占める貢献度は、徐々に減少している。

スリランカのセンサス・統計局の調査結果によれば、2009年の貧困率は都市で6.7%、農村で15.7%であり、スリランカでは、貧困層の82%は農村に存在している。このため、国家レベルの自立を達成し、食料安全保障を保ち、貧困緩和に向けた収入と富の均衡のために、農業セクターの成長は最も重要な事項とされている。

２－２　スリランカ国農業分野全体の状況

スリランカの農業セクターは、小規模農家が中心となって主食のコメやその他の畑作物（Other Field Crops：OFC）等を生産する非プランテーション（食用作物生産）部門、農園を中心に紅茶・ゴム・ココナッツ等の商品作物を生産するプランテーション部門、その他の畜産、漁業、林業などの部門に大別される。

かつて農業はスリランカ経済の基幹産業であったが、GDPにおける農業セクターのシェアは国内の産業構造の変化に伴って長期的に低落基調にあり、1970年代前半の38%から2009年には12%にまで低下している。国家の輸出収入における同セクターのシェアも、同様に大きく低下している（1977年：79%→2009年：24%）。

しかし、農業は依然として国内労働人口の32%を抱える雇用の大きな受け皿であり、国内人口の70%が居住する農村地域において、多くのコミュニティや小規模農家の生計を支える重要な手段となっている。

コメ及びその他の畑作物（OFC）の生産性向上を実現するうえで、灌漑開発は最も重要な手段となっている。住民の生活用水、家畜の飲用水、養殖池の給水、電力供給のための基本インフラとしても不可欠な役割を果たす。

過去、政府は灌漑施設の修復・開発及び効率的な水利用による作付率の向上や灌漑農地面積の拡大に優先的に取り組んできており、1968年にマハヴェリ河流域及び北中部州の乾燥地域の総合灌漑開発（約36.5万ha）を実現するための30年計画として「マハヴェリ河総合開発計画」のマスタープランを策定している。1979年に内容の見直しと事業実施機関であるマハヴェリ庁の設立が行われ、1980年代よりさまざまなドナーの支援を得つつ事業を実施してきている。

スリランカ政府の2006年の資料によれば、国内の潜在灌漑面積は約60万haとされ、このうち約80%が乾燥地域に分布している。灌漑地区は大規模灌漑地区（80ha以上）と小規模灌漑地区（80ha

未満）に分類され、大規模灌漑地区（約40万ha）のうち、約300以上（約30万ha）の地区は灌漑水資源管理省の灌漑局（Irrigation Department：ID）、残る約10万haはマハヴェリ庁によって運営される。小規模灌漑（約20万ha）は農業省の農業開発局（Department of Agrarian Development：DAD）によって管理され、全国で15,000以上の地区が存在するといわれる。しかし、農民組織による不適切な維持管理や老朽化、紛争による破壊や荒廃により、これらの多くの灌漑地区は機能していない状況にある。

２－３　スリランカ国の灌漑分野に関する戦略

現在、スリランカ政府の灌漑開発事業は、主に灌漑水資源管理省（灌漑局、マハヴェリ開発庁）・経済開発省・農業省農業開発局によって所管されている。政府は、マヒンダ・チンタナにおいて、効率的な水利用・灌漑システムの生産性改善を通じて2016年までに商業的な灌漑農業への転換を図ることを開発目標として掲げ、そのための戦略として既存の灌漑施設の改修及び新規の灌漑施設の開発を重視するとしている。

マヒンダ・チンタナにおいて、農業は地方住民にとって、生活の糧であると示され、当該セクターが有効に活用されることにより、地方部での貧困削減に貢献するといったことが示されている。また、スリランカ政府は、伝統的農業から生産性を向上させる農業への転換についても言及している。農業セクターの政策の最終到達点は、持続的な収入、食料安全保障、農業に依存している人々の収入手段を確保し、貧困層へ適量の食料を適切な価格で供給できることである。

スリランカ政府は、従来のような低価値農業から高価値農業へのシフトと、生産性と競争性の向上に対し、高い優先度をおき、農業セクターが著しい成長を遂げる糸口にしようとしている。これに関する政策については、以下のように示されている。

（1）生産性の向上
（2）マーケティングと関連するインフラの整備
（3）技術普及
（4）均衡のとれた開発のためのコミュニティ組織化とその組織への参加
（5）環境悪化の低減
（6）低い生産性の農業から高い生産性の農業への転換
（7）輸出関連の農業セクターにおける生産性、生産量、競争力の向上
（8）労働力や土地などの農業セクターの生産性に関係する要素の改善
（9）機械化や農業にかかる労力を削減できるような技術移転を図った農業生産性の向上
（10）市場メカニズムの開発と望ましい貿易規則の導入

上記の政策に関連し、本プロジェクトは（9）の一部以外に合致するとして、スリランカ政府側から説明を受けた。

また、国家農業政策（2007年）には、下記の課題について政策ステートメントが示されている。

（1）農業生産性向上
（2）種苗生産
（3）肥料
（4）農薬

（5）農業機械化
（6）灌漑・水管理
（7）土地管理
（8）土壌保全
（9）農業金融
（10）農業保険
（11）農業研究
（12）農業普及・農業教育
（13）収穫後処理技術
（14）マーケティング
（15）農業に基盤を置いた産業
（16）伝統的農産物及び伝統的農業
（17）家庭菜園
（18）農業への投資
（19）植物遺伝資源の利活用
（20）農業への若者の参加
（21）農業輸出

本プロジェクトは、上記のうち（5）（16）（19）を除くすべてに関連する案件であると、スリランカ政府から説明を受けた。

２－４　スリランカ国政府及びドナーの協力する灌漑事業

JICAを含むドナーによる近年の灌漑分野の支援は、単に灌漑インフラの建設や改修のみを行うだけでなく、農業や生計向上支援なども含めた総合的な農村開発プロジェクトの形態をとるものが多い。現在、灌漑分野の支援を最も積極的に行っている他ドナーは世界銀行であり、（North-East Irrigated Agriculture Project：NEIAP）及びその後継案件であるRe-awaking Projectを通じて北東部の灌漑施設改修・参加型農村開発、（Dam Safety and Water Resources Planning Project：DSWRPP）を通じて国家水利用計画の策定や80の大規模ダムの改修・維持管理改善を支援している。

以下に、マハヴェリ開発庁が実施するプロジェクトについて示す。

ドナー	分　野	プロジェクト名	金　額	期　間
JBIC	灌漑リハビリ、改善	ワラウェ川左岸灌漑改修拡張計画（SL-P45）	25億7,200万円	1995～2001
JBIC	灌漑リハビリ、改善	ワラウェ川左岸灌漑改修拡張計画 II（SL-P48）	93億9,300万円	2000～2008
JICA	肥料	肥料利用適正化計画プロジェクト	1,400万円	2006～2008
JICA	灌漑	乾燥地域の灌漑農業における総合的管理能力向上計画	3億5,000万円	2007～2010
世銀	灌漑リハビリ、改善	Dam Safety and Water Resources Planning Project	7,200万米ドル	2008～2012

国際協力銀行（JBIC）のワラウェ川左岸円借款事業（WLBP）では、6,250haの土地が新規に開発され、既存の施設の改善も併わせて行われた。このプロジェクトはハードウェアの整備について、目標のほぼすべてが達成された。また、WLBPについては、dual canal systemや夜間の貯水を含めたHigh tank, low tankなどの新しい灌漑システムを導入した。加えて、農業普及や水管理、農家組織化及び組織強化、植林、野生象防除等のサービスについても提供された。農業普及の特徴は、土壌の状態や気象条件に合わせた作物多様化である。コメ以外の作物の栽培地は68％であり、この高い割合は、プロジェクトの大きな特徴でもある。

第３章　灌漑分野の開発課題とその現状

３－１　対象開発課題の制度的枠組み

英文要請書によれば5課題が提示されている。すなわち、①水管理、②灌漑施設の維持、③農民組合（FO）の能力強化、④環境配慮、⑤加工流通である。これらのうち①・②・③・④はマハヴェリ庁とFOにかかる課題で、⑤の加工流通は管理の視点からは民間セクターであるがFO支援の視点からはマハヴェリ庁が関係する。よって、灌漑水資源管理省・マハヴェリ庁・FO・市場流通について、制度的枠組みを以下に解説する。

３－１－１　水資源管理省

(1) 主たる業務と機能

① 灌漑・貯水池・水資源管理及び関係課題にかかる政策・プログラム・プロジェクトの形成
② 政策・プログラム・プロジェクトの実施監理
③ 当該省に管轄する公共サービスの効率的かつ国民友好的な提供
④ 近代的技術を駆使した効率的実施のための制度・方策の改善
⑤ 塩害除去事業
⑥ 雨水収集
⑦ 洪水防御
⑧ 河川等水源の汚染防止
⑨ 灌漑・排水・洪水防御にかかる事業の推進・建設・維持・管理
⑩ 灌漑にかかるコンサルタントサービスと建設
⑪ 6灌漑事業にかかる事項

(2) 部署・関係組織及び公共団体

① 灌漑局
② マハヴェリ庁と関係公社・協会（マハヴェリ畜産公社を除く）
③ 中央工学コンサルタント局（以下、英文から「CECB」と略す）
④ マハヴェリ灌漑局プログラム
⑤ 水資源委員会

(3) 関係法規

① 灌漑法
② マハヴェリ庁条例1970-No.23
③ 水資源委員会条例1964-No.29
④ 上述（1）と（2）の事項にかかるすべての法規でかつ他の省庁に属さないもの

３－１－２　マハヴェリ庁

(1) ビジョン・使命・目的・組織及び予算

1) ビジョン

自然が保護された河川及び農村から豊かな社会への移行のための管理された流域の確保と経済開発の推進

2) 使　命

流域における効果的な人的開発とともに人的資源の活用と自然資源の環境融和的・持続的・環境的管理がなされた水資源の確保

3) 目　的

① ダム・貯水池・水路・灌漑配水施設と関係施設の建設・維持及び管理
② 入植地の開発
③ 農業開発と土地開発
④ 入植後の支援
⑤ 流域管理と環境保護
⑥ 復旧・維持とダムの安全確保

4) 組　織

今回の改革においても前回の1997～2000年改革から大きな組織的変更はない。ただし、Executive directorの数は2名になった。それぞれ土木技術担当と経済開発担当からなる。現在、検討中の現地事業所（RPM事務所）を含む組織図を図３－１に示す。

5) 予　算

現在の予算状況を表３－１に示す。

表３－１　マハヴェリ庁の予算

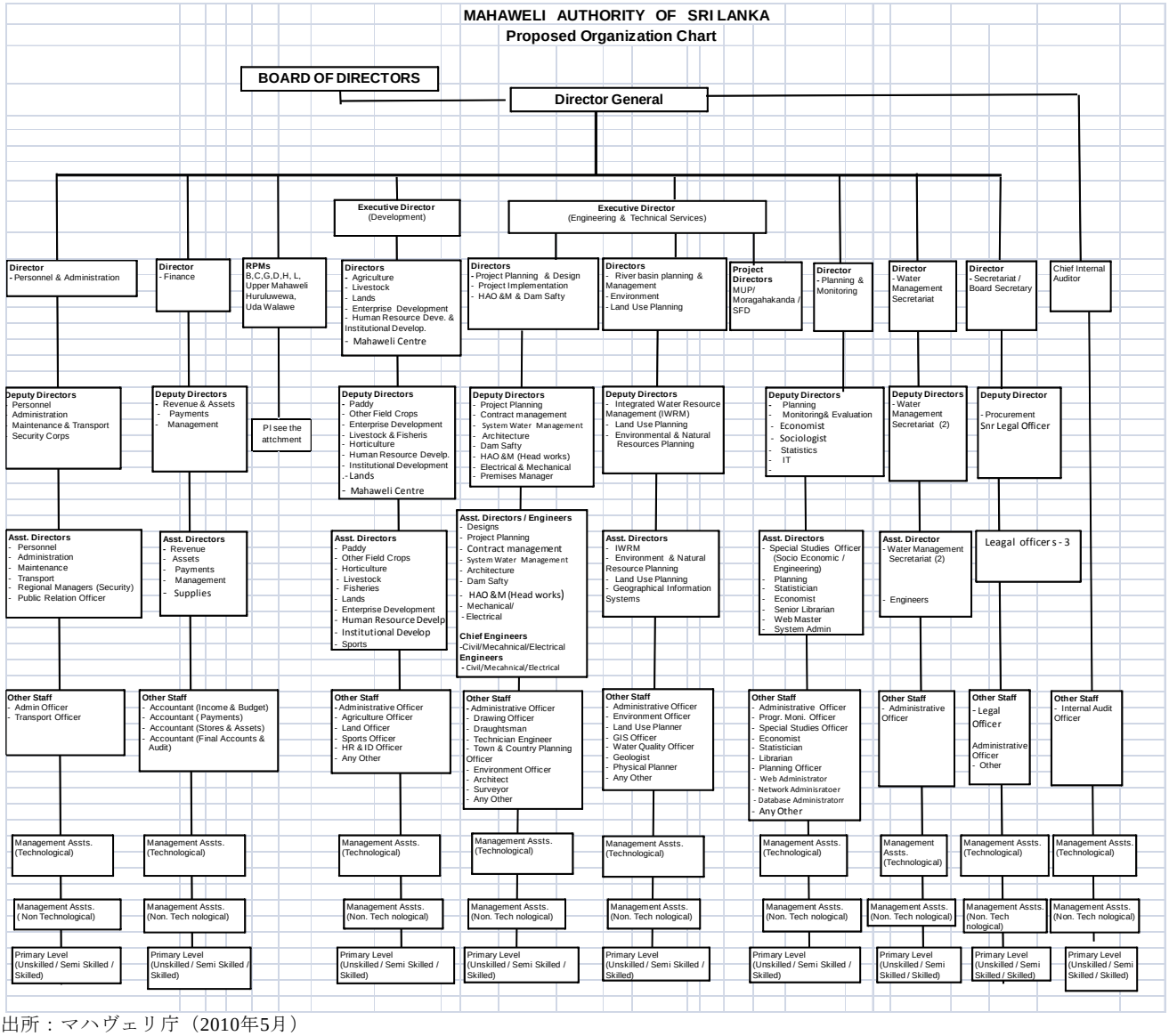
（単位：百万Rs）

項目	1997	2007	2008	2009	2009/1997（%）	1997-2009
Net salary	580.2	1426.2	1564.6	1654.0	285.1	(1073.8)
Other Emulations.	195.8	26.9	22.4	24.5	12.5	171.3
Other Recurrent.	360.7	112.6	138.8	139.6	38.7	221.1
Total Recurrent.	1136.7	1565.7	1725.8	1818.3	159.9	(681.6)
Total Capital	1798.0	4815.0	5271.5	4016.6	223.4	(2218.6)

注：MASL Staff as of March 2010 –（Permanent-4644, Trainees-156）

6）職　員

RPM事務所職員の詳細を表３－２に示す。



出所：マハヴェリ庁（2010年5月）

図３－１　マハヴェリ庁の組織図

表３－２　RPM事務所の職員内訳

Position	CE	EA	DP	TO	Jalapaiaka（Water controller）	Total
［RPM Office］						
DRPM（technical）	1					1
Construction & Maintenance Unit	1	2	3	1	－	7
Flow Monitoring & Operation Unit	2	2	－	3	13	20
Electro Mechanical Unit	2	－	－	－	－	2
［Left Bank area］						
BM Office（Kiriibbanwewa）	1	2	－	3	－	6
BM Office（suriyawewa）	－	1	－	2	2	5
BM Office（Maurapura）	1	3	－	3	2	9
BM Office（Chandrikawewa）	－	3	－	3	5	11
BM Office（Murawasihena）	1	1	－	4	5	11
BM Office（A'pelassa）	－	3	1	4	8	16

CE=Civil engineer, EA=Engineering assistant, DP=Draught person, TO=Technical officer,
出所：マハヴェリ庁（2010年5月）

３－１－３　ウダ・ワラウェ地区のRPM事務所と下部組織

ウダ・ワラウェ地区ではRPM事務所を上部組織として、その下に出先機関としてBlock事務所・Unit事務所がある。

（1）RPM事務所

組織図を図３－２に示し、各部署の活動を以下に記述する。

1）Water management section

雨期96,277ha、乾期89,051haの灌漑を任務とする。

2）Maintenance section

幹線水路、支線水路及び付帯施設の修理と建築物の維持を任務とする。幹線水路は49.56km, 支線水路（B-canalと称す）は47.8km、3次水路（D-canalと称す）は191km、四次水路（F-calalと称す）は647.50kmの延長がある。これらのうち、幹線水路とB-canalはRPM事務所が維持管理を担当し、D&F-canalはFOが維持管理を担当する。水源貯水池は満水位標高88.39mである。

3）Agricultural section

事業準備、情報提供、技術指導、新穀物の紹介、圃場管理を任務とする。統計では、雨期は水稲作13,068ha、バナナ4,135ha、その他果樹64ha、野菜465haが栽培されている。水稲の平均単収は6.24t/haである。

4）Human Resource & Institutional Development（HR&ID）section

任務として270のFOの維持を担当しており、研修の実施及び年2回のボランテイアキャンペーンを行う。ほかの活動として、宗教文化的行事・小規模女性社会活動・ビジネス開発を行う。先行実施されたワラウェ川左岸円借款事業（WLBP）では水稲種子洗浄器・精米機・堆肥製造機が供与されたが、政府からの供与はない。ビジネス開発としてWLBPでは商品フェアがコロンボで開催されるなどしたが、その後は持続していない。

5）Land division

任務は入植委員会の管理で、土地測量・許可上の配布・無償資金供与・土地配分・適任者の選定を行っている。入植地の土地利用では、住宅地5,932ha・灌漑地23,600ha・その他 35,098haで計 64,530haを管理している。

（2）Block事務所とUnit事務所

組織図は図３－３に示し、各部署の活動を以下に記述する。

1）Block Manager

Block事務所の監理を担当する。

2）Unit manager

主たる担当は入植管理で、Unitのなかのすべての資源（Resources）の調整を行っている。農民の福祉・FO形成・農民福祉の参加型管理なども実施している。

3）Technical Officer（TO）

水管理・灌漑施設の維持にかかる助言・住居建設や水路維持にかかる技術的課題への助言を担当している。

4）Irrigation Engineer（IE）

主に水管理・Engineering Assistant（EA）の指導を担当している。

5）Land officer

土地の配分・許可証発行・土地問題の解決・二者間の紛争などの土地問題の解決支援を担当している。

6）HR&ID officer

FOの形成強化・FO研修プログラムの実施・スポーツ及びボランティア活動の支援・宗教活動支援・チーズ生産などの農家企業支援を担当している。

7）Agriculture Officer（AO）

農業と普及の年次行動計画及び月別行動計画の準備・Field Assistant（FA）の調整とモニタリング、他の組織との調整・資材供与の調整・農民とFAの研修を担当している。

8）Engineering Assistant（EA）

主に水管理・D-canalのFOへの委任・輪番灌漑計画策定・施設建設の見積作成を担当している。

9）Field Assistane（FA）

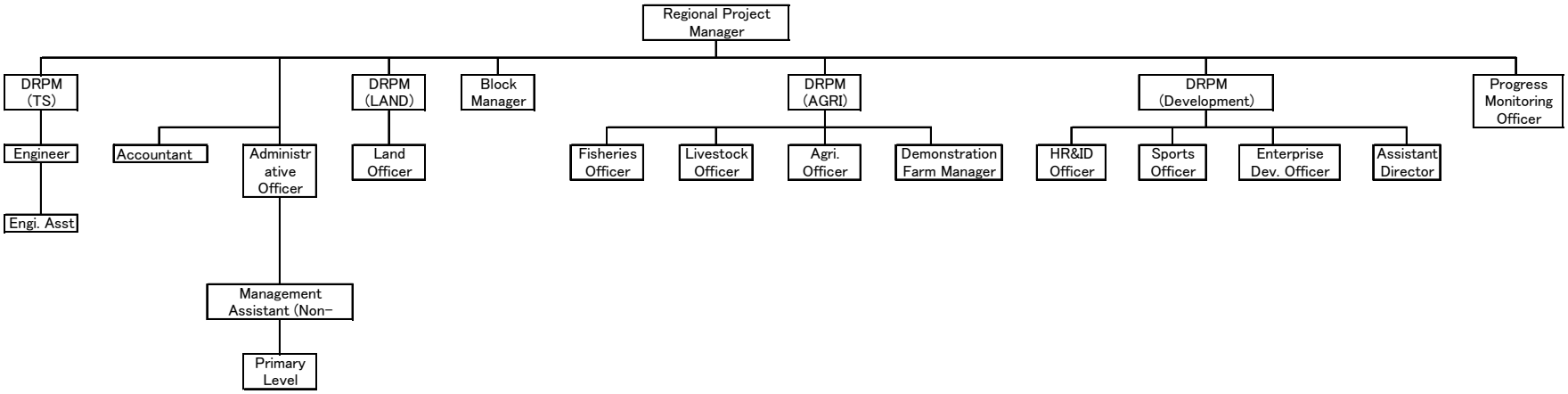
新技術の移転・進捗モニタリング・Unitレベル農業実施計画の策定・他の事務所との調整・肥料補助申請の認可・農家の指導を担当している。FAは収穫後処理及び流通業者との調整も担当している。

10）Fesheri development officer

内水面漁業とエビ養殖及びこれらの活動計画策定・農家の組織化・稚魚調達の調整・内水面漁民の組織化を担当している。現在18の漁民組織がある。

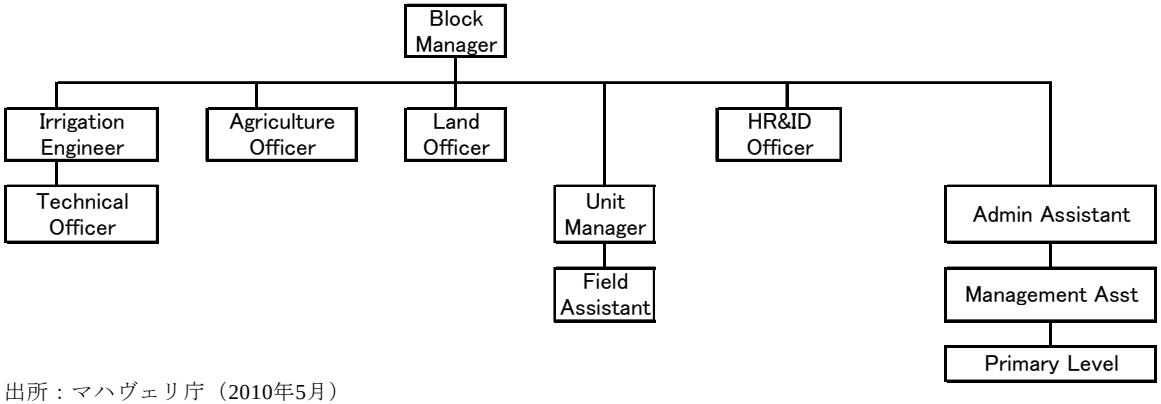
(3) 職員研修

職員研修はHR&IDの下で管理されるが、実施はほかの政府部署の計画に参加する方法で行われる。2010年の研修計画では、動機づけプログラム・能力向上・技能開発・組織開発・マイクロファイナンス・女性開発・職業訓練・農業開発が予定されている。最近5年間の職員研修予算を表３－３に示す。表より、2008年以降は研修予算が減少していることがわかる。現地の聞き取り調査でも、Block&Unit事務所では、3年以内に研修を受講した現地職員は、Suriyawewa blockでは8名中の2名（25%）、Mayurapura Blockでは24名中の5名（21%）である。WLBPで実施された研修に参加したのは、Mayurapura Blockでは24名中の3名（約13%）であった。



出所：マハヴェリ庁（2010年5月）

図３－２　調査時点で提示されているRPM事務所の組織図



出所：マハヴェリ庁（2010年5月）

図３－３　調査時点で提示されているBlock事務所の組織図

表３－３　最近5年間の研修予算

（百万Rs）

会計年度	予　　算
2006	12.9
2007	57.25
2008	138.65
2009	70.26
2010	21.75

出所：マハヴェリ庁（2010年5月）

３－１－４　水管理システムと農民組合（FO）

(1) ウダ・ワラウェ左岸開発事業の概要

事業区域は3県に及ぶ。表３－４に行政区域を、表３－５に事業規模を、表３－６に対象地域の農家数を要約する。

表３－４　ウダ・ワラウェ左岸開発事業の行政区域

州	県	郡	Block	Unit
Uva	Monaragala	Thanamalvila	Kiribbanwewa	Habaraluwewa
				Kiribbanwewa
				Mahagama
Southern	Hambantota	Sooriyawewa	Sooriyawewa	Samaja sewapura
				Viharagala
				Baddewewa
				Alioluara
				Bedigantota
			Mayurapura	Nabadagaswewa
				Andarawewa
				Thalawilla
				Ruhunupura
				Kaluwarawewa
				Bolhida
				Galwewa
				Bellagaswewa
				Ranamurapura
				Katuwewa
				Thissapura
				Samarakoonwewa
				Ballagaswewa
				Tissapura
		Angunakolapalassa	Angunakolapalassa	Pahalagama
				Binkama
				Kanukatiya
				Janidura
			Muravasihena	Siyanbalagoda
				Muravasihena
				Mamadala
				Helekinda
Sabaragamuwa	Rathnapura	Embilipitiya	Cahandrikawewa	Timbolkatiya
				Moraketiya
				Tunkama
				Kuttigala

出所：マハヴェリ庁（2010年5月）

表３－５　ウダ・ワラウェ左岸開発事業の灌漑事業規模（現在の数値）

Description	Unit	Sub Phase I & II	Sub Phase III	Total
Commanding Area	ha	3580	1572	5152
Main canal	km	15	4	19
Branch canals	km	11	12.1	23.1
Distributory canals	km	69	33	102
Field canals	km	239	111	350
High tanks	Nos	28	16	44
Low tanks	Nos	10	9	19
Main & lateral drainage	km	72	38	110
Market roads	km	29	17	46
Buildings	Centres	7	3	10

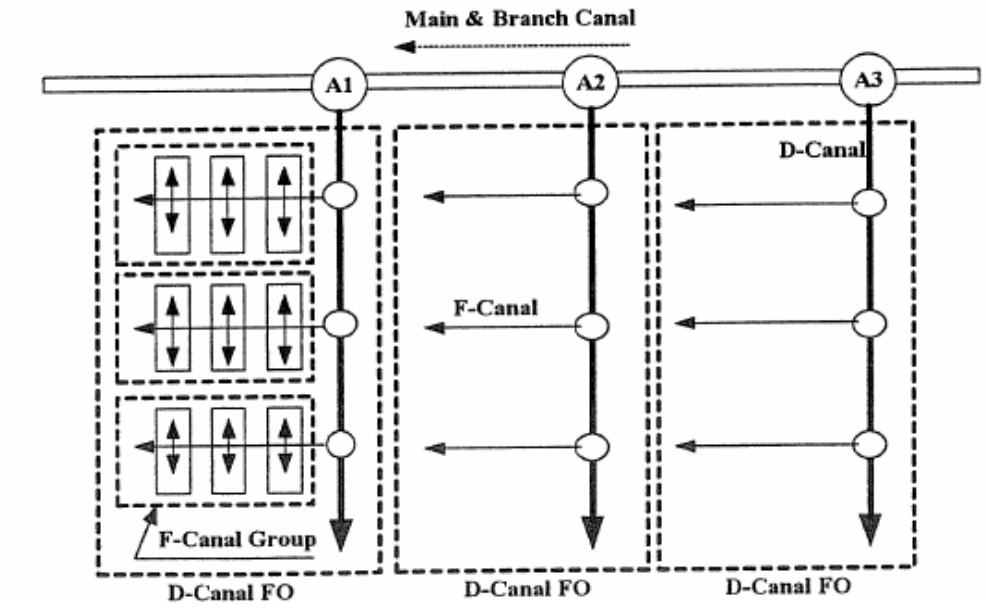
出所：マハヴェリ庁（2010年5月）

表３－６　ウダ・ワラウェ開発事業地区の2008年12月時点の農家数

地　　区	農　家	非農家	合計（戸）
左　岸	11,733	10,800	22,533
右　岸	22,731	24,087	46,818

出所：Statistical hand book 2008 in Mahaweli Hand Book 2008-2009, p.22

図３－４に灌漑区における配水システムを示す。幹線水路と支線水路はマハヴェリ庁により、D-canalとF-canalはFOによって維持管理される。

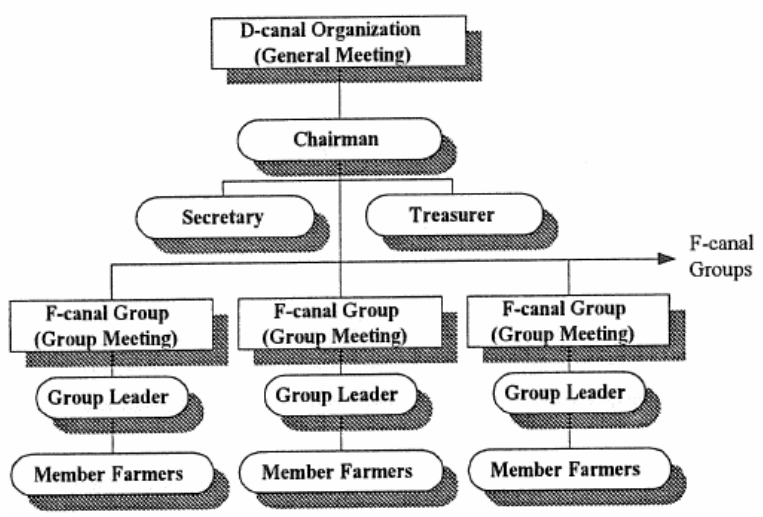


出所：旧JBICのSAPIチームの報告書

図３－４　水配分の模式図

（2）農民組合（FO）

FOはD-canal単位のプロットで形成される。FO組織は、総代会の下、委員長・秘書・会計役によって構成される。FOによってはF-canal単位で水管理グループを形成している。図３－５にFOの典型的な組織図を示す。ウダ・ワラウェ開発事業でD-canalに形成されたFOの総数は273で、そのうち137は右岸、136は左岸である。



出所：旧JBICのSAPIチームの報告書

図３－５　典型的なFOの組織図

図３－５が示すように、組織としてFOは委員長・秘書・会計役がいる。これらは奉仕活動であるために無給であり、毎年改選される。

図示していないが、FOには内部監査・外部監査の制度がある。外部監査員はBlock事務所によって任命され、年に1回2,000Rsの料金でFOが依頼して、監査が行われる。

FOの組織としての活動は以下のとおりである。

1）灌漑施設の維持管理と村落活動のためのボランティア作業の管理
2）肥料・農薬の配布（補助のある水稲作地域対象）
3）村落開発業務
4）農作業のための信用供与の調整
5）FO会員間の問題解決

維持管理の農家への移管が事業地域全体では終了していないため、D-canalとF-canalの水門操作はいまだFOによって実施されていない地区がある。信用供与については、非常に限られたFOしか実施していない。

水利費の収集はFO会計役によってなされるが、水利費額はFOによって異なる。水利費徴収率はマハヴェリ庁によれば100％近い。調査団が確認したところ、Suriyawewa blockで聞き取りした24FOではほぼ100％徴収されていると報告されたが、Mayurapura blockで聞き取りした26FOでは表３－７に示すように必ずしも100％ではなかった。

表３－７　Mayurapura blockで聞き取りしたFOの水利費徴収率

Water fee collection rate	No of Fos	%
80% to 100%	16	62
50% to 80%	7	27
Less than 50%	3	12
Total	26	100

出所：調査団

日本の土地改良区とFOを比較すると、FOは日本と同様に施設維持管理と水管理を担当するが、それだけではなく、水稲への政府補助肥料の配布・村落開発事業・信用事業及びその他組合員間のさまざまの問題解決にあたるっている点が異なる。よって、水利費の徴収率が100%近いことを理由に組織が堅実であると評価するのはなく、さまざまな活動についても考慮してFOの活動を評価すべきであるとマハヴェリ庁は説明している。

(3) 参加型管理と調整委員会

1) 参加型管理

参加型管理はマハヴェリシステムでは1992年以来採用されている。同管理では、灌漑システムの管理はRPM事務所とFOが役割と責任を分担して、次のように共同で行う。

① すべての水管理・維持管理に関する活動はさまざまなレベルで設置された調整委員会によって共同で管理・調整される。これら委員会では、RPM事務所員とFO代表者が灌漑施設と生産計画における決定と管理責任を分担する。
② D-canal及び下位のレベルの灌漑ネットワークはFOによって維持管理される。
③ RPM事務所は幹線水路と支線水路（B-canal）の維持管理を行う。

参加型管理システムの主たる目的は、農家によって実施される効率的な灌漑システムの持続性を確保することによりプロジェクトの生産段階の実績を持続的に維持することである。強固に独立したFOの設立支援を通じて、すべてのレベルの灌漑管理プロセスへの農民参加が確保される。特に決定における灌漑システムへの当事者意識の確保が望まれる。FOの参加型管理は次のような効果をもつ。

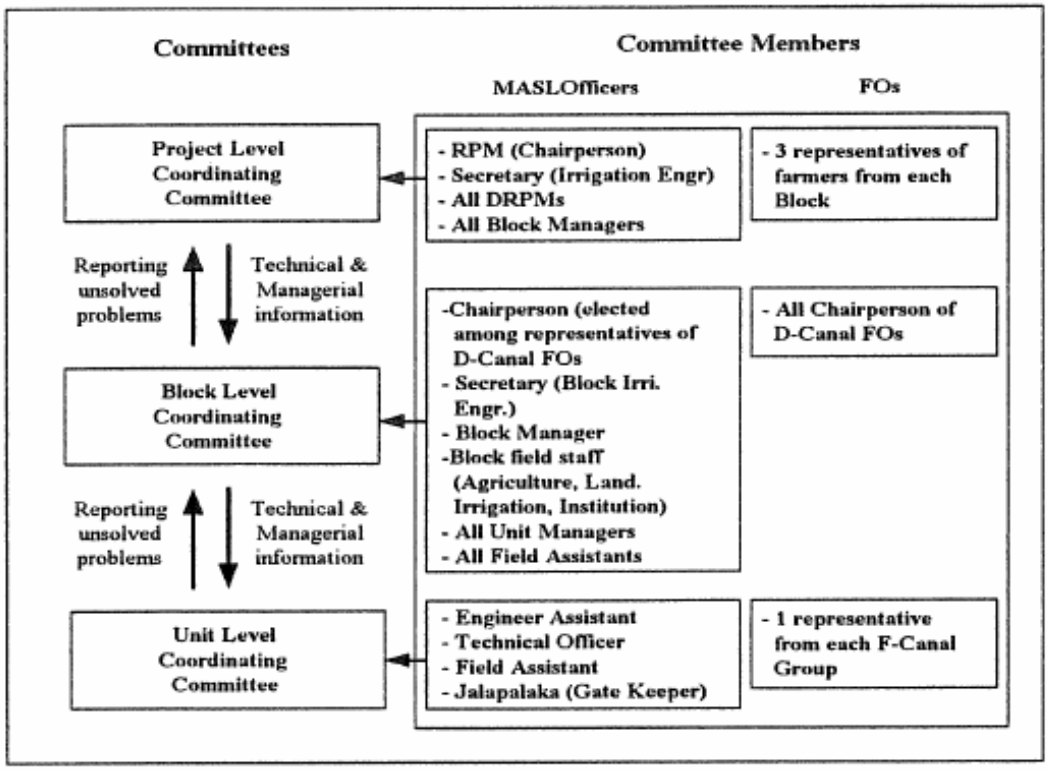
① FOの責任遂行にかかる動機づけと奨励をもたらす。
② マハヴェリ庁職員が農民参加の必要性に対する認識と対応強化の意識を高める。
③ さまざまな計画とプログラムを農民と共同で実施するなかで農民とマハヴェリ庁職員が協力する機会を増やす。
④ FO代表者にマハヴェリ庁職員が灌漑管理で直面している問題を気づかせる。

参加型管理が持続するなかで、マハヴェリ庁職員の役割が管理者から奨励者に移行すると思われる。強固に自立したFOは灌漑管理だけでなく経済的活動についても高い管理能力を示すと期待されている。

(4) 管理（調整）委員会

調整員会のシステムは、プロジェクトレベル・Block レベル・Unitレベルで設置されている。そこでは、マハヴェリ庁職員とFO代表が参加する。委員会は水配分・作付体系・水路維持作業の優先順位・水路システムの改善と近代化・モニタリング・評価への参加にかか

る問題を解決することを目的とする。ウダ・ワラウェ事業地区で実施されている調整委員会による参加型管理の組織構成を図３－６に示し、各レベルの調整委員会について下記に説明する。



出所：旧JBICのSAPIチームの報告書

図３－６　参加型管理の調整メカニズム

1）プロジェクトレベル調整委員会

同委員会はRPM事務所長を委員長、灌漑技師を秘書とする。会合は3カ月に1度及び委員から要請があったときに随時開催される。農民代表者はBlock調整員会によって任命され、任期は1年である。農民代表者のうち、委員長代理1名、秘書代理1名になる。

2）Blockレベル調整委員会

Blockレベルで組織される同委員会は、D-canal FOの委員長のなかから選ばれたものが委員長となり、秘書はBlock事務所の灌漑技師が務める。回答は毎月委員から要請があったときに随時開催される。

3）Unitレベル調整委員会

Unitレベルで組織される同委員会は、水路管理グループの代表から選ばれたものが委員長となり、秘書はUnit事務所長が務める。回答は毎月及び委員から要請があったときに随時開催される。

4）水路の維持管理以外に委員会で頻繁に討議される事項として次のものがある。

①　土地問題：隣接地への侵入・法令違反行為・作業の遅延・共同使用地の配分

②　流通：農産物の適正価格の維持

③　災害に対する穀物保険の推進：農業信用・市場情報・包装・品質管理・価格・資材調達など

④　第二世代の雇用：牛乳加工・共同購入販売・タイプ・裁縫にかかるマハヴェリ庁による訓練プログラム

⑤　その他の訓練プログラム：会計・記録・監査・幼稚園教師・水管理にかかる訓練機会

日本の土地改良区の場合は委員会ではなく土地改良連合という組織になっている点がスリランカのシステムと異なる。

(5) 灌漑管理移管プログラム

上述の参加型管理政策と調整委員会システムの下で、灌漑管理の移管が次の3段階にわたって実施されている。

1) ステップ－1組織形成

この段階では、FOが組織され、Institutional organizerによって能力強化される。

2) ステップ－2共同管理

マハヴェリ庁とFOが共同管理できる段階に達したとき、Memorandum of understanding（MOU）と称する協定書に署名する。同文書では、維持管理にかかるマハヴェリ庁とFOの各役割と責任が明記されている。

3) ステップ－3移管

FOが維持管理責任の移管に賛同しかつ実施可能になったとき、“turnover agreement”が双方で署名される。同文書は　マハヴェリ庁とFOの各責任が詳述されている。この段階でのマハヴェリ庁の役割は技術的・管理的助言とFOの財政力を超える施設修復への財政支援に限られる。

調査時点において入手した2010年5月時点での移管の進捗状況を表３－８に示す。表が示す進捗状況は、129 FO中の60 FOで移管が終了している。これは47%にあたる。非常に多くの入植希望者があったことなど入植にかかる課題が多かったために移管が遅れたが、計画では2010年中に完了することになっている。

表３－８　灌漑管理移管の進捗状況

Area	No. of FO	Registered under 2000 Agrarian	1st Agreement	2nd Agreement
Left Bank	136	73		60
Right Bank	137	117		128
Total	273	190	0	188

出所：マハヴェリ庁（2010年5月）

入植及び灌漑管理にかかる農民研修は、IE, HR&ID, EA, TO及びUnit事務所長によって実施される。

３－１－５　農業普及

(1) スリランカにおける農業普及組織

普及活動を有機的に統合するため、Agrarian Service Centerと称する機関が関係省庁から構成される普及員チームの基地として設立されている。同センターは農家の小売場所としての機能と、普及サービスに働く職員の調整機能の2つの機能を持つ。しかし、普及にかかる組織は複雑で組織間の調整を図ることは難しいのが実態である。多くの組織が農業普及と支援サービスに従事している。それら組織として、農業局の普及研修部・土地省の普及開発ユニット・農業サービス部・州の牧畜生産及び衛生部・農業輸出部・スリランカ養殖局・ココナツ栽培委員会・カシュナッツ公社・農業開発庁が挙げられる。

(2) マハヴェリ庁の組織

マハヴェリ庁では入植地域を対象に、農家への新技術の指導と農業にかかる問題解決支援のため農業普及プログラムを実施している。同プログラムは、マハヴェリ庁本部―RPM事務所―Block事務所―Unit事務所の順で指揮監督されている。本部にはDirector・Deputy Director・農業職員（専門技術員）が配置されている。RPM事務所には、農業担当のDeputy Resident Project Managerと農業職員（専門技術員）が配置されている。Block事務所には農業技師が、Unit事務所にはUnit事務所長とFAが配置されている。研究課題については、農業部の地域試験場とマハヴェリ庁が協力調整することになっている。実証展示活動は農家圃場でFAの指導のもとに実施される。地域内には営農を支援するほかの組織もある。例えば、ココナツ栽培委員会・牧畜生産、衛生部及びサトウキビ研究所などである。

表３－９に普及プログラムにおける中央政府とマハヴェリ庁の役割分担を要約する。

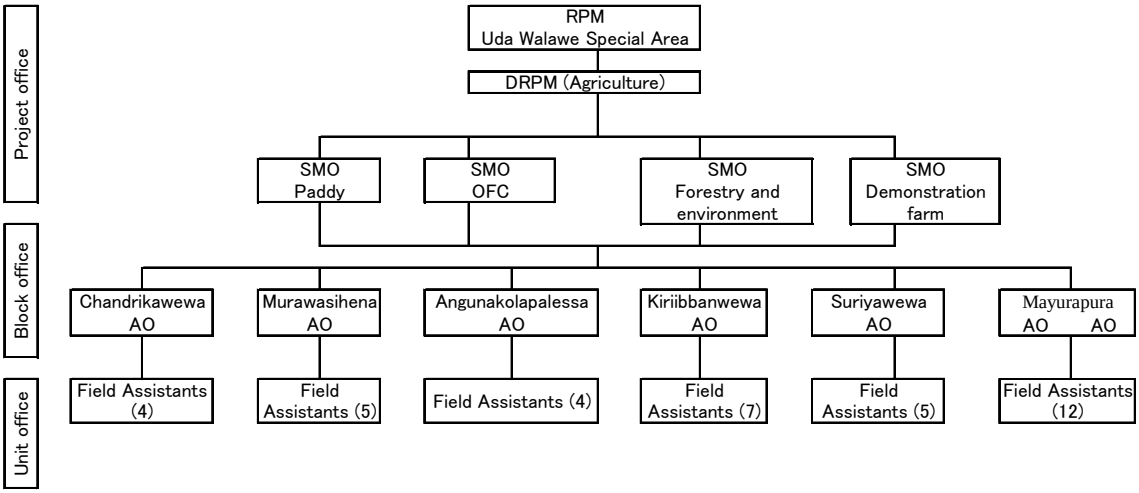
表３－９　普及プログラムにおける中央政府とマハヴェリ庁の役割

中央政府	マハヴェリ庁
①　プログラムを管理する指針を設定する。 ②　マハヴェリ庁・州政府・その他組織が実施する普及活動に補助を行う。 ③　普及員の資格認定を行う。 ④　全国の情報網を設定する。	①　プログラムを実施する指針を設定する。 ②　プログラムを実施する。 ③　普及員を普及所もしくは農家組織/村落組織に配属/派遣する。 ④　FAを通じて農家に普及サービスを提供もしくはFOを通じて普及サービスを提供する。

出所：マハヴェリ庁（2010年5月）

(3) 普及組織と普及員（FA）数

マハヴェリ庁ウダ・ワラウェRPM事務所の農業担当Deputy RPMがウダ・ワラウェ事業地域の農業普及サービスの責任者である。同普及サービスシステムは、① Deputy RPMを長としたRPM事務所に配置されている3名の専門技術員（SMO）・②Block事務所に配置されている農業職員（AO）・③Unit事務所に配属されているFAからなる。RPM事務所・Block事務所・Unit事務所の機構図を図３－７に示す。また、表３－10に現場で普及活動している職員であるAOとFAの数を示す。



出所：マハヴェリ庁（2010年5月）

図３－７　農業普及機構

表３－10　ウダ・ワラウェの普及員数

	Block	AO	FA
Rignt bank	Chandrikawewa	1	4
	Murawesihena	1	5
	Angunakolapelessa	1	4
	Total	3	13
Left bank	Kiriibbanwewa	1	7
	Suriyawewa	1	5
	Mayurapura	2	12
	Total	4	24

AO=Agricultural officer, FA=Field assistant

出所：マハヴェリ庁（2010年5月）

ウダ・ワラウェの入植農家数が11,733であるから、1名のFAが11,733÷24＝489農家を担当していることになる。現地で聞き取りした7名のFAの担当農家数はそれぞれ508, 530, 540, 742, 543, 1265, 532であった。1,265農家以外は平均に近い農家数である。1名のFAだけ1,265農家と多いのは、WLBPが実施される前に入植した農家がいる地域を担当しているからである。なお、これらFAは勤務時間の40％ほどは農業資機材の配布に従事しており、残る60％だけが農民組織化・農業展示・農家訪問・土壌採取などの普及業務に活用されている。

（4）普及システム

同地域では統合的普及システムが採用されている。これは対象グループ重視の普及・問題解決型普及・参加型普及が組み合わされたものである。その詳細を次に示す。

1）FAは月に1回事務所で特定課題の研修を受講し、それ以外の日は農家もしくは農家グループを訪問する。

2）FAによる普及では、対象農家グループから1名をコンタクト農家として選出して定期的に情報を与える場合と、複数の農家を定期訪問する場合がある。

3）FAは問題を抱えている農家グループと定期会合をもち、そこで作付け体系の策定及び研修/デモンストレーションの実施を行う。
4）FAは自らの普及結果の点検・評価のための農家訪問も行う。

（5）普及活動と研修

すべてのFAはバイクを移動手段として持っている。その業務は次のようである。

1）新技術の普及：FAは実証調査を一時借り上げた農家圃場で行い、その後に新技術を農家に紹介する。
2）農家指導：FAは新規参入農家に指導を行う。
3）調整業務：FAは農協と地方公共団体が協力で特産物開発を行うための調整業務を行う。
4）環境保護：FAは技術指導と集合研修を通じて化学肥料・農薬の使用を制限する普及を行う。また、FAは減農薬のための技術指導・購買への助言も行う。
5）経営支援：FAは個々の農家の営農規範の確立指導及び新流通方式の開始によって農家経営支援を行う。

普及方法については、普及教材作製以外は日本と相違はない。同地域では普及員が普及教材を作製するのではなく、RPM事務所が作製してBlock事務所・Unit事務所へ配布する。ポスター・リーフレットは1度に5,000部印刷される。また、リーフレット・ポスター・小冊子は農業省から配布される場合もある。しかし、調査団が確認した普及教材はすべてWLBPで作製されたもので、ほとんどはリーフレットであった。確認されたリーフレットは、RPM事務所で16、Mayurapura Block事務所で13、Andrawewa Centre Unit事務所ではすべてが配布されて皆無であった。

普及員の能力強化研修は農業省のIn- service Training Institutes（ISTI）が実施する。マハヴェリ庁普及員（AO, FA）は雨期・乾期の各シーズンに1度の割合で研修を受講している。表３－11は最近3年間の普及員研修にかかるマハヴェリ庁全体の実績データである。表から研修は技術的なものが多く、加工流通の研修が実施されていないことがわかる。

表３－11　普及員の研修実績（マハヴェリ庁全体）

Year	Type of Training	No.	Name of training course	No. of Participants
2007	Production techniques	74	Officer training	1,850
	Production techniques	260	Farmer training	9,100
	Others	23	Awareness training	1,771
	Others	34	Capacity Building	1,540
	Others	9	Skill Development	99
2008	Production techniques	58	Officer training	1,450
	Production techniques	433	Farmer training	15,000
	Others	19	Awareness training	481
	Others	17	Capacity Building	564
	Others	27	Skill Development	836
2009	Production techniques	79	Officer training	1,817
	Production techniques	837	Farmer training	34,200
	Others	10	Awareness training	309
	Others	34	Capacity Building	1,676
	Others	8	Skill Development	78

出所：マハヴェリ庁（2010年5月）

これら普及について特筆すべき点を整理すると以下のようである。

特記すべき事項を次に挙げる。

① 日本の2004年度までのシステムと同様に専門技術員（Subject Matter Officer：SMO）と農業改良普及員（Agricultural Officer：AOとField Assistant：FA）からなり、普及方法もT&Vシステム（Training and Visit, ここでは普及員の研修及び普及員による訪問指導）である。

② FA（末端の普及員）1人当たりの担当農家数平均489戸と、潤沢な普及員の配置である。くわえて、すべてがオートバイで普及活動を行っている。ただし、業務の約40％は肥料配布などの普及以外の業務に費やされている。それでも普及員数はT&Vシステムには比較的十分な数であると考えられる。

③ 上述のように職員全体の研修予算が減少しているため、普及員の能力強化研修受講者が少ない。

３－１－６　流　通

(1) ウダ・ワラウェ事業地区の市場

“Pola（ポラ）”といわれる公共の卸売/小売市場が典型的な流通の場で、地方公共団体が所有し、1年間の契約で民間に管理委託している。ポラでは農家と流通業者が集まり、農産物だけでなく香辛料・衣類等の地方のニーズにあった品物も取引される。ポラのほかに農民収集センター（Farmers Collection Center）というFOによって経営されている市場がある。同センターはポラと異なり、周辺の農産物だけが取引される。ウダ・ワラウェ左岸地区では、3ポラがSuriyawewa ブロックに、1ポラがKiriibanwewaブロックにある。ウダ・ワラウェ開発事業地区全体では16のポラと1つの農民収集センターがある。これらの詳細を表３－12に示す。

ポラは一般的に単なる広場で、屋根付小屋・水道といった施設はない。また、道路・通信施設・照明施設・駐車場があるポラも少ない。ポラは卸売市場と小売市場の２つのタイプに分けられる。通常、卸売市場は早朝の5時～9時まで開催され、小売市場はその後に開かれる。いくつかのポラでは小売市場は卸売市場と同日には開催されない。ポラでは、地方公共団体もしくは管理委託した民間団体が販売者である農家とトラックから料金を徴収する。その額は、農家は販売粗収入の5%、トラック所有者はトラック1台につき60～70Rsである。FOによって経営されているポラは一般的に無料であるが、Hathporuwaのポラの1つでは農家は1回につき10～15Rsをポラの維持費として寄付している。

表３－12　ウダ・ワラウェ事業地区の市場

No	Name of Pola	Block	Type		Operating organization	Operation Day	
						Retail	W/sale
1	Uda Walawe（ Town area）	Embilipitiya	Retail		Pradeshiya Saba	Wed & Sat	
2	Galwanguwa	Embilipitiya	Retail	W/Sale	Pradeshiya Saba	Sat	Sat
3	Ebliliplitiya（New town）*	Embilipitiya	Retail	W/Sale	Pradeshiya Saba	Wed & Sun	Tue
4	Canal8（Morokatiya）	Embilipitiya		W/Sale	Canal-8 FO		Mon & Sun
5	Danduma	Embilipitiya	Retail	W/Sale	Pradeshiya Saba	Tue	Tue
6	Kethsirigama	Embilipitiya	Retail	W/Sale	Pradeshiya Saba		Mon
7	Tunkama	Chandrikawewa	Retail	W/Sale	Pradeshiya Saba	Fir	Thu
8	Padalangala	Chandrikawewa	Retail	W/Sale	Pradeshiya Saba	Tue	Tue
9	Barawkumbuka	Murawesihena	Retail	W/Sale	Pradeshiya Saba	Sun	Tue&Sun
10	Mamadala	Murawesihena	Retail		Pradeshiya Saba	Sat&Wed	
11	Angunakolapallessa（Town）	Angunakolapallessa	Retail	W/Sale	Pradeshiya Saba	Wed&Sun	Wed&Sun
12	Ranna	Angunakolapallessa（out side）	Retail	W/Sale	Pradeshiya Saba	Tue&Fri	Tue&Fri
13	Kiriibanwewa	Kiriibanwewa	Retail	W/Sale	Pradeshiya Saba	Sun	Sun
14	Haburugala	Kiriibanwewa	Retail	W/sale	Pradeshya Saba,	Fri	Fri
15	Mahagama	Kiriibanwewa	Retail	W/sale	Pradeshya Saba	Tue	Mon
16	Ali OLUARA	Suriyawewa	Retail	W/sale	Hatporuwa FO	Tue	Mon
17	Suriyawewa（Town）	Suriyawewa	Retail	W/sale	Pradeshya Saba	Sat	Fri

注：Embilipitiyaは政府によって建設された経済センターである。
出所：マハヴェリ庁（2010年5月）

(2) 流通システム

ポラ経営者・流通業者・精米業者が農産物流通の主な関係者である。購入業者は、コロンボ・MataraとGalleのような南部都市・Nuwara Eliyaのような内陸・Monenagala とAmparaのような東部都市など、さまざまな地域から集まる。最も多くの購入業者はコロンボから来ており、莫大な量のバナナとパパイアが首都に運ばれる。地方流通業者・小売店主・農家が直接コロンボ及び郊外の市場に商品を運び込む場合もある。

バナナ・野菜・果実・調味作物・塊茎類がポラで扱われる。豆類・穀類（トウモロコシ・ヒエ等）・ゴマは町の地方流通業者に販売され、それから仲介業者に転売されて大きな市場へ運ばれる。コメは主に地方精米業者・流通業者に販売されて精米され、大きな市場に運搬される。コメの収穫期に水稲流通組合が店舗を開いてコメを購入する。

ポラでのコメ以外の作物価格は基本的に農家と購入業者の直接交渉で決まる。そこでは、流通業者が所属する市場の取引価格を毎日入手し、それを基に価格を決めて農家に提示す

る。

村の中に農家と流通業者が運営する収集センターが設置される場合もある。それは、ある農家が流通業者と取引したのがきっかけになって流通業者が村に集まるようになった場合である。農家の第二世代が流通業者になっている場合もある。

(3) 現地調査結果

前述の説明は質問状調査によるが、加えて現地での聞き取り調査から次のことがわかった。

1) 中国が港建設中で将来の市場と思われるHambantotaについてRPM事務所で聞き取りしたが、バナナなどの生産地が近いので市場として有望ではないと回答した。

2) 農民グループのなかには自ら集配所を経営して利益を上げているFOがある。現地調査では右岸のBanana associationと左岸のCollection centerを訪問した。いずれも流通以外のFOの組織活動が活発であった。マハヴェリ庁の希望は、FOの市場・流通能力の強化によってコメ以外の作物（バナナなど）の栽培を増やし、かつ組織力を高めたいと考えている。

3) WLBPで実施した加工技術の研修に15名が参加したが、営業に結びつけたのは1名だけであった。その1名は新規入植者（ただし農地を持っていない）で、他の14名は土地を持っている農家の主婦もしくは後継者であった。

4) JICAがHambantota で実施している技術協力プロジェクト「南部地域の村落生活向上プロジェクト」（South CAP）の流通戦略について専門家に聞き取りしたところ、次の回答であった。

① 流通に関して、対象グループは33世帯でRegisterされた団体になっている。もう2団体を実施しようとSuriyawewa Divisionで進めている。

② 農家の交渉能力が低いので仲介業者（Middleman）を選定して交渉を代行してもらう方向で実施している。

③ 実践につながるマーケティングについては、リスクを負ってまで行うという農家はなかなかいない。

④ 食品加工について研修を受けることは歓迎するものの、流通に生かす人は限られている。

South CAPは在来の農家が対象だが、ワラウェ地域は元々農家ではない入植者を含んでおり、農家の性格が本プロジェクト対象とは異なっており、そのことが流通加工に対する農家の対応の違いになっているとの印象をもった。なお、食品加工・流通の研修を実施できるスリランカの団体について、South CAPから情報を得た。

３－２　灌漑分野の開発課題・現状

３－２－１　調査方法・分析方法

現地における文献調査と聞き取り調査で問題を確認し、それらを解決する課題・ニーズを把握する方法で調査を実施した。まず、問題の確認は、PCMの問題分析の手法を用いた。ただし、PCMでは参加者分析とワークショップを実施するが、現実的に参加者を選出しても参集を確保することが難しいことから、本件の利害関係者としてワラウェ左岸地区を管轄する現地のマハ

ヴェリ庁職員と農民組合（FO）を対象に聞き取り調査を行い、問題を挙げてもらう方法で問題分析ワークショップに代用した。マハヴェリ庁職員については、レベル的な偏りを避けて、ワラウェ地域を取りまとめるRPM事務所レベルの職員と出先のBlock事務所・Unit事務所の2つのレベルからの聞き取り調査を行った。また、地域的偏りを避けるため、WLBPが実施された3ブロック中で、最も上流に位置しフェーズ1（1995～2001年度）に事業が実施されたSuriyawewa blockと、最も下流に位置してフェーズ2（2000～2007年度）に事業が実施されたMayurapura Blockの両方で聞き取り調査を実施した。FOについても、両ブロックからFOの代表者にできるだけ多くの参加者を集め、問題を聞き取った。これら聞き取りした数を表３－13に示す。なお、問題を聞き取りしたFO数は対象地域全体の50/136=37％になる。

表３－13　聞き取り調査した職員数と農民組合数・農家数

聞き取り先			職員数	内　訳
マハヴェリ庁（RPM 以下）	RPM Office		19	
	Block office・Unit	Suriyawewa block	8	1-Block manager, 3-Unit manager, 1-Technical officer, 1-AO,
		Mayurapura Block	24	1-Block manager, 12-Unit manager, 2-Technical officer, 1-AO, 7-FA, 3-EA, 1-Irrigation engineer, 1-fishery devt officer,
	計		51	
農民組合	Suriyawewa block		24	
	MayurapuraBlock		26	
	計		50	
個別農家	Suriyawewa block		3	水牛ヨーグルト生産農家、2-畑作物及び水稲生産農家
	MayurapuraBlock		1	2-畑作物及び水稲生産農家
	計		4	

聞き取り調査に際しては、相手国政府の要請書に記載された4項目を基礎にした。しかし職員に対しては、問題の技術的内容を考慮して、維持管理を組織的なソフトにかかるものと予防保全のハードにかかるものに分けた。FOに対しては、FO委員の役割分担を考慮して項目を単純化した。これら項目は次のとおりである。

（1）職員への問題聞き取り調査項目

1）The establishment of an institutional mechanism for efficient water management
2）Provision of proper maintenance system for the new irrigation structures
3）Capacity enhancement of farmer organizations and officers for proper management of newly introduced OFCs and sophisticated structures,
4）Consideration of environmental impacts given by the new facilities in water management and other farm activities and
5）Improvements of processing and marketing for sustainable income generation with OFCs

（2）FOへの問題聞き取り調査項目

6）Water management
7）Land

8）Infrastructure
9）Fertilizer
10）Cultivation calendar
11）Problems faced on marketing

次に問題の確認と課題の考察のために現地調査を実施した。訪問箇所は計26カ所で、うち22カ所を図３－８に示す。

なお、詳細は表３－14のとおりである。

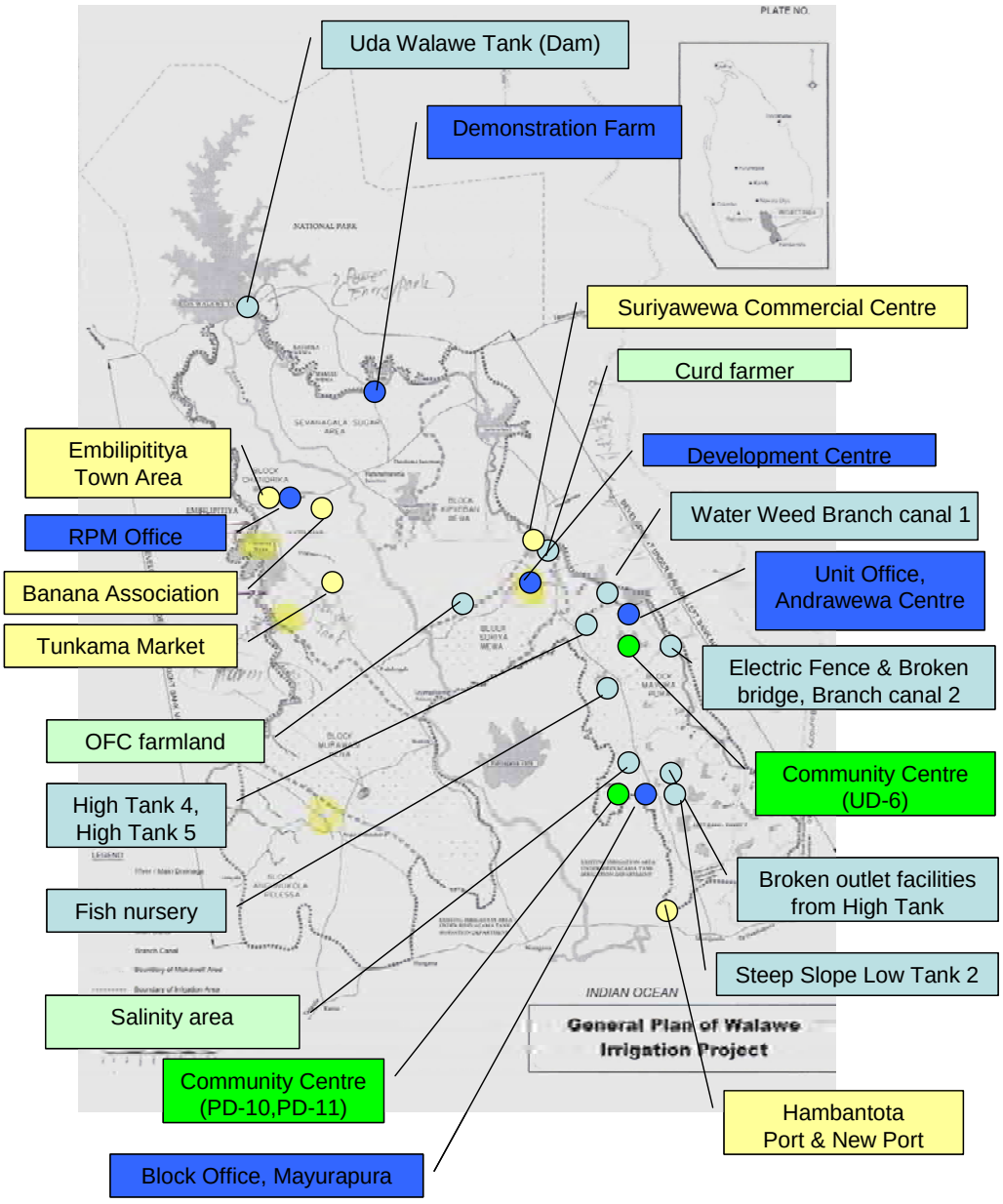


図３－８　訪問先地図

表３－14　現地調査の訪問先リスト

訪問先数	訪問先名	
MASLの施設	RPM Office	5
	Development Centre Unit office Block Office Demonstration farm	
農民組織施設	Community Centre	4
	Community Centre Farmers Association Fish Nursery	
灌漑施設		13
	Tank D-canal F-canal Dual canal F-canal broken water outlet High Tank-4 High Tank-5 Low Tank-1 Low Tank-2 Andrawewa Branch Canal-1 Branch Canal-2	
農　地	Salinity area Salinity area OFC farmland OFC farmland	4
合　計		26

聞き取り調査で収集した問題のなかの類似の事項を整理して24問題を抽出し、それらを用いてPCM問題分析の方法で問題・目的分析を行った。

３－２－２　調査分析結果

（1）現状の問題分析

問題分析の結果を図３－９に示す。分析の結果、問題は大きく3つに整理された。

問題－1：水田化による水資源の不足

問題は、計画された地域の農家が、畑作物・果樹等の非水稲作物の作付を水稲作に転換する（以下、「水田化」と略す）ために計画以上の用水を使用することから水資源の不足が生じ、WLBPで開発された地域の灌漑持続性が脅かされていることである。また、稲作と畑作が混じると水管理が複雑になり、Dual canal systemで水田用（PD水路）と畑作用（UD水路）に分離した水路では更に水管理が複雑になることに対する懸念もある。現状での水不足の生起は局地的だが、現地調査においてもSuriyawewa blockでは24 FOすべてで稲作への転換農家がいると回答し、Mayurapura Blockでは26 FO中の12 FOで転換農家がいると回答したように、水田化はかなり広がっている。Suriyawewa blockはWLBPが最初に実施された地区であることから、年数が経つに従がって水田化農地が増えていると推察される。

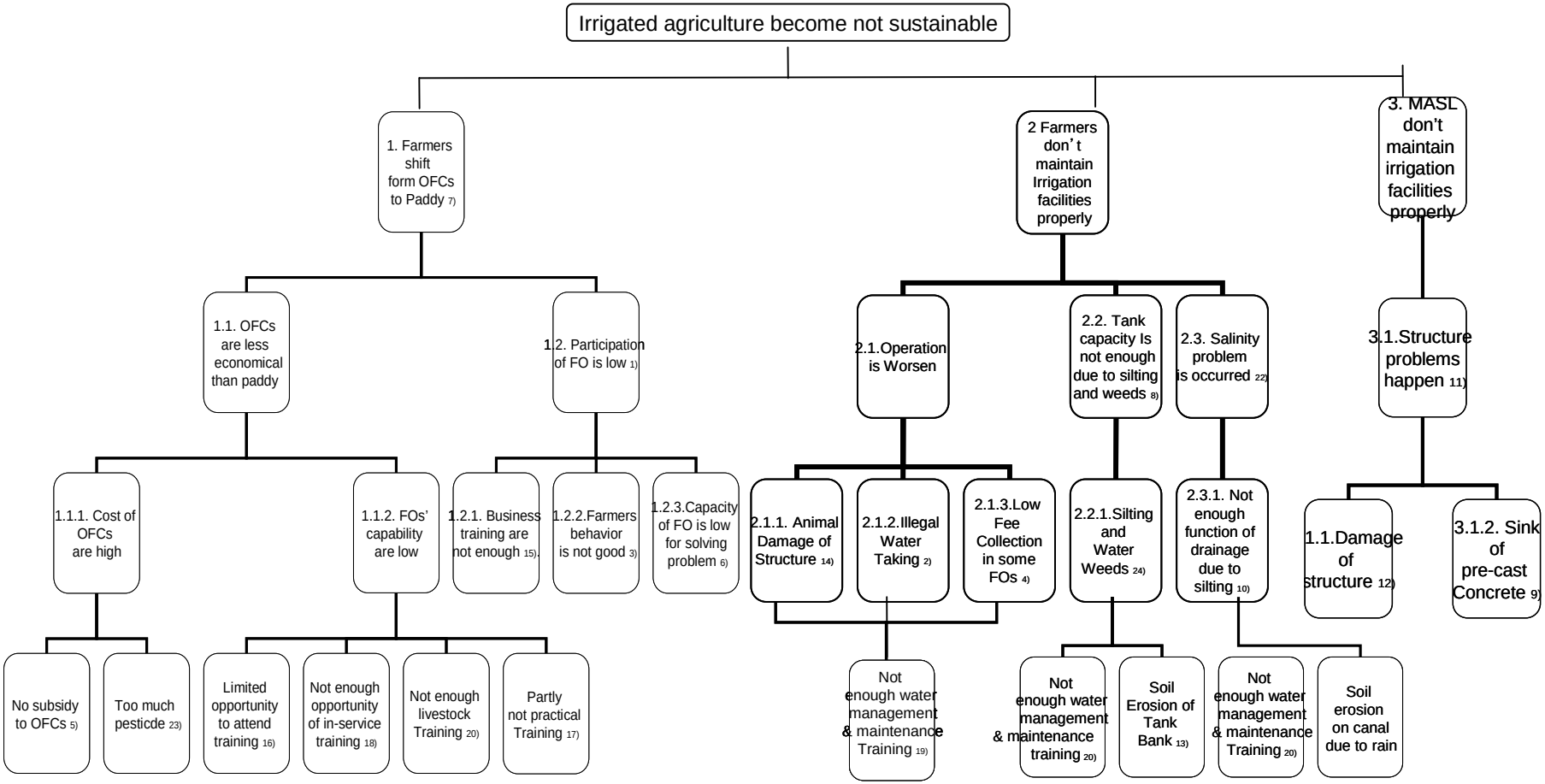

Irrigated agriculture become not sustainable
1. Farmers shift form OFCs to Paddy 7)
2 Farmers don't maintain Irrigation facilities properly
3. MASL don't maintain irrigation facilities properly
1.1. OFCs are less economical than paddy
1.2. Participation of FO is low 1)
2.1.Operation is Worsen
2.2. Tank capacity Is not enough due to silting and weeds 8)
2.3. Salinity problem is occurred 22)
3.1.Structure problems happen 11)
1.1.1. Cost of OFCs are high
1.1.2. FOs' capability are low
1.2.1. Business training are not enough 15).
1.2.2.Farmers behavior is not good 3)
1.2.3.Capacity of FO is low for solving problem 6)
2.1.1. Animal Damage of Structure 14)
2.1.2.Illegal Water Taking 2)
2.1.3.Low Fee Collection in some FOs 4)
2.2.1.Silting and Water Weeds 24)
2.3.1. Not enough function of drainage due to silting 10)
1.1.Damage of structure 12)
3.1.2. Sink of pre-cast Concrete 9)
No subsidy to OFCs 5)
Too much pesticde 23)
Limited opportunity to attend training 16)
Not enough opportunity of in-service training 18)
Not enough livestock Training 20)
Partly not practical Training 17)
Not enough water management & maintenance Training 19)
Not enough water management & maintenance training 20)
Soil Erosion of Tank Bank 13)
Not enough water management & maintenance Training 20)
Soil erosion on canal due to rain

図３－９　問題系図

このことからマハヴェリ庁では本問題を最も深刻に受け止めている。また、聞き取り調査では、水稲の灌漑水が不足するために排水路を嵩上げして取水する農家がいて塩害が懸念されていることもあげられた。

原因としては、①非水稲作物がコメに比較して経済的優位性がないこと、②FOの組織力の欠如があげられる。経済性については、非水稲作物のコストがコメに比較して高いことと、FOの営農能力の不足がある。コストについては、政府が稲作だけは肥料に補助金を支出して、3,500Rs/50kgの肥料を350Rs/50kgで販売していることが主な原因である。非水稲作農家は肥料を3,500Rs/50kgで購入せねばならない。それでも、PD-10・PD-11での聞き取りでは、農家の1名は水稲作からバナナに変えた農家がいた。このように、経営能力があればコストに見合う利益を得ることができることから、FOの経営能力の不足があげられる。その理由としては、研修の不足にあるといわれている。

次に②のFO組織力の欠如は、バナナの集配業をしているUD-6のFOや右岸のBanana Associationのように組織力があれば、市場・流通事業を実施して非水稲作物でも稲作の比較優位性を克服できるが、それがないということである。その原因としては、ビジネス研修が不十分であったこと、農家の依頼心が強く自立していないこと及び、FOの問題解決能力が低いことが挙げられている。

問題－2：農家による灌漑施設の維持管理が適正になされていないこと

維持管理が不十分なことと塩害のために、灌漑された水が効率的に使われていない問題がある。原因としては、①管理の不備、②維持活動の不備による溜め池貯水能力の低下、③塩害のために灌漑しても生産できない農地が生起していることである。まず①管理の不備としては、違法な取水・家畜による施設破壊・一部FOのおける水利費徴収率の悪化を総称してあげられている。それは水管理・維持管理研修の不十分に起因するといわれる。次に②溜め池貯水能力の低下は、堰堤の侵食と水管理・維持管理研修の不十分のために堆砂及び雑草の繁茂が起こり、それが当初設計した貯水能力を減じている状況がある。最後に③の塩害は、排水路堤の浸食とそれを維持管理する能力をつける水管理・維持管理研修の不十分のために排水路の能力が低下し、それが塩害を引き起こしている。

これらの問題の背景として、WLBPで実施した入植者の導入研修効果が十分に生起していないことから、その理由を現地で調査を行った。集まった農民全員に入植者の導入研修に参加した人数を尋ねたところ、Suriyawewa blockでは（24 FOの）31名中の13名（43%）、Mayurapura Blockでは（26 FOの）39名中の20名（51%）であった。このように参加者が少ない理由は次のとおりであった。

① 研修の召集があったときは入植直後の多忙な時期で参加できなかった（FOからの聞き取り）。
② FOの代表者が受講したが毎年改選されるので、現地調査で召集したFO代表のなかに研修を受講しなかった農家がいた（RPM事務所での聞き取り）。
③ マハヴェリ庁の職員の異動で連絡が不十分であった（FOからの聞き取り）。
④ 研修の主なプログラムは2007年と2008年の2年間に集中したので、期間が短かった（RPM事務所での聞き取り）。
⑤ 30%～40%の農家はWLBP実施中に入植できなかった（コロンボでのMASL本部での

聞き取り)。

問題－3：マハヴェリ庁による灌漑施設の維持管理が適正になされていないこと

問題として、施設が設計された水供給能力を発揮できない状況が生じている。原因は、施設の破壊が放置される、あるいは破壊の前に保全されないことにある。くわえて、事例としては非常に少ないと聞くが、フェーズ1工事の最後からフェーズ2の間で設置されたU字工が沈下していることが原因で水供給能力が低下している場合もある。

優先順位

要望調査で挙げられた4項目の問題の間の優先順位について灌漑水資源管理省・マハヴェリ庁から聞き取った結果は次のとおりである。

優先順位－1：非水稲作物の市場流通価値を増すための価値連鎖（バリューチェーン）機能の不備

優先順位－2：非水稲作物の導入と比較的複雑な灌漑施設にかかる水管理・維持管理研修にかかる職員と農家の研修訓練の不足

優先順位－3：効果的水管理・施設維持管理を確保する組織整備の不適切

優先順位－4：水管理・非化石燃料駆動の農業機械の活用による環境管理の考慮の欠落

これらを上述の問題分析と併せて討議した結果、優先順位－1は問題－1に適合し、優先順位－2&3は優先順位－3に適合すること、優先順位－2は問題－1と2に関係することを確認した。また、優先順位－4の環境問題について、現地調査では塩害・雑草の繁茂が環境問題として挙げられて問題系図に含めたが、要請書で挙げられたほかの環境問題は現地調査では確認できなかったので含めなかったことを説明し、スリランカ側に理解された。

(2) 目的分析と課題の抽出

問題分析を基に目的系図を作成した。図３－10に目的系図を示す。

その結果、抽出された課題は、大きくは次の3つである。

1) 農家の水田化が抑制される

2) 農家による灌漑施設の維持管理が適正に行われる

3) マハヴェリ庁による灌漑施設の維持管理が適正に行われる

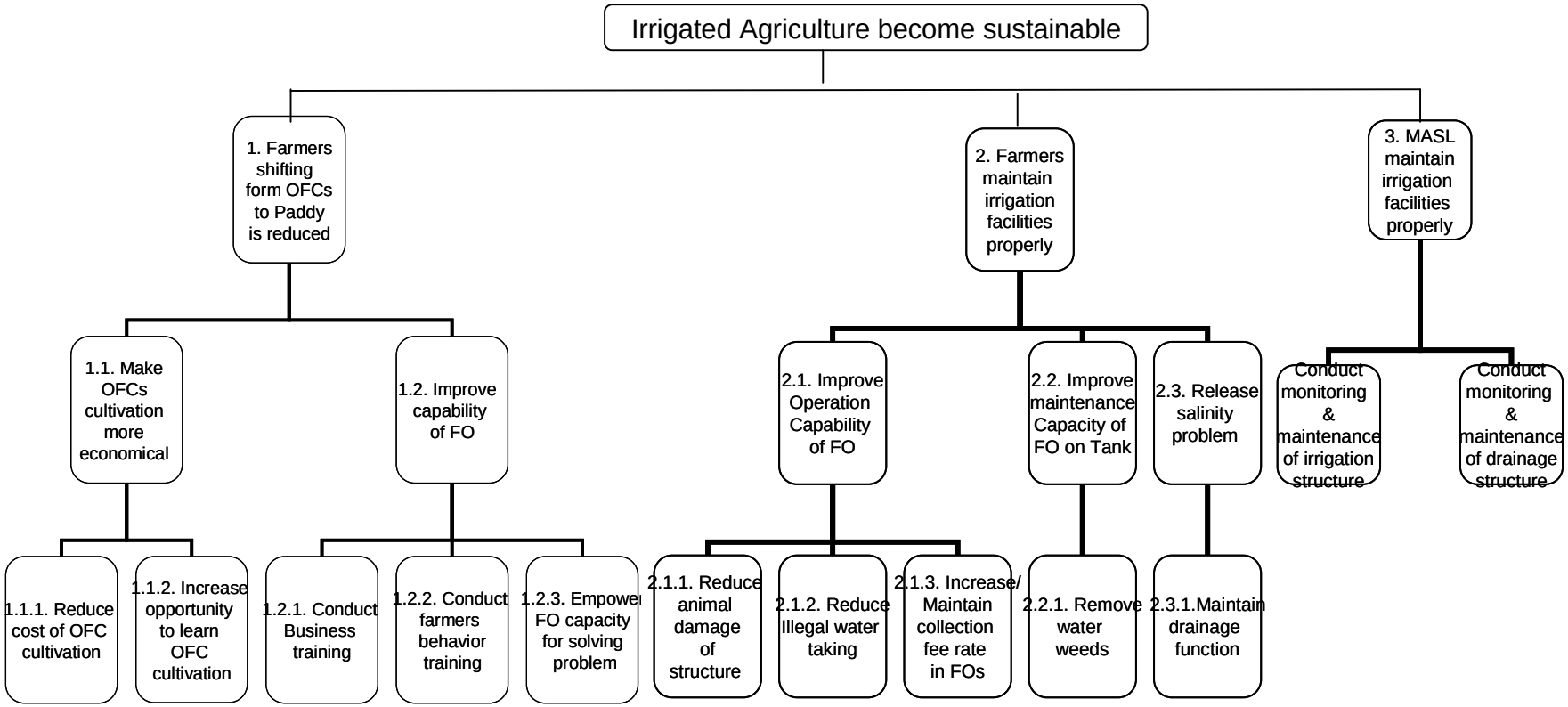

Irrigated Agriculture become sustainable
1. Farmers shifting form OFCs to Paddy is reduced
2. Farmers maintain irrigation facilities properly
3. MASL maintain irrigation facilities properly
1.1. Make OFCs cultivation more economical
1.2. Improve capability of FO
2.1. Improve Operation Capability of FO
2.2. Improve maintenance Capacity of FO on Tank
2.3. Release salinity problem
Conduct monitoring & maintenance of irrigation structure
Conduct monitoring & maintenance of drainage structure
1.1.1. Reduce cost of OFC cultivation
1.1.2. Increase opportunity to learn OFC cultivation
1.2.1. Conduct Business training
1.2.2. Conduct farmers behavior training
1.2.3. Empower FO capacity for solving problem
2.1.1. Reduce animal damage of structure
2.1.2. Reduce Illegal water taking
2.1.3. Increase/ Maintain collection fee rate in FOs
2.2.1. Remove water weeds
2.3.1.Maintain drainage function

図３－10　目的系図

３－３　わが国の援助戦略上の意義

政策的には、本件のような農村部における灌漑分野にかかる支援は、国別援助計画のうち「中・長期開発ビジョンに沿った援助計画」の「貧困対策に対する支援」に合致している。また、協力プログラムにおいても「農漁村・地方開発」のなかでスリランカの貧困対策は主に農漁村部などを中心に分布しており、貧困層の経済基盤である農水産業の生産性の向上などが重要な課題であり、農業については、低い生産性、農家の営農技術不足などが課題であるとされていることと本件の内容は整合している。

技術的には、灌漑施設の維持について日本の予防保全の考え方と関係技術に優位性がある。また、灌漑地域の農民組織化においては、部分的ではあるが、日本の土地改良区の知見が有効である。

よって、政策的整合性と日本の技術的優位性を用いた援助という視点から援助戦略上の意義があるといえる。

第４章　プロジェクト戦略

４－１　プロジェクトの実施戦略

PCMによれば、目的系図のなかからプロジェクトして適正なアプローチもしくはアプローチの組み合わせを選択することが目的分析の次の段階として求められる。図３－10の目的系図では、3つの中アプローチと5つの小アプローチがある。よって、これらのなかから実施可能性を分析して実施戦略を検討し、アプローチを選択する必要がある。その実施可能性と実施戦略について、中課題単位で行った検討結果を表４－１に要約する。

４－２　プロジェクトの実施体制

水資源管理省のSecretary/Acting Director General（次官）が委員長・マハヴェリ庁のAdditional Secretaryが副委員長となって関係省庁（農業省等のワラウェで普及サービスを実施している省庁）を構成員とする合同調整委員会（JCC）を組織してプロジェクト実施計画策定と実施監理を行う。実施機関はマハヴェリ庁のワラウェRPM事務所で、同事務所長がプロジェクト・マネジャーになる。その他のカウンターパートは同RPM事務所のMaintenance section・HR&ID section・Agricultural sectionの長が適任と思われる。また、プロジェクト事務所はマハヴェリ庁のワラウェRPM事務所内に設置する。

なお、これら実施体制について本調査ではスリランカ側とまったく協議していない。

表４－1　抽出された課題にかかる実施可能性の検討案

No	中課題	小課題	実施可能性の検討案
1	農家の水田化が抑制される	1.1　非水稲作物の経済性が改善される 1.2　FOの非水稲作の営業能力が強化される	調査でのマハヴェリ庁職員の議論から次のことがわかっている。 （1）マハヴェリ庁の期待はBanana Associationに象徴される営業能力のあるFOを育成することであり、South CAPのように仲介業者に依存することではない。 （2）円借款の加工研修では15名研修して1名しか事業化していないこと、UD-6でバナナの集配業をしているのは元衣服業であったことから、ある程度才能のある人でないと研修しても効果がない。 （3）FOメンバーが毎年改選されることから、FO代表者に限定せずに広く研修して才能のある人を選出して能力強化する方法が望ましい。その対象者として農家の後継者も有用である。 （4）WLBPでの研修内容を聞き取りすると、ビジネス研修は具体的には展示が主で4P（Product, Place, Price, Promotion）にかかる体系的かつ具体的な内容ではなかったこと、加工研修もある程度限定的であったことから研修内容を充実することに協力可能性がある。また、最も先進的なBanana Associationでさえ、品質管理はスケールを用いていないなど低い水準にあったことからも、協力可能性がいえる。 以上のことから、「タイ　農業協同組合におけるコミュニティリーダー育成プロジェクト2007～2010年）で実施したように、広くFOから参加者を得てスリランカのリソースを用いて研修を行い、翌年のモニタリングで優秀な参加者を強化研修する二段階研修法が有効と考える。強化研修では、日本からのリソースに制限があることから、タイの同プロジェクト技術移転した市場流通の知見と元々タイが実施しているさまざまの加工研修を第三国研修で実施することが実施可能性としてあげられる。なお、研修に際しては普及員（AO, FA）も受講対象に含めて、FOのモニタリングとフォローアップをしてもらうとともに、最終年では強化研修をマハヴェリ庁で実施できるようにする。よって研修対象はFOから推薦された農家と普及員（AOとFA）である。また、事業家資金としてはICIMの回転資金のノウハウが活用できよう。ただ、この実施にあたる専門家は経営のわかる人であるので、人選が難しい。

2	農家による灌漑施設の維持管理が適正に行われる	2.1　FOの水管理能力が強化される 2.2　FOの施設維持能力が強化される 2.3　塩害が抑制される	日本の土地改良区では農家が実施しているような排水路の除草さえもマハヴェリ庁が実施しており、その経費の不足で排水不良になっている水路があった。このことから、農家を研修して現状よりも維持管理の担当範囲を広げることで維持管理状況を改善することに協力可能性がある。対象農家が多いので、通常はEngineering Assistant（EA）が維持管理の訓練を実施しているが、EAは数が少ないので次の予防保全を中心に技術移転を行い、農家の維持管理能力強化は普及員が農家を訓練することで実施するのが現実的である。この活動の実施には、日本の土地改良区の維持管理システムを活用して現在の維持管理分担を見直し、維持管理研修を行うことへの協力が考えられる。しかし、次の点に留意する必要がある。 ①　既存の維持管理役割分担の変更手続きと普及員に施設維持管理を訓練させることへのマハヴェリ庁の同意取り付けが必要である。 ②　土地改良区の場合は施設の建設から農家が参加していて当事者意識（Ownership）が醸成されているが、スリランカの場合は政府が施設を建設して入植者を募ったのでOwnershipが弱く、何をインセンティブとして農家の維持管理範囲の拡大を図るかが課題である。
3	マハヴェリ庁による灌漑施設の維持管理が適正に行われる	3.1　灌漑施設のモニタリングと維持活動が強化される 3.2　排水施設のモニタリングと維持活動が強化される	施設のモニタリングで事前に維持管理の必要を予測して保全することが必要である。そこで予防保全の日本の技術を移転することに協力の実施可能性がある。対象は、Civil Engineer（CE）とEAになろう。CEとEAの職員数はワラウェ地区で26名なので、全マハヴェリ庁に研修対象を拡大して技術移転し、他の地区へもインパクトをもたらすことも可能であろう。ただし、この分野への協力はスリランカの優先順位で最低であったことから、マハヴェリ庁側のインセンティブが低いと思われる。

４－３　プロジェクトの協力体制

類似案件としては、技術協力プロジェクト「乾燥地域の灌漑農業における総合的管理能力向上計画」（ICIM）と円借款「モラガハカンダ開発事業（モラガハカンダ）」のソフトコンポーネントがある。これらは、水利組織強化・営農改善・加工流通・維持管理・研修と本件と類似の内容を含む。これら2案件と本件の相違と協力可能性については以下のように考える。

（1）ICIMは貧困対策にかかる灌漑農業モデルといえる。すなわち、小規模農家を対象とし、灌漑関係は末端水路の改修を主とし、流通加工ではFO以下の小グループでの加工を中心とした活動をしている。それに対して本件は経済開発にかかる灌漑農業モデルといえる。すなわち、ある程度（0.8ha～1.0ha）の規模の農家を対象とし、灌漑関係では基幹施設から末端に至るシステム全体をとらえ、流通加工はFO単位もしくはFO集団による規模の大きなものを念頭においている。このことはマハヴェリ庁との協議でも、ICIMは小規模開発である点が異なると説明された。しかし、ICIMで実施されている回転資金による農民組織の活動強化・GISを用いた計画手法・普及手法は本件にも有効と考える。本件の実施はICIM終了後なので、技術移転された知見を活用すべく、カウンターパート機関と協力体制をとることは有用と考える。なお、ICIMが雇用したローカルエキスパートの活用も考慮すべきである。

（2）モラガハカンダのソフトコンポーネントはFOの設立強化・農業普及・流通加工・研修がその内容でワラウェ川左岸円借款事業（WLBP）のソフトコンポーネントと同様な質・量になると思われる。そこには本件で育成したFO・職員は整備したモラガハカンダのソフトコンポーネントの研修に活用が期待されるので、協力体制を構築することが有効と考える。

４－４　自立発展性向上のための戦略

本件技術協力プロジェクトでマハヴェリ庁へ移転した開発モデルが職員研修を全国に広まることが自立発展性につながる。しかし、現状として研修予算が減額されており、WLBPのフォローアップ研修すら実施は非常に制限的である。その点を調査団はマハヴェリ庁に確認したところ、研修予算獲得に努めているとのことで、そのことは付属資料1. Aide Memoireに含めた。今後も、調査団に限らずJICAが在スリランカ日本国大使館の協力も得て、機会あるごとに研修予算の増加をスリランカ政府に働きかけていくことが大切である。

４－５　実施上の配慮

先行実施されたWLBPと本件の関係に配慮すべきである。WLBPに対して本件は研修の補完と発展という位置づけになる。具体的には次のようである。

質的面では、流通加工研修の発展と維持管理における予防保全の導入がある。第1の流通加工は、WLBPでは流通については展示程度の研修だけであったので4P（Product, Price, Place, Promotion）を含む体系的な研修として内容を充実すること、加工も加工方法と原料作物・果物にかかる内容を充実することがあげられる。維持管理については、予防保全を導入することはWLBP研修の発展になる。

量的面では、補完になる。すなわち、FOメンバー及びマハヴェリ庁で研修を受講していない農家/職員が多い。理由は、入植直後の多忙、FO代表の改選による交代、連絡不十分、期間の短さ、入植の遅れである。これらのうち、入植直後の多忙・FO代表の改選による交代を除くほかの理由はスリランカ側が解決できたことである。FO代表の改選による交代については、改選後もマハヴ

ェリ庁職員がフォローアップ研修を実施すべきことであり、そのために職員研修も実施された。しかし、入植直後の多忙については考慮すべきと考える。すなわち、入植直後は住居の建築・家族の移動と生活の定着など多忙を極めており、家族的なことが研修よりも優先されたことは考慮すべきと考える。

第５章　プロジェクトの基本計画

基本計画案の代替案を述べる。なお、これらの代替案は帰国後に考えたものであり、スリランカ側とは協議したものではない。

５－１　上位目標

上位目標は、ワラウェ川両岸地区の灌漑農業が自立発展することである。その実現のため、図３－10の目的系図では3課題の下に3つのアプローチが挙げられている。PCMでは、これらのなかからプロジェクトを選択することになる。これら課題の優先順位は、スリランカ側の問題意識からは優先順位－1が第1課題の水田化の抑制にあることから、この課題を単独かほかの中課題を組み合わせるかでプロジェクト形成に3つの代替案が提言できる。

表５－１　代替案

代替案 No.	プロジェクト名（仮）	プロジェクト目標	成　　果	関係する中課題 No.
1	非水稲作物振興計画	農家の水田化が抑制される	1）非水稲作物の市場流通価値の向上がなされる	1
			2）FOの営業能力が強化される	
2	総合的灌漑農業管理計画	非水稲作物を中心とした灌漑農業が振興される	1）非水稲作物の市場加工が振興される	1
			2）FOの維持管理能力が強化される	2
3	総合的灌漑農業管理保全計画	灌漑農業の持続性が確保される	1）非水稲作物の市場加工が振興される	1
			2）FOの維持管理能力が強化される	2&3
			3）マハヴェリ庁の施設維持保全能力が強化される	

以下、それぞれの代替案について基本計画を提案する。

５－２　プロジェクト目標・成果・活動・投入・外部要因リスク

５－２－１　代替案－１：非水稲作物振興計画

(1) 対象地域

ワラウェ川左岸円借款事業（WLBP）対象地区

(2) 対象グループ

1）ワラウェ川左岸地区から選択されたFO

2）RPM事務所のHR&ID section、Agricultural sectionの職員

(3) プロジェクト目標

農家の水田化が抑制される

（4）成　果

1）非水稲作物の市場流通価値の向上がなされる

2）FOの営農能力が強化される

（5）活　動

1.1　非水稲作物の生産コストを低減する

1.2　非水稲作物の栽培技術を強化する

2.1　企業家研修を実施する

2.2　農家の企業意識の向上を図る

2.3　FOの問題解決能力の向上を図る

（6）投　入

1）日本側の投入：専門家派遣（長期：マーケット・農民組織、短期：商品開発・流通・加工・会計・研修・普及）、機材供与（研修用機器・研修教育資材作成機器）、研修員の第三国派遣（タイ等）

2）スリランカ側の投入：カウンターパートの配置、事務所・事務所員の確保、ローカルコスト負担（光熱費・研修経費など）

（7）外部要因リスク

1）灌漑施設の維持管理が適正になされること

2）非水稲作物の価格が近年の水準よりも暴落しないこと

3）対応不能な規模の自然災害が生起しないこと

５－２－２　代替案－２：総合的灌漑農業管理計画

（1）対象地域

ワラウェ川左岸円借款事業（WLBP）対象地区

（2）対象グループ

ワラウェ川左岸地区から選択されたFO

RPM事務所のHR&ID section、Agricultural section、Maintenance sectionの職員

（3）プロジェクト目標

非水稲作物を中心とした灌漑農業が振興される

（4）成　果

1）非水稲作物の市場加工が振興される

2）FOの維持管理能力が強化される

（5）活　動

1.1　非水稲作物の市場流通価値の向上策を実施する

1.2　FOの営業能力が強化する
2.1　FOの施設管理能力を向上する
2.2　FOの貯水池の維持能力を向上する
2.3　塩害の緩和策を実施する

（6）投　入

1）日本側の投入：専門家派遣（長期：マーケット・水利組織、短期：商品開発・流通・加工・会計・研修・普及・農民組織・灌漑排水)、機材供与（研修用機器・研修教育資材作成機器・農業用トラクター・簡易土木機器)、研修員の第三国派遣（タイ等）と日本への研修員受入れ

2）スリランカ側の投入：カウンターパートの配置、事務所・事務所員の確保、ローカルコスト負担（光熱費・研修経費・維持管理器具など）

（7）外部要因リスク

1）マハヴェリ庁による灌漑施設の維持管理が適正になされること
2）非水稲作物の価格が近年の水準よりも暴落しないこと
3）対応不能な規模の自然災害が生起しないこと

５－２－３　代替案－３：総合的灌漑農業管理保全計画

（1）対象地域

ワラウェ川左岸円借款事業（WLBP）対象地区

（2）対象グループ

1）ワラウェ川左岸地区から選択されたFO
2）RPM事務所のHR&ID section、Agricultural section、Maintenance sectionの職員

（3）プロジェクト目標

灌漑農業の持続性が確保される

（4）成　果

1）非水稲作物の市場加工が振興される
2）FOの維持管理能力が強化される
3）マハヴェリ庁の施設維持保全能力が強化される

（5）活　動

1.1　非水稲作物の市場流通価値の向上策を実施する
1.2　FOの営業能力が強化する
2.1　FOの施設管理能力を向上する
2.2　FOの貯水池の維持能力を向上する
2.3　塩害の緩和策を実施する

3.1　灌漑施設のモニタリング・保全を実施する
3.2　排水施設のモニタリング・保全を実施する

（6）投　入

1）日本側の投入：専門家派遣（長期：マーケット・水利組織・予防保全、短期：商品開発・流通・加工・会計・研修・普及・農民組織・灌漑排水・施工管理)、機材供与（研修用機器・研修教育資材作成機器・農業用トラクター・簡易土木機器・施設モニタリング機器・土木機器)、研修員の第三国派遣（タイ等）と日本への研修員受け入れ
2）スリランカ側の投入：カウンターパートの配置、事務所・事務所員の確保、ローカルコスト負担（光熱費・研修経費・維持管理器具・施設修理費など）

（7）外部要因リスク

1）施設の修復費用が政府から支出されること
2）非水稲作物の価格が近年の水準よりも暴落しないこと
3）対応不能な規模の自然災害が生起しないこと

５－３　プロジェクト実施にあたる事前の義務・必要条件

前述のすべての代替案に共通な条件であるため、これらについてはまとめて以下に列記する。

（1）カウンターパートが配置されること
（2）カウンターパートの交通費などの移動のための予算が遅滞なく支出されること
（3）研修員の第三国研修派遣にかかる連絡調整及び派遣手続きが円滑に実施されること

付　属　資　料

１．団長書簡（Aide Memoire）

２．質問票　回答（灌漑水資源管理省、マハヴェリ庁、ウダワラウェ事務所）

３．質問票　回答（農民組織）

４．主要面談者リスト

Aide Memoire
on the Integrated Irrigation and Environmental Management of the Uda Walawe Left Bank Project in the Democratic Socialist Republic of Sri Lanka by Japan International Cooperation Agency preparatory survey team

Japan International Cooperation Agency (JICA) survey team comprised of Dr. Hideyuki Kanamori (Team Leader) and Ms. Fumiko Akaishi(Survey Planning) dispatched to Sri Lanka, has since its arrival on 13 June 2010, carried out a field survey and interviews and had detailed discussions with officials of Ministry of Irrigation & Water Resources Management (hereinafter reffered to as "MIWRM") and Mahaweli Authority of Sri Lanka (hereinafter reffered to as "MASL") and persons concern, for the fact finding of Integrated Irrigation and Environmental Management of the Uda Walawe Left Bank Project (hereinafter referred to as "the Project") through reviewing the proposed assistances shown on the application form submitted on June 2009 (hereinafter referred to as "the Application").

The main findings of the JICA survey team are described in Report on the Integrated Irrigation and Environmental Management of the Uda Walawe Left Bank Project, attached hereto. This aide memoire includes the situation analysis from JICA survey team and problem to be addressed by MIWRM and MASL. It is noted that further discussions are necessary to realize the Application.

The following points have been discussed and confirmed between JICA survey team and MIWRM and MASL at this Preparatory Survey.

(1) Priority of the problems

In the Application, four problems were addressed. For reference of the project selection, JICA survey team inquired the priority to the MIWRM and MASL, and the followings are answered.

- 1st priority problem: Not well functioning in agricultural value chain to ensure profit margin of other field crops.
- 2nd priority problem: Lack of training for both officers and farmers in irrigation management, in introduction of other field crops and in operation & management of comparatively more sophisticated infrastructure

- 3rd priority problem: Inadequate institutional mechanism to ensure efficient water management and maintenance of infrastructure
- 4th priority problem: Lack of considering environmental factors in water management procedures and using non-fuel-dependent agricultural machinery

(2) Efforts to enrich the effect of Uda Walawe Left Bank Irrigation Upgrading & Extension Project (hereinafter referred to as "the WLBP loan aid")

In order to carry out follow-up training and effective operation & management activites of the WLBP loan aid, the MIWRM and MASL are requesting from the Government of Sri Lanka to increase the amount of annual budget provision.

Colombo, June 24, 2010

For
Japan International Cooperation Agency

金森秀行

Hirdeyuki Kanamori (Dr)
Senior Advisor
Japan International Cooperation Agency

赤石布美子

Fumiko Akaishi (Ms)
Program Officer
Paddy Field Based Farming Area Division 2,
Rural Development Department
Japan International Cooperation Agency

Report of Preparatory survey on the Integrated Irrigation and Environmental Management of the Uda Walawe Left Bank Project

1 Introduction

Uda Walawe Project is the largest irrigation project in the southern areas. The first phase of the project was completed in 1967. From 1995 to 2008, under the Walawe Left Bank Irrigation Upgrading and Extension Project, a new area of 6,250 ha was developed on the left bank, together with improvements to the existing facilities. The Uda Walawe Left Bank Irrigation Upgrading & Extension Project WLBP loan aid was funded by Loan aid from JICA, formerly it was Japan Bank for International Cooperation (hereinafter referred to as "JBIC"). By the end of 2008, the project has achieved all the physical targets. The WLBP loan aid has introduced several new irrigation structures such as dual canal system, lined canals and high and low tank systems with night storage.

There are, however, several issues have appeared due to installation of the huge infrastructures, i.e. (1) the establishment of an institutional mechanism for efficient water management, (2) provision of proper maintenance system for the new irrigation structures, (3) capacity enhancement of farmer organizations and officers for proper management of newly introduced other field crops (hereinafter referred to as "OFCs") and management of sophisticated structures, (4) consideration of environmental impacts given by the new facilities in water management and other farm activities and (5) improvements of processing and marketing for sustainable income generation with OFCs. Solving these issues is needed.

In order to have consolidated achievements of Walawe left bank development project and ensure the sustainability of interventions, Government of Sri Lanka (herein after referred as "GoSL") proposed technical cooperation to the Government of Japan (hereinafter referred to as "GoJ") with the application form submitted on June 2009. It is named the the Integrated Irrigation and Environmental Management of the Uda Walawe Left Bank Project (the Project). The proposal indicates assistance of the development of an integrated irrigation and environmental management program for the Left bank Uda Walawe scheme, with emphasis on the extended development area.

Considering the importance of the Project proposal, the GoJ instructed JICA to carry out the fact-finding survey. The JICA, then, decided to send a survey team to analyze the details of the Project proposal from the viewpoints of efficiency of the Project implementation and adaptability to the nature of the requested scheme being referred to as "technical cooperation project."

This report summarizes the finding of the survey.

2 Background

2-1 Socio-economic context

Sri Lanka recorded an economic growth rate of well above 6%. In 2009, although there was a negative impact of the intensified conflict in the North as well as the fallout of global financial crisis, the economy exhibited its resilience by achieving a growth of 3.5%. Its Gross Domestic Product (GDP) per capita has notably increased from US$ 914 in 2000 to US$ 2,053 in 2009.

The agricultural productivity has relatively stable except rice which has reached near self-sufficiency. In the year 2009, the value of industrial exports has increased to 75 % of the total compared to 24 % for agricultural exports. Agricultural exports, which provided the largest source of foreign exchange prior to the 1970's, accounts for 24 % of total export earnings, with tea exports providing 17 %. Thus, gradual decline in importance of the role of the agricultural export sector can be seen in the Sri Lankan economy. The domestic agricultural sector, comprising paddy and other crops, has slightly increased its share in GDP over the last three decades.

According to the survey results by Department of Census and Statistics (herein after referred to as "DCS") in 2009, it is revealed that the poverty in terms of urban sector is 6.7 % and rural sector is 15.7 %. In Sri Lanka the biggest contribution (82 %) comes from rural sector, reflecting its highest population share. Thus the highest number of poor persons is recorded from rural sector (2,303 thousands). Therefore, growth of the agricultural sector is essential to achieve self reliance at national level, ensure food security and bring about equity in the distribution of income and wealth for alleviating poverty.

2-2 Description of the sector / sub-sector

Modern irrigation began in the last century. Major river basin development initiated in the 1950's and includes the Gal Oya, followed by Uda Walawe, Rajangane, and culminated in the Mahaweli program, which aimed to develop the largest river basin in Sri Lanka. One of the objectives of developing these irrigation systems was to resettle the population from the land scarce Wet Zone to the sparsely populated Dry Zone of the country. Irrigated area increased from about 200,000 ha in 1950 to about 400,000 ha in 1970, and 500,000 ha in 1990 to about 650,000 ha in the year 2000.

Over 80 % of the irrigated land lies in the Dry Zone. The Wet Zone is classified as areas receiving more than 2500 mm of rainfall per annum at 75 % expectancy of annual rainfall. The Wet Zone comprises the following districts: Colombo, Gampaha, Kalutara, Kandy, Nuwara-Eliya, Galle, Mataa, Ratnapura and Kegalle. The Dry Zone ,included the Intermediate Zone, is the area with mean annual rainfall between 1900-2500 mm. The Dry Zone included the following districts, Jaffna, Mannar, Vavuniya, Mullaitivu, Batticaloa, Amparai, Trincomalee, Puttalam, Chilaw,Anuradhapura,

Polonnaruwa, Hambantota, Moneragala, Badulla, Matale and Kurunegala. Parts of the latter three districts fall within the Intermediate Zone. (About 80% of the land area and 16 of the 25 districts fall within the Dry Zone). The area of WLBP loan aid was in the Hambantota and Moneragala,,Dry Zone.

2-3 Host country strategy

Mahinda Chintana Ten Year Development Plan (2010) recognizes agriculture as the main source of livelihood of the rural population, and pledges the sector will be more efficient to increase the return to labor, which will also contribute to reducing rural poverty. The government is directed towards transforming traditional subsistence agriculture to one which maximizes productivity. The goals of its policy of agriculture sector are to achieve sustainable earnings, food security, and higher incomes for those dependent on this sector reduce the cost of living of the population as a whole, and provide adequate diet at an affordable price for the poor.

The government places high priority on achieving a broad based shift from low-value to high-value agriculture, accompanied by sustained improvements in productivity and competitiveness. which will launch the agriculture sector into a significantly higher growth trajectory. The following policy measures and actions are proposed:

1) Productivity enhancement,
2) Facilitating marketing and related infrastructure
3) Technology dissemination
4) Participation of community based organizations for equity-based development
5) Minimizing environmental degradation
6) Transforming low-productive subsistence farming to high productive advanced agriculture
7) Increasing productivity, production and competitiveness of export based agricultural sectors
8) Increasing return to labor, land and other factors of production in agriculture sector which would directly contribute to rural poverty reduction
9) Enhancing agricultural productive efficiency through mechanization and technological transformation whereby agriculture labor could be released for off-farm employment as an improved livelihood strategy, and
10) developing market mechanisms and introducing favorable trade rules

This project is supposed to support fully above mentioned policy except item 9), partly

The National Agriculture Policy (2007) provides policy statement on several issues described as below.

1) Promoting Agriculture Production
2) Seeds and Planting Materials
3) Fertilizers
4) Pesticides
5) Agricultural Machinery
6) Irrigation and Water Management
7) Land Use
8) Soil Conservation
9) Agricultural Credit
10) Agricultural Insurance
11) Agricultural Research
12) Agricultural Extension and Education
13) Post Harvest Technology
14) Marketing
15) Agro-based Industries
16) Traditional Agricultural Crops and Methodologies
17) Home Gardening
18) Investments in Agriculture
19) Utilization and Sharing of Plant Genetic Resources
20) Youth Involvement in Agriculture
21) Agriculture Exports

The project is supposed to support to these statements, except item 5), 16) and 19).

2-4 Prior and on-going assistance

Several donor assistances project were implemented by MASL in this decade are listed in Table 2.1.

Table.2.1. Donor Assistance Project implemented by MASL in this decade

Donor	Related field	Project title	Amount	Year
JBIC	Irrigation rehabilitation & improvement	Walawe Left Bank irrigation upgrading & extension Project (SL-P45)	JPY 2572 million	1995-2001
JBIC	Irrigation rehabilitation & improvement	Uda Walawe Left Bank Development Phase II (SL-P48)	JPY 9393 million	2000-2008
JICA	Fertilizer	Promotion of Integrated Plant Nutrition Practice among Farmers for Sustainable Improvement of Crop Productivitiy and Alleviation Poverty	JPY 14 million	2006-2008
JICA	Irrigation	Increasing the Capacity of Integrated Management in Irrigated Agriculture in Dry Zone Project	JPY 350 million	2007-2010
World Bank	Rehabilitation & improvement	Dam Safety and Water Resources Planning Project	USD 72 million	2008-2012

Source: MASL, May 2010

About the WLBP loan aid, a new area of 6,250 ha was developed on the left bank, together with improvements to the existing facilities. The project has achieved almost all the physical targets. The WLBP loan aid has introduced several new irrigation structures such as dual canal system, lined canals and high and low tank systems with night storage. In addition, the WLBP loan aid also provided services on agriculture extension, water management, strengthening/formulating farmers organizations, forestation and protection of wild elephant. The characteristics in agriculture extension are crop diversification according to the soil and climatic condition. As the area under OFCs is 68 %, the high rate is a distinct feature of the project.

However, some issues were pointed during this survey.

3 Institutional Framework, Situation Analysis and Problems to be Addressed

3.1 Institutional Framework

According to the Application, there are five subjects of proposing technical cooperation, i.e. 1) water management, 2) maintenance of irrigation structures, 3) capacity enhancement of farmer organizations (hereinafter referred to as "FOs") and officers, 4) environmental consideration, and 5) processing and marketing. The subjects 1), 2), 3) and 4) are issues under the MASL and FOs. The subject 5) is issues under the private sector for managing and under the MASL for supporting FOs. The institutional framework of MIWRM, MASL, FO and marketing are, thus, described herein.

3.1.1 Ministry of Irrigation & Water Resources Management (MIWRM)

(1) Major duties and functions

- Formulation of policies, programs and projects in regard to the subjects of irrigation, reservoirs, water resources management and all subjects that come under the purview of departments and statutory institutions
- Direction of the implementation of such policies, programs and projects with a view to achieving the relevant national objectives within the lines agreed wit the national planning authorities and within budgeted resources
- Provision of all public services that come under the purview of the Ministry in an efficient and people friendly manner
- Reforming of all systems and procedures to ensure the conduct of business in an efficient manner deploying modern management techniques and technology
- Salt water exclusion schemes
- Rain water harvesting
- Flood protection
- Prevention of the pollution of rivers, streams and other watercourses
- Promotion, construction, operation and maintenance of schemes of irrigation, drainage, flood control
- Irrigation consultancy services and construction
- Matters relating to six projects

(2) Departments, statutory institutions and public corporations

- Department of irrigation
- MASL and its subsidiary companies and associates except Mahaweli Livestock Enterprise Company Ltd.
- Central engineering consultancy bureau (hereinafter referred to as "CECB")
- Mahaweli irrigation department program
- Water rerources board

(3) Laws to be implemented

- Irrigation ordinance
- Mahaweli Authority of Sri Lanka Act. No. 23 of 1979
- Water resources bard Act, No. 29 of 1964
- All other legislations pertaining to the subjects specified in the above (1) and (2), and not specifying brought under the preview of any other Ministry and remaining currently in force

3.1.2 Mahaweli Authority of Sri Lanka (MASL)

(1) Vision, mission and objectives, organizational framework and budgetary status

Vision

Harnessed rivers, well managed basins moved from agrarian to prosperous society and promoted economic development

Mission

Water resources management dominated, environmentally sustainable, eco-friendly use of natural resources as well as the use of human resources with effective human engineering ensured in the river basin(s)

Objectives

- Construct, maintain and operate dams, reservoirs, canals, irrigation distribution systems and other structures related to the project or any special area
- Land development and settlement
- Agricultural development and land development
- Post settlement activities
- Watershed management & environmental concervation
- Rehabilitation maintenance & dam safety

Organizational framework

After recent restructuring, there are no major changes proposed in down the ladder than that prevailed after restructuring in 1997 – 2000 except number of Executive Directors, It comprises only two Executive Directors namely, Engineering & Technical (hereinafter referred to as "ET") and Economic Development (hereinafter referred to as "ED") operating under the directions of the Director General of MASL. The proposed organization chart of the Residential Project Manager's office (hereinafter referred to as "RPM office")under the restructuring is shown in Figures 3.1.

Budgetary status

The present budgetary status is reported as shown in Table 3.1.

Table 3.1 Recurrent Budget of MASL (Rs. Millions)

Expenditure	1997	2007	2008	2009	2009/1997(%)	1997-2009
Net salary.	580.2	1426.2	1564.6	1654.0	285.1	(1073.8)
Other Emulations.	195.8	26.9	22.4	24.5	12.5	171.3
Other Recurrent.	360.7	112.6	138.8	139.6	38.7	221.1
JTotal Recurrent.	1136.7	1565.7	1725.8	1818.3	159.9	(681.6)
Total Capital	1798.0	4815.0	5271.5	4016.6	223.4	(2218.6)

Source: MASL Staff as of March 2010 – (Permanent-4644, Trainees-156)

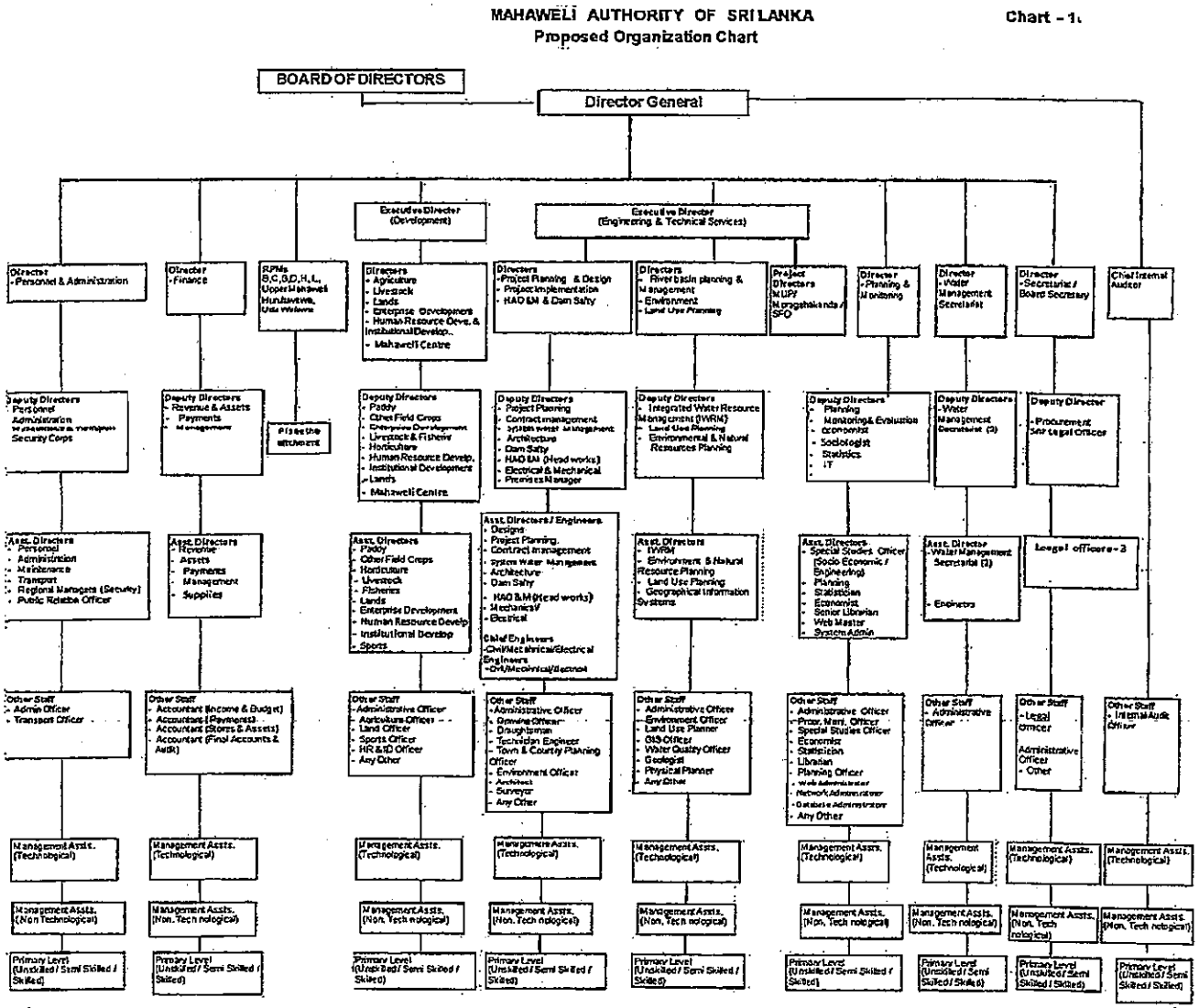


Figure 3.1 Proposed organization chart of the MASL

Source: MASL, May 2010

Personnel status

Number of field staff of MASL is shown in Table 3.2.

Table 3.2 Number of field staff of MASL

Position	CE	EA	DP	TO	Jalapaiaka (Water controller)	Total
[RPM Office]						
DRPM (technical)	1					1
Construction & Maintenance Unit	1	2	3	1	_	7
Flow Monitoring & Operation Unit	2	2	_	3	13	20
Electro Mechanical Unit	2	_	_	_	_	2
[Left Bank area]						
BM Office(Kiriibbanwewa)	1	2	_	3	_	6
BM Office(suriyawewa)	_	1	_	2	2	5
BM Office(Maurapura)	1	3	_	3	2	9
BM Office(Chandrikawewa)	_	3	_	3	5	11
BM Office(Murawasihena)	1	1	_	4	5	11
BM Office(A'pelassa)	_	3	1	4	8	16

CE=Civil engineer, EA=Engineering assistant, DP=Draught person, TO=Technical officer,

Source: MASL, May 2010

3.1.3 Local offices in Uda Walawe

(1) Resident Project Manager's office (RPM office)

The organizational structure is shown in Figure 3.2 and the activities of each section are described below.

1) Water management section duty is 1199 ha, of which 96,277ha for Maha (wet season) and 89051 ha for Yara (dry season).
2) Maintenance section duty is repairing Branch canal, Main canal and structures and building maintenance. Main canal has 49.56km, Branch canal (hereinafter referred to as "B-canal") has 47.8 km, Distribution canal (hereinafter referred to as "D-canal") has 191 km, Field canal (hereinafter referred to as "F-canal") has 647.50 km long for Left Bank. Main canal and B-canal are under this RPM office and D&F-canals are under the FOs. Tank capacities are 88.39m of the main sea level, which is full supply level. The Tank water come from river.
3) Agriculture section is preparing program, supplying knowledge, giving technical instruction, introducing new crops, and maintaining farms. On the statistics, Maha season paddy covers 13,068 ha, Banana covers 4,135 ha, Papaya 439 ha, other fruit 64 ha and vegetables 465 ha. The average yield of paddy rice is 6.24 t/ha. Papaya can be harvested for three years, Banana for three years with income generation. Banana and papaya are for fresh fruit and sold to Colombo and other areas of main cities. Buyers come here. There are 10 to 15 farmers' groups that mainly sell bananas. MASL gave FO the place to banana selling center and it was built by a FO, they sell paddy, banana, vegetables at once per week, for mainly wholesale purpose. The number is 6 to 7 centers. Buyers also come to the fields.

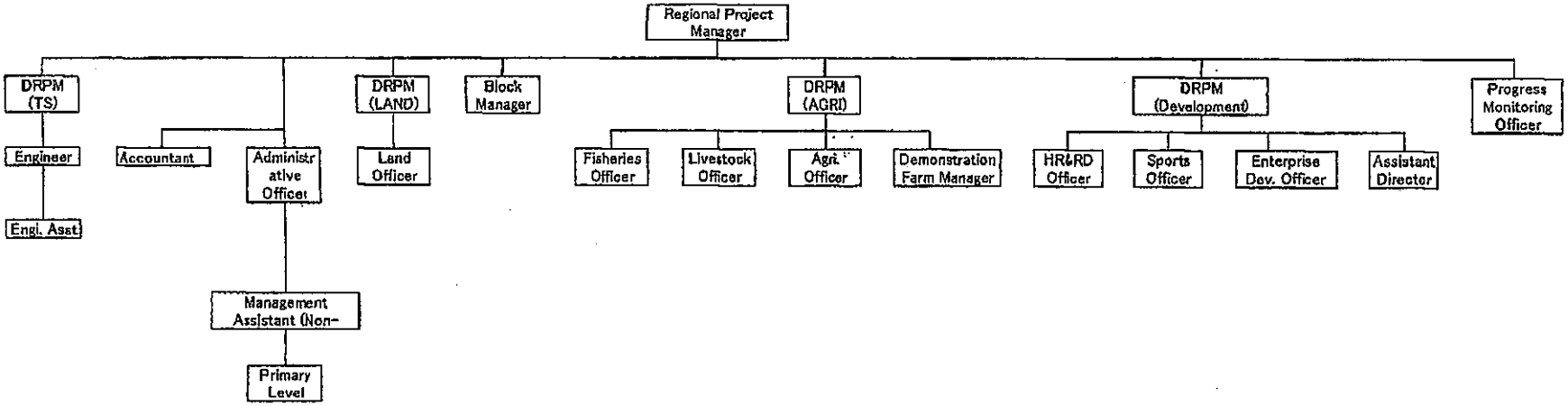


Figure 3.2 Proposed organization chart of Resident Project Manager's Office (Source: MASL, May 2010))

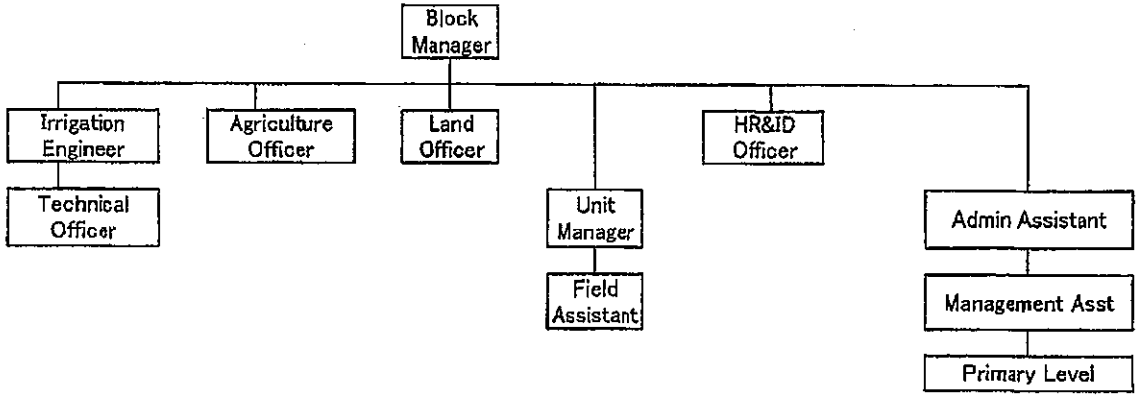


Figure 3.3 Proposed organization chart of the Block office (Source: MASL, May 2010)

4) Human resource development section maintains 270 FOs, conduct training programs, does Sramadana (voluntary) campaign with FO at twice per year. Other activities are Religious and cultural program, Small scale women's societies and Business development. The business development includes infrastructure, Providing machineries and Commercial exhibitions. Infrastructure facilities: area for business man's working places. Providing machineries are done by the JBIC but no machinery is from the government. Seed paddy cleaners, 10-rice flower machines, 3-compost machines were provided.

The commercial exhibitions are Promotion activities that was introduced in 2007 held at Colombo for paddy, papaya, banana, small scale processes of banana chips, rice flower, green gram, and small scale juice producers. For business development, exhibition was held under the loan project. Before the loan project, no activity of Business was done due to financial problem. After the loan aid project, they will continue but not yet. Trainers are officers with assistance from other organizations such as industry development board, Nippon Koei and others. It was done at only 2007, after that no exhibition was held. Originally, other exhibitions are planned to be held for commercial purpose. A lot of inquires were given and the RPM office linked them to farmers. Not support fully. In the exhibition, they can show the products and and most of the people can know. There are not much but some commercial farmers who grow for commercial bases. OFC farmers are commercial farmers such as banana, papaya and some selected vegetables and paddy. Paddy has subsidy for fertilizers in which the discount price of 350 Rs/50kg is given. No subsidy for OFCs. The RPM office wants to make business farmers.

5) Land division is holding land kachecheri (selection committee), conducting land survey, issuing permits, issuing grant, land allocation, selection the relevant (suitable) persons for the land. On Land use, High land (residential area) is 5832 ha, Low land (irrigable area) is 23,600 ha, others are 35,098 ha and the Total is 64,530 ha.

(2) Block office and unit office

The organizational structure is shown in Figure 3.3 and the activities of major staffs are described below.

1) Block manager: Coordinate administration at block.
2) Unit manager: Main job is settlement, coordinating all the resources of unit. Welfare of farmers, FO development, participatory management Welfare of farmers is helping them to enjoy good life sanitation, drinking water and others.
3) Technical officer (hereinafter referred to as "TO"): water management, providing advices for maintenance of irrigation system, providing advices for technical problems such as house construction, canal maintenance, during the construction land devt. Activities.
4) Irrigation engineer (hereinafter referred to as "IE"): Mainly water management, supervision to Engineering assistants (hereinafter referred to as "EA") and TOs.
5) Land officer: Look after land matters such as assigning land, issuing permits and solving land problems, dispute of two parties.

6) HRID officer: Build and strengthen the FO, organize training program of FOs, conduct sport activities and voluntary activities, religious activities, conduct business promotion (family business such as curd production, etc.)
7) Agriculture officer (hereinafter referred to as "AO"): preparation of annual and monthly action plan of agriculture and extension, coordination and monitoring of FAs, coordination with other institutions like dept, coordination of supplying inputs, Training of farmers and FAs.
8) Engineering assistant (EA): Mainly water management, handing over the D-canal to FOs, Rotation planning, preparation of estimating construction works
9) Field assistant (hereinafter referred to as "FA"): Transfer of new technology, progress monitoring, planning of agriculture implementation program at the unit level, coordination with other officers, approving application forms of fertilizers, Supervision of farms and attending their problems on pest and disease. They give advices post harvesting and coordinating marketing personnel such as middle man. New technologies are such as parachute delivering, introduction of tissue culture for banana
10) Fishery development officer: In-inland fishery and prawn culture, planning these activities, organization of farmers, coordination of supplying finger rings (nursery fish) in the tank, organizing inland fireman. there are 18 fishery societies

(3) Training of staffs

The staff training is done under the HRID and trainings are conducted by participating other government departments' programs. The 2010 training plan includes the following main activities.

- Awareness Program
- Capacity Building
- Skill Development
- Institutional Development
- Microfinance
- Women Development
- Vocational Training
- Agricultural Development

The budgets allotted for staff training for last five years reported as shown in Table 3.3. It shows decreasing trend of training budgets.

Table 3.3 Training budgets for last five years

Fisical Year	Amount from regular budget (Million Rs)
2006	12.90
2007	138.65
2008	70.26
2009	21.75

Source: MASL, May 2010

3.1.4 Water Management System and Farmers' Organization

(1) Feature of the Uda Walawe Left Bank Project

The Project area is administratively composed of a part of three provinces as shown in Table 3.4 and the physical feature is summarized in Table 3.5. The number of farm families is summarized in Table 3.6.

Table 3.4 Land administration of the Project area

Provinces	District	Divisional Secretariat	Block	Unit
Uva	Monaragala	Thanamalvila	Kiribbanwewa	Habaraluwewa
				Kiribbanwewa
				Mahagama
Southern	Hambantota	Sooriyawewa	Sooriyawewa	Samaja sewapura
				Viharagala
				Baddewewa
				Alioluara
				Bedigantota
			Mayurapura	Nabadagaswewa
				Andarawewa
				Thalawilla
				Ruhunupura
				Kaluwarawewa
				Bolhida
				Galwewa
				Bellagaswewa
				Ranamurapura
				Katuwewa
				Thissapura
				Samarakoonwewa
				Ballagaswewa
				Tissapura
		Angunakolapalassa	Angunakolapalassa	Pahalagama
				Binkama
				Kanukatiya
				Janidura
			Muravasihena	Siyanbalagoda
				Muravasihena
				Mamadala
				Helekinda
Sabaragamuwa	Rathnapura	Embilipitiya	Cahandrikawewa	Timbolkatiya
				Moraketiya
				Tunkama
				Kuttigala

Source: MASL, May 2010

Table 3.5 Left Bank Irrigation Area (Extention Area)

Description	Unit	Sub Phase I & II	Sub Phase III	Total
Commanding Area	ha	3,580	1,572	5,152
Main canal	km	15	4	19
Branch canals	km	11	12	23
Distributory canals	km	69	33	102
Field canals	km	239	111	350
High tanks	Nos	28	16	44
Low tanks	Nos	10	9	19
Main & lateral drainages	km	72	38	110
Market roads	km	29	17	46
Buildings	Centres	7	3	10

Source: MASL, May 2010

Table 3.6 Number of Farm Families (FF) settled in Uda Walawe
As at end of December 2008

System	Farmer	Non-farmer	Total
Uda Walawe, Total	22,731	24,087	46,818
Left Bank	11,733	10,800	22,533
Right Bank	10,998	13,287	24,285

Source: Statistical hand book 2008 in Mahaweli Hand Book 2008-2009

Figure 3.4 schematically describe the irrigation system. The main and branch canals are operated and maintained by the MASL and the D-canals and F-canals are by FOs.

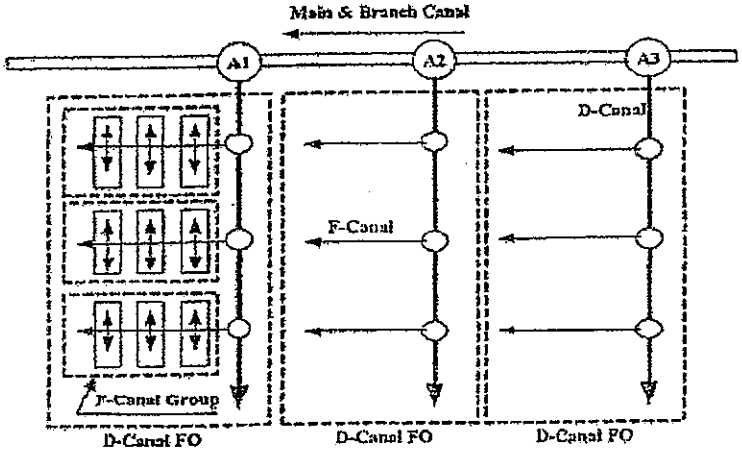


Figure 3.4 Schematic description of the water delivery system of the Uda Walawe

Source: the SAPI Team for JBIC

(2) Farmers Organization (FO)

The FO is established with the farmers having farm plots in D-canal area. The FO is conducted by the Chairperson, Secretary and Treasurer under the General meeting of the member farmers. The FO contains some F-canal groups established with the farmers in the F-canal areas. Figure 3.5 shows a

typical organization structure of FO. The total number of D-canal FOs established in the Uda Walawe Project is 273 in which 137 in the Right Bank area and 136 in the Left Bank area.

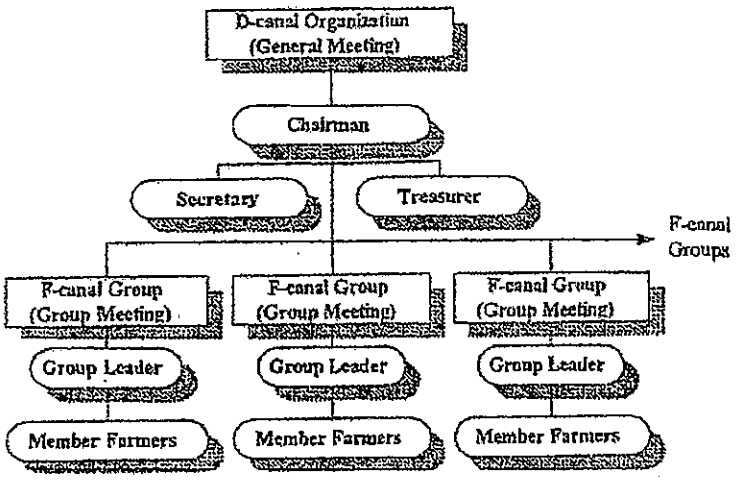


Figure 3.5 Typical organization structure of FO, Source: the SAPI Team for JBIC

External audit and internal audit are provided although these are not shown in Figure 3.5. The external audit is assigned by the Block office and it is done once per year with fee payment of 2000 Rs/year from the FO.

The FO activities are generally as follows.

1) Operation of voluntary labor work for Operation and Maintenance (hereinafter referred to as "O/M") of irrigation facilities as well as community activities
2) Distribution of fertilizers and chemicals (only for paddy area)
3) Community development works
4) Loan arrangement for farm operation and cultivation
5) Solving members' problems and others

Since the turnover of the O/M activities to the farmers has not been made in the project area, the operation of gates in D-canals and F-canals has not been executed by the farmers/FOs. On the loan arrangement, a very limited number of FOs deals with loans.

Water fees are collected by the FO treasurer; the fee amount differs among FOs. The fee collection rate is, according to the MASL, almost 100%. We confirmed it at the Suriyawewa block and Mayurapura block. Total 24 FOs in Suriyawewa block reported to collect at almost 100% and total 26 FOs in Mayurapura block reported the following collection rates in Table 3.7.

Table 3.7 Water fee collection rate in Mayurapura block

Water fee collection rate	No of FOs	%
80% to 100%	16	62
50% to 80%	7	27
Less than 50%	3	12
Total	26	100

Source: Interview from farmers, JICA survey team

(3) Participatory management and coordination committees

Participatory management

Participatory management has been applied fro the Mahaweli Systems since 1992. According to the policy, the management of the irrigation systems has been executed jointly by the RPM office and FOs on the basis of the mutual sharing of roles and responsibilities. The main features of joint management are:

1) All activities related to water management and O/M in the entire system are coordinated and managed jointly by appropriate Coordination Committees set up at several levels in the project implementation organization. Within these committees, RPM officials and FOs representatives share decision-making and management responsibilities in respect of the irrigation infrastructure and production plans.
2) The irrigation networks at the D-canal level and subordinate canal level are operated and maintained by the FOs, and
3) The RPM office operates and maintains the Main and Branch canals.

The main purpose of the participatory management system is to ensure the success of the "production phase" of the project by securing the sustainability of an efficient irrigation system to be managed by the farmers. Throuth initiation and support in developing strong independent FOs, their participation in the processes of irrigation management at all levels would be secured; particularly for decision making as the owner of the irrigation system. The FOs participation will aim at:

1) Encourage and motivate FOs in carrying out any responsibilities entrusted to them.
2) Make the MASL officials be more responsive to the feelings and needs of farmers.
3) Create greater chances of cooperation with farmers in implementing the various plans and programs.
4) Make farmers' representatives be aware of the constraints faced by MASL officials in carrying out their duties.

As the participatory management will proceed, the role of MASL may shift from "controller" to "facilitator." The strong self-reliant FOs will manage not only the irrigation water but also the economic activities.

(4) Management (Coordinating) Committees

A coordinating committee system was established in the Project level, Block level and Unit level. To

facilitate participatory management, MASL officials and farmers' representatives attend the committees. The committee system aims at resolving problems on water distribution, cropping patterns, prioritization of canal maintenance work, improvement and modernization of the canal system, as well as participation in monitoring and evaluation. The composition and the institutional mechanism of participatory management in the Uda Walawe Project executed under the coordinating committee system as illustrated as follows in Figure 3.6.

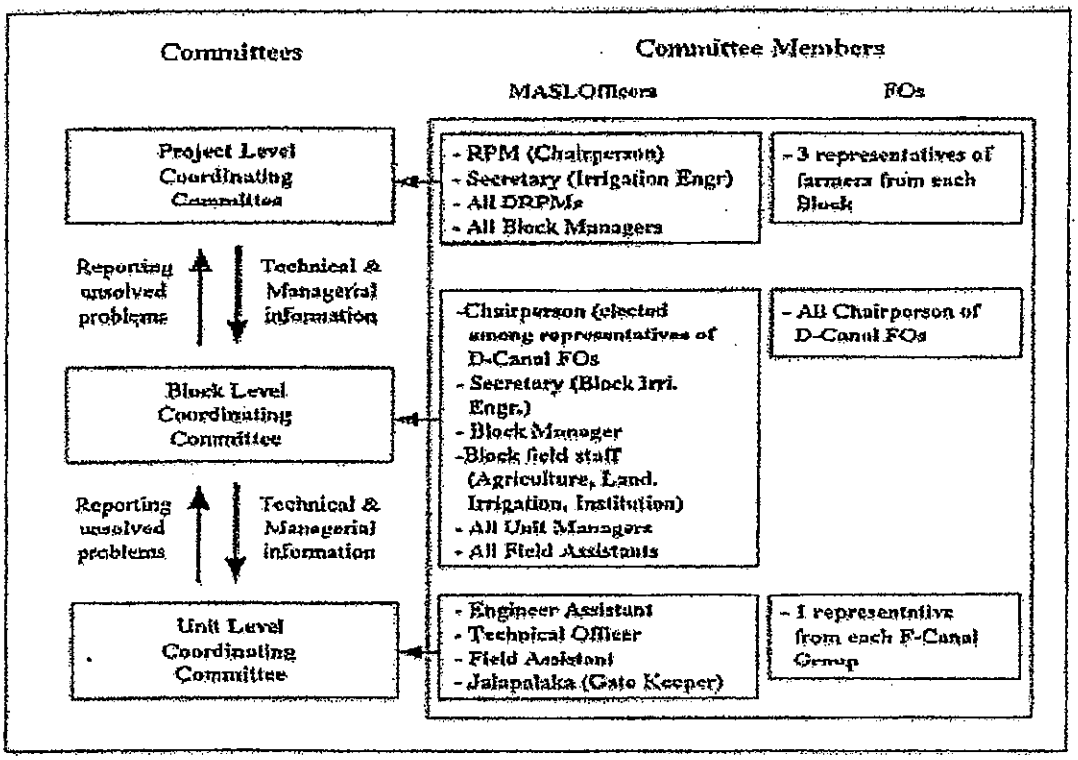


Figure 3.6 Coordination mechanism of participatory management (Source: the SAPI Team for JBIC)

1) Project level coordinating committee: The Project level coordination committee is chaired by RPM while the secretary is the irrigation engineer. The meeting is held once every three months or as required with the members. The representatives of farmers are appointed through the Block coordinating committee for one year term of service. One of them is for Deputy Chairperson, and one is for Deputy Secretary.
2) Block level coordinating committee: This committee is organized at the Block level with the chairperson elected from the chairpersons of D-canal FOs in the Block, while the secretary is the block irrigation engineer. The meeting is held every month and as required with the members.
3) Unit level coordinating committee: This committee is organized as the Unit level, the chairperson is elected from the field canal representatives while the secretary is the Unit Manager. The meeting is held every month and as required with the members.

The topics discussed frequently at the meeting other than O/M of canals are as follows:

1) Land matters: encroachment, illegal activities, delay of deeds, allocation of land for common use
2) Marketing: to maintain appropriate prices of agricultural products
3) Crop insurance promote to insure crops against disaster: agricultural loans, market information, packing, quality, prices, input supply, etc.
4) Infrastructure development: road, electricity, playgroung, nursery school, cemetery, furniture for Sunday school
5) Second generation employment: training program by MASL for milk processing, purchasing and sale of products, typing, sewing, bridal dressing
6) Other training programs: Accounting, book keeping, auditing, nursery school teachers, water management

(3) Turnover program

- Under the participatory management policy and the institutional coordinating systems described above, the Turn over program has been launched with the tree stages as follows.
- Step-1: Institution-building In this stage, FOs are formed and strengthened using "Institutional organizers."
- Step-2: Joint operation: When the MASL and FO agree that both parties are ready for joint operation, they sign a Memorandum of understanding (MOU) under which the roles and responsibilities of both parties are clearly defined in respect of operation and maintenance.
- Step-3: Turnover: When the FO is ready and agreeable to take over O/M responsibilities completely, a "turnover agreement" is signed between both parties. The agreement specifies the respective responsibilities of MASL and the FO. The role of MASL at this stage may be limited to providing technical and management advice, and finantial assistance to improve canals beyond the financial capability of FOs.

The present progress of turnover was reported at the end of May, 2010 as follows. The progress shows that 60 FOs out of 129 have finished the turnover; it is 47%. The turnover is planed to be completed within 2010, although the schedule is delayed due to many issues in resettlement process, such as too many applicants having to examine the selection criteria.

Table 3.8 Progress of Turnover Programme

Area	No. of FO	Registered under 2000 Agrarian service act	1st Agreement	2nd Agreement
Left Bank	136	73		60
Right Bank	137	117		128
Total	273	190	0	188

Source: MASL at the end of May, 2010

The training is carried out by the Irrigation engineer, (IE) HRID, Engineering assistant (EA), Technical officer (TO) and Unit manager (UM).

3.1.5 Agricultural Extension

(1) Institutional framework over the country

Agrarian Service Center is established as the base of field extension team composed of line agencies to integrate extension activities. The Center has a dual function, firstly as retail outlet of farm inputs, and secondly as Coordinating points of officers working for the extension services. The organization is complex and it is difficult to obtain coordination among the institutions. A number of institutions engage in agricultural extension and support services. These are Extension & Training Division of Department of Agriculture, Extension Development Unit of Ministry of Land, Department of Agrarian Services, Department of Animal Production & Health, Provincial Department of Agriculture, Provincial Department Animal Production & Health, Department of Export Agriculture, Sri Lanka Aqua-culture Department Authority, Coconut Cultivation Board, Cashew Corporation, and Agricultural Development Authority.

(2) Institutional framework of MASL

Mahaweli Authority of Sri Lanka (MASL) conducts Agricultural Extension Program on agriculture in Mahaweli Settlement Areas so that farmers can apply new technologies and they can solve problems in agriculture. The program is carried out under a basic direction that is determined by the MASL. Guiding order of the program is the Head Office (HO) – Resident Project Manager Office – Block office – Unit office. Head Office of MASL has a Director (Agriculture), Deputy Directors and Agriculture Officers (subject matter specialized). The RPM office has a Deputy Resident Project Manager (DRPM) _ Agriculture and Agriculture Officers (subject matter specialized). The Block Office has a Agriculture Officer. The Unit Office has a Unit Manager (UM) and Field Assistant (FA). For research problems the MASL and Regional Research Stations of Department of Agriculture have coordination and cooperation each other. Trial and demonstrations are being conducted on farmers' fields under the supervision of Field Assistant (FA). There are other organizations that are concerned with farming, such as Coconut cultivation Board, Department of Animal Production & Health, Sugarcane Research Institute (SRI).

Table 3.9 describes roles of the Central government and MASL on implementation of extension program.

Table 3.9 Roles of central government and MASL

Central Government	MASL
1) Provide a guideline to manage the Program. 2) Provide subsidy for the extension activities carried out by the Provincial government, MASL and other statuary bodies. 3) Conduct examination of qualifying extension workers. 4) Provide information network over the country.	1) Provide a guideline to carry out the Program. 2) Carry out the program. 3) Assign Extension Workers in the extension centers and form farmer or community based organizations. 4) Provide extension services for farmers by FAs and indirectly through FOs and farmers.

Source: MASL, May 2010

(3) Structure and number of FAs

Deputy Regional Project Manager in (agriculture) office of MASL Uda Walawe is responsible for agricultural extension services in the Project area. The organization structure for agricultural extension services consist of 1)project office headed by DRPM for agriculture and three Subject Mater Officers (SMO), 2) Agricultural officer (AO) in the Block manager's office, and 3) Field assistants (FA) in the Unit Manger Offices. The structure of the office in MASL Project office, Block office and Unit manager offices is shown in Figure 3.7.

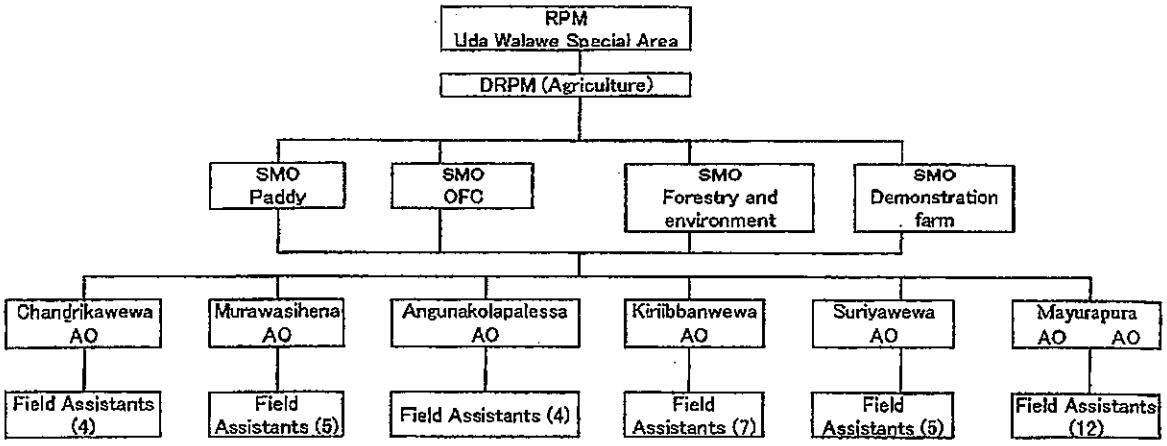


Figure 3.7 Agriculture extension organization structure, Source: MASL, May 2010

Table 3.10 show the number of extension agents.

Table 3.10 Number of Agricultural agents of Uda Walawe as at end of December 2008

Block		AO	FA
Right Bank	Chandrikawewa	1	4
	Murawesihena	1	5
	Angunakolapelessa	1	4
	Total	3	13
Left Bank	Kiriibbanwewa	1	7
	Suriyawewa	1	5
	Mayurapura	2	12
	Total	4	24

AO=Agricultural officer, FA=Field assistant
Source: MASL, May 2010

Since the total number of present settled farm families (hereinafter referred as "FF") is 11,733, one FA is in charge of 11,733÷24=489 FF. In fact, seven FAs interviewed are in charge of 508, 530, 540, 742, 543, 1265 and 532, respectively. The number of 1265 FF is big for the large area including old settlements before WLBP loan aid. It is however noted that the FAs can spend only 60% of their total time of duty for agricultural extension activities including organization of training camps, field demonstration, field visits for farmers, soil sample collection and crop cutting surveys, because they have to spend some time in distributing inputs (seeds, materials, equipment) and maintaining the regular accounts for the input distribution

(3) Extension system

MASL extension system is Integrated Extension system. This system is a combination of Target Group Oriented Extension, Problem Oriented Extension and Participatory Extension. Specific system is described as follows.

1) An FA attends a specific training at office once a month, and visits farmers /farmer groups and FOs in the remaining days of the month according to a schedule.
2) When FA visit target group, he has freedom to selects one farmer as a contact farmer and to give messages regularly to him or visit all or several members.
3) The FA holds a regular meeting with Problem oriented farmer group to make farming schedule and to give training or demonstration.
4) The FA visits to inspect and evaluate the results of the FA's work.

(4) Extension activities and in-service training

All the FAs are using motorbikes. The FA's jobs are as follows.

1) The FAs introduce new technologies to farmers and work together with farmers to improve technologies. In advance, the FAs verify the applicability of new technologies at a extension field; the field is a part of a farm provided by rent.
2) The FAs provide guidance to new farmers.
3) The FAs conduct coordination activities to make and develop the locality in cooperation with

4) For environmental protection, the FAs provide technical guidance and training meetings for farmers to control application of fertilizers and chemicals.
5) For less application of chemicals, the FAs provide technical guidance and trading advices to farmers.
6) The FAs support family farm management by advising to make the management rule of individual family and to start new marketing.

For extension methodology, the similar methods to Japan are applied except extension materials, which are not made by extension related staffs. DRPM (Agrculture) office of the RPM's office provides all the materials and delivers to Block and Unit offices. Total 5000 copies are prepared at once for posters and leaflets. In additionally some leaflets, booklets and posters are received from Department of Agriculture. All the leaflets studied were made by the WLBP loan aid, most of which are leaflets. The number of available leaflets was 16 at the RPM's office, 13 at the Mayurapura Block office and nothing at "U-2" Unit office due to using out.

On in-service training, the In- service Training Institutes (ISTI) of Department of Agriculture are organized the training. MASL extensions officers are trained pre seasonally in each season. Table 3.11 shows the data of in-service training done for recent three years. It is noted that the number is not for the Project area but for all the participants from the MASL. The table shows that the training was focused on not processing and marketing but technical matters.

Table 3.11 Record of in-service training

Year	Type of Training	No.	Name of training course	No. of Participants
2007	Production techniques	74	Officer training	1,850
	Production techniques	260	Farmer training	9,100
	Others	23	Awareness training	1,771
	Others	34	Capacity Building	1,540
	Others	9	Skill Development	99
2008	Production techniques	58	Officer training	1,450
	Production techniques	433	Farmer training	15,000
	Others	19	Awareness training	481
	Others	17	Capacity Building	564
	Others	27	Skill Development	836
2009	Production techniques	79	Officer training	1,817
	Production techniques	837	Farmer training	34,200
	Others	10	Awareness training	309
	Others	34	Capacity Building	1,676
	Others	8	Skill Development	78

Source: MASL, May 2010

3.1.6 Marketing

(1) Marketing place in the Project area

Local market called "Pola" is the typical marketing place in the Project area, which is managed by local government. In Pola, farmers and traders sell the commodities not only agricultural products but also some other good, such as spices, clothes and others according to the local peoples needs. Farmers collection centre is also in the Project area, which is managed by FOs. Compared to Pola, farmers collection centre is only for the agricultural crops from farmers around the area. There are sixteen 16 Polas and one (1) farmers collection centre in and around the Project area; eight in Chandrikawewa block, two in Marawashihena, two in Angunakolapelessa and nearby. In the Left bank, three are in Suriyawewa block and one is in Kiriibanwewa. The Table 3.12 shows features of the existing Polas in and around the Project area.

Table 3.12 Existing Polas and collection centers in and around the Project area

No	Name of Pola	Block	Type		Operating organization	Operation Day	
						Retail	W/sale
1	Uda Walawe (Town area)	Embilipitiya	Retail		Pradeshiya Saba	Wed & Sat	
2	Galwanguwa	Embilipitiya	Retail	W/Sale	Pradeshiya Saba	Sat	Sat
3	Emblipitiya (New town)*	Embilipitiya	Retail	W/Sale	Pradeshiya Saba	Wed & Sun	Tue
4	Canal8 (Morokatiya)	Embilipitiya		W/Sale	Canal-8 FO		Mon
5	Danduma	Embilipitiya	Retail	W/Sale	Pradeshiya Saba	Tue	Tue
6	Kethsirigama	Embilipitiya	Retail	W/Sale	Pradeshiya Saba		Mon
7	Tunkama	Chandrikawewa	Retail	W/Sale	Pradeshiya Saba	Fir	Thu
8	Padalangala	Chandrikawewa	Retail	W/Sale	Pradeshiya Saba	Tue	Tue
9	Barawkumbuka	Murawesihena	Retail	W/Sale	Pradeshiya Saba	Sun	Tue&Sun
10	Mamadala	Murawesihena	Retail		Pradeshiya Saba	Sat&Wed	
11	Angunakolapallessa (Town)	Angunakolapallessa	Retail	W/Sale	Pradeshiya Saba	Wed&Sun	Wed&Sun
12	Ranna	Angunakolapallessa (out side)	Retail	W/Sale	Pradeshiya Saba	Tue&Fri	Tue&Fri
13	Kiri ibbanwewa	Kiri ibbanwewa	Retail	W/Sale	Pradeshiya Saba	Sun	Sun
14	Haburugala	Kiri ibbanwewa	Retail	W/sale	Pradeshya Saba,	Fri	Fri
15	Mahagama	Kiri ibbanwewa	Retail	W/sale	Pradeshya Saba	Tue	Mon
16	Ali Oluara	Suriyawewa	Retail	W/sale	Hatporuwa FO	Tue	Mon
17	Suriyawewa (Town)	Suriyawewa	Retail	W/sale	Pradeshya Saba	Sat	Fri

Note: Embilipitiya has economic center build by the government
Source: MASL at the end of May, 2010

The Pola is generally an open space without some market facilities such as a few roofed stall, water supply system (some place only). In addition to these, roads, communication facilities, lighting, and parking spaces are poor in the existing Polas.

The existing Polas are classified into two types, wholesale and retail. Normally wholesale is held very early in the morning from five to nine o'clock. Retails sales take place later. In some places , retail is not operated at the same day of wholesale. Pola is normally held by Pradeshiya Saba (the local government). Polas operated by Preseshiya Saba collects an entry fee from sellers and lorries. Farmers who bring and sell their products pay 5% of gross sales and lorry owners pay Rs 60 to Rs 70 per lorry. While Polas managed by FO are generally free markets. In the Pola at Hathporuwa, one of the FO manages it with farmers paying Rs. 10 to Rs. 15 per sale as donation for maintenance of Pola.

(2) Marketing system

Pola manager, trader, collector, and rice miller are the major stakeholders for agriculture commodities marketing. Buyers join the Pola marketing from various places as Colombo, southern scities as Matara, Galle, and upcountry as Nuwara Eliya, and the Estern cities as Monenagala and Ampara. The largest number of trader comes from the central market of Colombo. Then the huge quality of Banana and Papaya is brought to the capital city by the traders. Local collectors, shoppers, and farmers also bring the commodities to the markets in Colombo and in its suburb.

Banana, vegetable, fruits, condiment crop and tuber crops are treated in the Ploas. Pulses and other course grains as Maize, Kurakkan (finger millet), Sesame are sold to local traders in the town area. Then the local traders sell the agricultural products to middlemen who bring the products to larger markets. Paddy is mainly sold to local rice millers and local traders then they bring the milled rice to the larger markets. Paddy marketing board during the harvesting time opens their stores for purchasing paddy rice.

Price of OFC in Pola is basically decided through direct negotiation between farmer and buyer individually. Trader and collector offer the price to the farmers on the basis of the daily market prices obtained from the staff in their own markets.

Inside the villages, there are some collection centers operated by the farmers and traders. One farmer connects with a trader and the trader comes to village. Some second generation interpreters do some collections.

3.2 Problems to be addressed

3.2.1 Problems identified

The Application suggested the following subjects on the problems appearing in the Uda Walawe Left Bank Project site.

1) Institutional problem: The establishment of an institutional mechanism for efficient water management is needed.
2) Maintenance problem: Provision of proper maintenance system for the new irrigation structures is necessary.
3) Capacity enhancement problem: Capacity enhancement of FOs and officers are required for proper management of newly introduced OFCs and sophisticated structures.
4) Environmental problem: Consideration of the impacts given by the new facilities in water management and other farm activities have to be considered.
5) Logical arrangement constraints of other field crops (OFCs): Improvements of processing and marketing are required to ensure profit margin of OFCs.

Since the Application does not describe the concrete problems, we conducted questionnaire surveys, interview surveys and field visits on the three levels, i.e. RPM office level, Block & Unit office level and FO level. The problems identified are summarized at each level for each subject. Marking "s" indicate the information come from Suriyawewa block, and "m" from Mayurapula. It is noted that some suggestions are omitted because those are judged not to be problems but petitions.

(1) Institutional problem

RPM office level

N/A

Block & Unit office level

1) Some of lease farmers attend the FO meeting, but some are not due to their busy condition[s]. At the maximum 70% of the members attend the general meeting; majority attending is at 60%. **(Low participation of FO activities)**
2) Distribution of water problem happens due to illegal water taking[s]. **(Illegal water taking)**
3) On taking over of D-canal, famere have not yet fully settled and FOs are not strengthened. They are always depending. **(Not good behavior of farmers)**
4) Membership collection is low in some FOs[m]. **(Low fee collection in some FOs)**
5) Cleaning canal attendance is not the standard[m]. (Low participation of FO activities)
6) Some land is leased and the farmers do not participate the maintenance program[m]. (Low participation of FO activities)
7) Paddy D-canal of maintenance is well but OFC D-canal is not good on maintenance due to low participation for cleaning by farmers[m]. OFC D-canal organization farmers cannot get fertilizers. Paddy D-canal FO members are tightly joined for the subsidy. **(No subsidy to OFCs causing low participation)**

FO level

1) The 7 FOs out of 24 feels less attendance of members due to poor organization[s]. The reason of poor is that members' problems cannot be solved by the FO. **(Low problem solving capacity of FO)**
2) The upper stream farmers take more water then the assigned and the downstream farmers face lacking water[s].(Illegal water taking)
3) Some drainage canals are blocked by some farmers to take water for paddy[s]. (Illegal water taking)
4) OFC areas are shifting to paddy, original system limits water, and it rises the shortage[m]. **(Shifting from OFCs to paddy)**
5) Tank capacity is not enough due to silting, water weeds and shifting to paddy[m]. **(Not enough tank capacity due to silting and weed)**

(2) Maintenance problem

RPM office level

1) Very few but some farmers do not follow instructions[s]. The MASL solves these problems. (Not good behavior of farmers)

Block & Unit office level

1) There is few cases that compaction of pre-cast concrete is not well, so pre-cast concrete should be repaired. All the D&F-canals are pre-cast canals[s]. **(Sink of pre-cast concrete canal)**
2) Drainage is poor because some drainage canals disappear by washing off with rain[m] . In some places, drainage canals are blocked by silting and illegal water taking. **(Not enough function of drainage canals due to silting,** Illegal water taking)

FO level

1) Despite at very few places, the pre-cast concrete flumes of some areas go down due to poor compaction[s]. Then the soil is lost and water cannot be taken. This problem happens on D-canals and F-canals. **(Sink of pre-cast concrete canal)**
2) New constructed tank capacity is not enough due to silting and water weeds of the Tank[s]. (Not enough tank capacity due to silting and weed)
3) Structures are broken by buffalos and cattle[e]. (Animal damage of structures)
4) A few farmers cannot take water from canal due to level differences at turn out[m]. **(Structure problem)**
5) Pre-cast concrete structures are damaged[m]. **(Damage of structures)**
6) Tank bank is eroded due to waving water[m]. **(Soil erosion of tank bank)**
7) Branch canal road, D-canal road and F-canal road are too big slope in some places[m].(Structure problem)
8) Some tanks' lining (rip-rap) is not installed[m]. (Structure problem)
9) Some drainage canals are silted[s]. (Not enough function of drainage canals due to silting)
10) Cattle damages road and canals[m]. **(Animal damage of structures)**

(3) Capacity enhancement problem

RPM office level

1) Since only one or a few trainings per farmer were done under the WLBP loan aid, it is not enough. Especially the business training is lacking. After 2008, no training has been given to farmers. **(Lack of business training)**

Block & Unit office level

1) Some people did not attend the WLBP loan aid training and some repeated to attend it[s]. **(Limited opportunity of attending the training)**
2) Some farmers participated a number of trainings but do not applied in their field[s]. **(Partly not practical training)**

3) Only 13 officers out of 28 have attended in-service training within five years. Only three out of 28 attended the WLBP loan aid training[m]. **(not enough opportunity of in-service training)**
4) Unit 7 to 12 FOs in Mayurapula block have not received water management and maintenance training courses in WLBP loan aid[m]. **(not enough water management and maintenance training of farmers)**

FO level

1) Government provides training for livestock production of 3 to 4 batches including 10 to 15 farmers/batch with limited time[s]. Since the budget is limited, government has not continued to have training. **(Not enough livestock training due to lacking budget)**
2) Only 13 farmers out of 31 have in Suriyawewa block attended the WLBP loan aid training[s]. The reason is that. They had urgent work, FO officer changed every year and some farmers didn't know the training. The training program was started at 2005 and those at 2006 have only a few programs[s]. Thus the main trainings were done at 2007 and 2008, which are the reason of not enough. (Limited opportunity of attending the training)
3) Total 20 farmers out of 39 have in Mayurapula block attended the WLBP loan aid training[m]. (Limited opportunity of attending the training)

(4) Environmental problem

RPM office level

N/A

Block & Unit office level

1) Soil erosions appear on canals[s]. **(Soil erosion on canals due to rain)**
2) Salinity problem appears due to poor drainage come from taking water from drainage[s] **(Salinity problem)**
3) Too much pesticide and fertilizer for paddy are given and too much pesticide is given for OFCs due to not following the instruction[s]. **(Too much pesticide)**
4) Salinity problems are the main rising problem in Mayurapula block[m]. (Salinity problem)
5) Water weeds in tank and silting of tanks and canals are problems[m]. **(Silting and water weeds)**
6) Drainage canal is not maintained properly and salinity problem has occurred[m]. (Salinity problem)

FO level

1) Water weeds grow in tank[m]. (Silting and water weeds)
2) They like to know without much pesticide. Majority of money goes to protect crop like pesticide[m]. IPM program has started in Suriyawewa but not in Mayurapula block[m]. (Too much pesticide)

(5) Logical arrangement constraints of OFCs

RPM office level

1) There is a trend of changing OFCs to paddy although not many farmers are changing to paddy due to marketing[s]; OFCs are not fix price and OFCs' crops are not yet value added. Technical know-how for processing of value addition is required. It is hoped that cottage industries are established. (Shifting from OFCs to paddy)

Block & Unit office level

2) Quality control has not been applied yet due to the behind situation[s]. They have not applied quality control. **(No quality control)**
3) They think to need a market/selling center for promotion[s].(**Not proper marketing**)
4) Increasing of paddy in the OFC area appears[s]. (Shifting from OFCs to paddy)
5) There is no proper marketing, and middle man is benefiting[m]. (Not proper marketing)
6) One village one crop concept is to be strengthened because only a few farmers are practicing [m]. (Partly not practical training).
7) Post harvest hading is poor and the farmers have low prices[m]. **(Poor post harvest handing)**
8) For marketing, they want to do quality production by packing products[m]. (No quality control)
9) They have to promote market oriented products[m]. **(No market oriented production)**
10) The middle man gets high commission and they want to reduce it[m]. (Not proper marketing)

FO level

1) A farmer producing the Curd does not practice quality control. (No quality control)
2) Problem of banana marketing, middlemans collect their banana and price is not satisfied. (Not proper marketing)
3) Majority of the attended FOs in Suriyawewa block identify shifting from OFCs to paddy due to fertilizer, pest and diseases and soil fertility[s]. For the subsidy, the fertilizer price is at 350 Rs/50kg; it is 3500 Rs/50kg without subsidy. (Shifting from OFCs to paddy)
4) Every time middle man has benefit and not proper market arrangement[m]. (Not proper marketing)
5) They do not have post harvest handling system[m]. (Poor post harvest handing)
6) They are interested in having marketing place within the village[m] (Not proper marketing)
7) Total 12 FOs out of 26 in Mayurapula block identify shifting from OFCs to paddy[m]. (Shifting from OFCs to paddy)

(6) Others

RPM office level

1) Livestock facility is lacking.
2) Some farmers have not yet settled living their original house.
3) Elephant and buffalo damages irrigation .

FO level

3) Land encroaching and disputing happen[s].
4) Cultivating canal reservation and roads appear[s].
5) Delay of delivering fertilizers is a problem[s].
6) Using organic fertilizers is only 10% of farmers because they have to apply big bulk[s].
7) Rice price is going down in real during the survey time[s].
8) Land dispute, encroachment of reservation and dispute between two parties, and no settlement appear[m].
9) During off-season, MASL issues water once in 14 days. The water is not enough due to different cropping pattern from the design.

3.2.2 Problems after generalization

Analyzing the problem contents for generalization, the following problems are addressed from the identified problems.

1) Low participation of FO activities
2) Illegal water taking
3) Not good behavior of farmers
4) Low fee collection in some FOs
5) No subsidy to OFCs causing low participation
6) Low problem solving capacity of FO
7) Shifting from OFCs to paddy
8) Not enough tank capacity due to silting and weed
9) Sink of pre-cast concrete canal
10) Not enough function of drainage canals due to silting
11) Structure problem
12) Damage of structures
13) Soil erosion of tank bank
14) Animal damage of structures
15) Lack of business training
16) Limited opportunity of attending the training of farmers
17) Partly not practical training
18) Less opportunity of in-service training
19) Not enough water management and maintenance training of farmer
20) Not enough livestock training due to lacking budget
21) Soil erosion on canals due to rain
22) Salinity problem
23) Too much pesticide
24) Silting and water weeds

The relationships among problems to be discussed are summarized as problem tree in Figure 3.7 with cause and effect analysis.

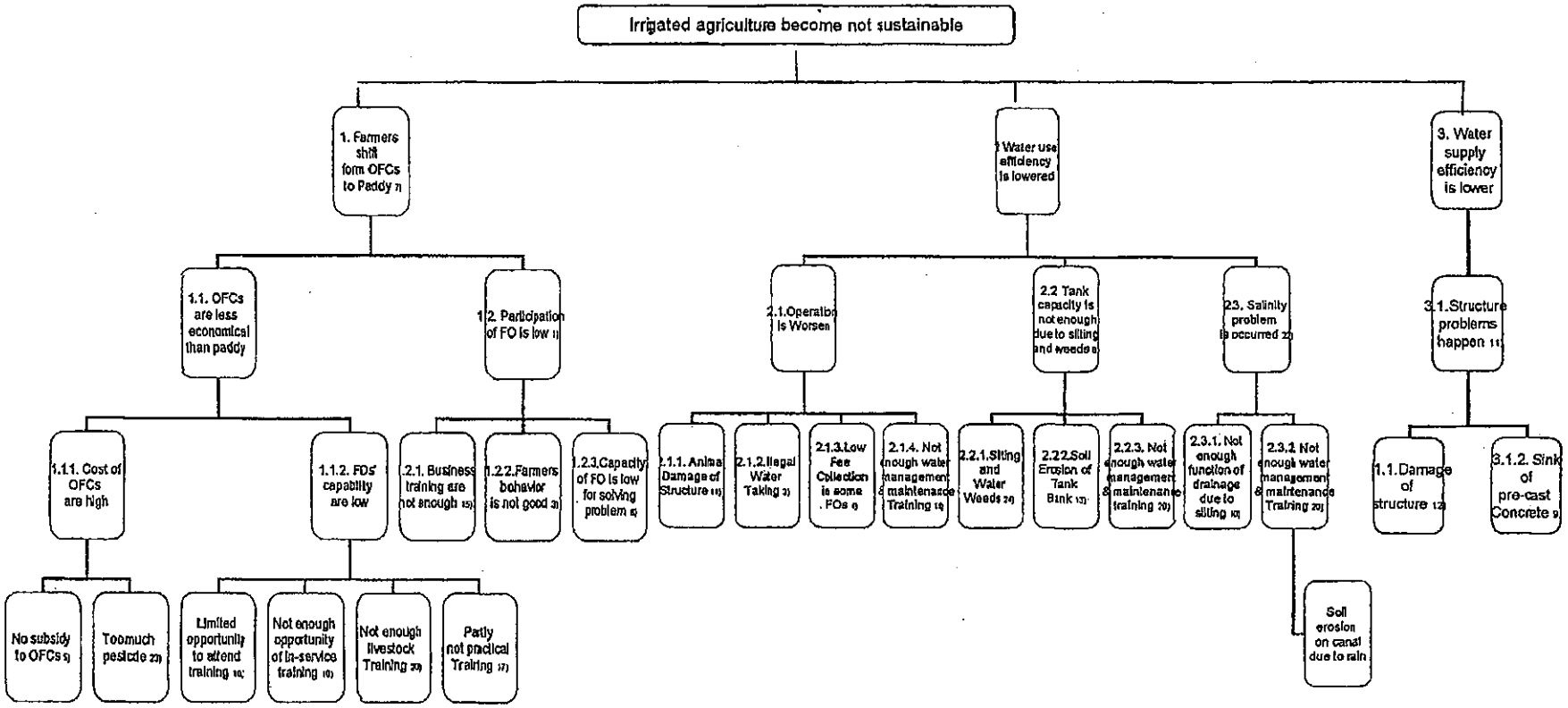


Figure 3.7 Problem Tree

Walaw Q-0

Questionnaires for Preliminary Survey on Integrated Irrigation and Environmental Management of the Uda Walawe Left Bank Project

スリランカ国スリランカワラウェ川左岸総合的灌漑・環境管理プロジェクト形成調査に係る質問状（ドラフト）

April 9, 2010

by
H. Kanamori, Senior Adviser of JICA

Abbreviations and Measurement Units[1]

1 Government and Organization

ADB	:	Asian Development Bank	
AE	:	Assistant Engineer	
AO	:	Agriculture Officer	
BIE	:	Irrigation Engineer in Block Office	
BM	:	Block Manager	
CE	:	Civil Engineer	
DCFO	:	Distributary Canal Farmers Organization	
DG	:	Director General	
DO	:	Divisional Officer	
DOA	:	Department of Agriculture	
DI	:	Department of Irrigation Development	
DP	:	Draught Person	
DRPM	:	Deputy Resident Project Manager	
FA	:	Field Assistant	
FAO	:	Food and Agriculture Organization of United Nations	
FF	:	Farmer Family	
FO	:	Farmers Organization	
GOSL	:	Government of Sri Lanka	
HRDU	:	Human Resources Development Unit	
ID	:	Irrigation Department	
IDU	:	Institutional Development Unit	
IE	:	Irrigation Engineer	
IIMI	:	International Irrigation Management Institute	(present IWMI)
IRDP	:	Integrated Rural Development Program	
IWMI	:	International Water Management Institute	
JBIC	:	Japan Bank for International Cooperation	
JICA	:	Japan International Cooperation Agency	
MASL	:	Mahaweli Authority of Sri Lanka	
MEA	:	Mahaweli Economic Agency	
MECA	:	Mahaweli Engineering & Construction Agency	
MMD	:	Ministry of Mahaweli Development	
NGO	:	Non Governmental Organization	
NWRA	:	National Water Resources Authority	
NWSDB	:	National Water Supply and Drainage Board	
OECF	:	Overseas Economic Cooperation Fund of Japan,	(present JBIC)
PD	:	Project Director	
RPM	:	Resident Project Manager	
SAPI	:	Special Assistance for Project Implementation	
SMO	:	Subject Matter Officer	
TO	:	Technical Officer	
UM	:	Unit Manager	
WFP	:	World Food Program	
WMS	:	Water Management Secretariat of MMD	

2 Project /Project Facilities Concerned

Anicut	:	A diversion weir to abstract water from a natural channel
BC	:	Branch Canal
CI	:	Cropping Intensity
D canal	:	Distribution Canal
D/D	:	Detailed Design
F canal	:	Field Canal
F/S	:	Feasibility Study
LB	:	Left Bank
LBMC	:	Left Bank Main Canal
Maha	:	North-east monsoon season (approx. Oct.- Mar.)
MD soil	:	Moderately Drained soil
MRRP	:	Mahaweli Restructure and Rehabilitation Project
O/M	:	Operation and Maintenance
OFC	:	Other Field Crops
Oya	:	River
PD soil	:	Poorly Drained soil
Pola	:	Weekly fair, market
PRA	:	Participatory Rural Appraisal
RB	:	Right Bank
RBMC	:	Right Bank Main Canal
S/W	:	Scope of Work
Tank	:	Reservoir storing water for irrigation
T.O.R	:	Terms of Referrence
VESP	:	Voluntary Early Separation Package
WD soil	:	Well Drained soil
Yala	:	South-west monsoon season (approx. Apr. - Sep.)

3. Measurement Units

Extent

cm^2 = Square-centimetres (1.0 cm x 1.0 cm)
m^2 = Square-meters (1.0 m x 1.0 m)
Km^2 = Square-kilometres (1.0 Km x 1.0 Km)
a. = Acre or Acres (100 m^2 or 0.1 ha.)
ha. = Hectares (10,000 m^2)
ac = Acres (4,046.8 m^2 or 0.40468 ha.)

Length

mm = Millimetres
cm = Centimetres (cm = 10 mm)
m = Meters (m= 100 cm)
Km = Kilometres (Km = 1,000 m)
Inch = 2.54 cm
ft = foot (0.3048 m)
mile = 1,609.34 m

Volume

cm^3 = Cubic-centimetres (1.0 cm x 1.0 cm x 1.0 cm or 1.0 m-lit.)
m^3 = Cubic-meters (1.0 m x 1.0 m x 1.0 m or 1.0 K-lit.)
lit. = Litre (1,000 cm^3)

Weight

gr. = Grams
Kg = Kilograms (1,000 gr.)
ton = Metric tonne (1,000 Kg)
MCM = 1,000,000 cu-m = 810.68 acre-ft
ac-ft = 1,233.83 m3

Currency

US$ = United State Dollars
¥ = Japanese Yen
Rs. = Sri Lankan Rupees

Time and Others

sec. = Seconds
min. = Minutes (60 sec.)
hr. = Hours (60 min.)

Notes to Answer the Questions

In order to carry out our survey efficiently, we prepared questionnaires shown below. We would like to ask you answer the questions in English. Please note the followings when you answer.

(1) Questions are shown with "Q-" and numbers (for example Q-23); all other descriptions (for example "1. BASIC DAT ON AGRICULTURE," or (1) Land use) are headings to classify the questions. Please, do not confuse questions and headings.

(2) Please type your answer by inserting to right after each question, starting with the word of "Answer: "

(3) Since the JICA information is basically opened to anybody for our accountability, your answers are shown in JICA report that is stored JICA library and opened to anybody. But if you want to make your answer confidential, please note us which answer is confidential. We will never open your confidential answer.

(4) There are example answers following the words of "Example Answer:" and sentences are surrounded with rectangular shaped lines. These are just examples to ease your understanding of questions. Please, thus, do not follow contents of the examples but answer the questions from your own viewpoints. I, therefore, would like to ask you to erase these example answers and rectangular lines after understanding the question.

(5) On statistic data asked in the questions, we will not request you to newly collect data as it will be quite time consuming. If you have existing data that are similar to or can partly satisfy our requests, please provide us the copy by showing the translation of the headings to English with pencil. If you don't have any data on relevant to the questions, please answer "No data."

(6) Accordingly, if we are asking for the data over several years and you do not have all, please show only available years' data.

(7) We have some information collected through past assistance. In order to confirm the correctness of the information, we show these information sentences surrounded with rectangular shaped lines or with copies from pdf files. And we ask whether this information is correct or not. If the information is not correct or you have to add some more information, please rewrite these sentences with correction and/or addition, and erase the copy of pdf files. In order to indicate that you have checked the information, please erase the rectangular lines or pdf files after rewriting the sentences.

(8) Due to the limited information so far obtained, some questions may not be suited for your county's situation to answer. In such case, please write "Not applicable".

References

(1) SAPI Team for Japan Bank for International Cooperation (2000): Final Report of Special Assistance for Project Implementation (SAPI) for Walawe Left Bank Irrigation Upgrading and Extension Project by on March 2000, III-6, III-32-72, 138-140, V-1-3, F-5, F-10

(2) JBIC (2002): JBICI Research Paper No.19, Impact Assessment of Irrigation Infrastructure Development on Poverty Alleviation: A Case Study from Sri Lanka November 2002 by Institute of Japan Bank for International Cooperation (JBIC) Joint Research with International Water Management Institute, pp. 10-25

(3) Mahaweli Authority of Sri Lanka (2007): Mahaweli Development Programme, pp. 4-5.

Action Plan - 2010

Human Resource & Institutional Development Unit - Head Office

Ministry of Agricultural Development & Agrarian Services
Mahaweli Authority of Sri Lanka
Name : Mr. K. Ariyathunga
Designation : Director (HRID / Moragahakanda Re-settlement)
Telephone No : 011-2696097

Budget Allocation"000 *17,000*

MASL Budget Code	Item No.	Activity	Allocation Rs.'000 2010	Unit		Milestones 2010 (Cumulative)				Output Target	*Participants*	Responsible for Implementation Name Designation Tel. no.
						1st Qtr	2nd Qtr	3rd Qtr	4th Qtr			
	1	*Staff Training*										
	1.1	*Awareness Programme*										
	1.1.1	*Special Seminar for middle managers*	50		F		25	25	50	2	80	Act. Deputy Director Mr.C.C.Hidellaarachchi
					P		1	1	2			
	1.1.2	*Human Resource Development (Development Assistants)*	60		F			60	60	1	50	
					P			1	1			
	1.1.3	*Human Resource Management (Management Assistants) Part 01*	100		F		50	100	100	2	90	
					P		1	2	2			
	1.1.4	*Human Resource Management (Admin Assistants)Part 02*	100		F			100	100	1	100	
					P			1	1			
	1.1.5	*- do - (Junior Managers, UM)*	100		F		50	100	100	2	90	
					P		1	2	2			
	1.1.6	*- do - (Senior Managers, D/D.D/ RPM)*	200		F			200	200	1	100	
					P			1	1			
		Total	610		F	-	125	585	610	9	510	
					P	-	3	8	9			
	1.2	*Capacity Building*										Act. Deputy Director Mr.C.C.Hidellaarachchi
	1.2.1	*Procument Guide line*	70		F	70	70	70	70	1	60	
					P	1	1	1	1			
	1.2.2	*Crop cutting Training*	70		F			70	70	7		
					P			7	7			
	1.2.3	*Language Training (Tamil & English)*	200		F		100	200	200	7	350	
					P			7	7			
	1.2.4	*Regional Development Planning (HRID/UM)*	200		F		100	200	200	2	100	
					P		1	2	2			
	1.2.5	*Training of trainers FOR Micro Finance*	250		F		125	125	250	2	80	
					P		1	1	2			
	1.2.6	*Training of trainers (HRID/UM)*	200		F		100	100	200	2		
					P		1	1	2			
		Total	990		F	70	495	765	990	21	590	
					P	1	4	19	21			

	1.3	*Skill Development*			F							Act. Deputy Director Mr.C.C.Hidellaarachchi
					P							
	1.3.1	*Awareness Training for newly recruiting officers*	400		F		400	400	400	1	50	
					P		1	1	1			
	1.3.2	*Land Administration*	200		F		100	200	200	2	100	
					P		1	2	2			
	1.3.3	*Short term courses*	500		F	100	200	400	500	100	100	
					P	20	40	80	100			
	1.3.4	*Seminars*	200		F		100	100	200	2	200	
					P		1	1	2			
	1.3.5	*Water Management Training for TO, EA*	900		F		450	450	900	2	60	
					P		1	1	2			
	1.3.6	*Water Management work shop for A.O.*	300		F			300	300	1	30	
					P			1	1			
	1.3.7	*Farmer organization Auditing*	300		F		150	150	300	2	60	
					P		1	1	2			
		Total	2,800		F	100	1,400	2,000	2,800	108	600	
					P	20	44	86	108			
	2	*Institutional Development Activities*										Deputy Director Mr.M.M.G.R.Mahakumbura
	2.1	*Refreshment workshop for HRIDOs on farmer organization activities*	400		F		400	400	400	2	60	
					P		2	2	2			
	2.2	*Farmer exchange programme*	500		F	200	300	500	500	4	150	
					P	2	3	4	4			
	2.3	*Field day programme for DRPMs and ADs*	200		F	100	200	200	200	2	35	
					P	1	2	2	2			
	2.4	*Refreshment workshop for FA on farmer organization activities*	600		F		450	450	600	4	120	
					P		3	3	4			
	2.5	*Refreshment Programme for UM on farmer organization activities*	300		F		200	300	300	2	120	
					P		1	2	2			
	2.6	*Govi Upahara Ceremony*	400		F		200	400	400	2		
					P		1	2	2			
	2.7	*Special seminar for PMC members on Water Management*	200		F		100	200	200	2	80	
					P		1	2	2			
	2.8	*Api Wawamu Rata Nagamu - Publicity*	500		F	50	200	400	500	10		
					P	1	4	8	10			
	2.9	*D-canal Demonstration competition expenses for prizes*	400		F		200	200	400	2	40	
					P		1	1	2			
	2.10	*D-canal Demonstration workshop for selected officers*	400		F	200	200	200	400	3	120	
					P	1	1	1	3			
	2.11	*Workshop programme for Auditors*	200		F	100	100	200	200	2	60	
					P	1	1	2	2			

	2.12	Workshop D-canal Demonstration IE/AO/IDO	150	F	75	75	150	150	2	76	
				P	1	1	2	2			
	2.13	Registration of farmer organization	10	F	5	5	10	10	2	200	
				P	1	1	2	2			
	2.14	Purchasing of necessary Act & ordinance relevant to farmer organizations	200	F		200	200	200	1		
				P		1	1	1			
	2.15	Printing expenses - canal handing over documents	200	F		200	200	200	1		
				P		1	1	1			
	2.16	Water management training for AO, IE, IDO	300	F			300	300	1	30	
				P			1	1			
	2.17	Workshop for Auditors	200	F		100	200	200	2	60	
				P		1	2	2			
	Total		5,160	F	730	3,130	4,510	5,160	44	1,151	
				P	8	25	38	44			
	3	**Women Development**									Act. Deputy Director Mr.C.C.Hidellaarachchi
	3.1	Follow-up workshop on small group leaders	200	F		100	100	200	8	200	
				P		4	4	8			
	3.2	Women day programme	300	F	300	300	300	300	1	1,500	
				P	1	1	1	1			
	3.3	Serving Mobilization and Leadership Development	200	F		50	100	200	4	160	
				P		1	2	4			
	3.4	Social Mobilization Programme	300	F		100	200	300	3	150	
				P		1	2	3			
	Total		1,000	F	300	550	700	1,000	16	2,010	
				P	1	7	9	16			
	4	**Social & Cultural Development**									Deputy Director Mr.M.M.G.R.Mahakumbura
	4.1	Awareness of Act & Law relevant to Mahaweli settlers	200	F	125	150	175	200	8	1,600	
				P	5	6	7	8			
	4.2	Child Protection Programmes	200	F		50	100	200	4	800	
				P		1	2	4			
	4.3	Special Seminar for Mahaweli foundation students	200	F			100	200	2	120	
				P			1	2			
	4.4	Cultural development programme	100	F				100	1	50	
				P				1			
	4.5	Library Development Programme	50	F		25	25	50	2	30	
				P		1	1	2			
	4.6	Awareness Programme for current issues	100	F	50	75	100	100	4	200	
				P	2	3	4	4			
	Total		850	F	175	300	500	850	21	2,800	
				P	7	11	15	21			

	5	*Sports Activities*									Assistant Director (Sports) Mrs.Sriyani Mallika
	5.1	*Refreshment training programme for sports officers*	200	F	75	75	150	200	3	60	
				P	1	1	2	3			
	5.2	*Coaching camps for federation tournament (Netball, Athletics, Volley ball, Kabbadi)*	200	F		100	200	200	6	120	
				P		3	6	6			
	5.3	*Mahaweli games - 2010*	2,000	F			2,000	2,000	1		
				P			1	1			
	5.4	*Coaching camps for International tournament*	200	F			200	200	1	20	
				P			1	1			
	5.5	*Judges training for sports officers (Netball, Kabbadi, Volley ball)*	150	F				150	1	10	
				P				1			
		Total	2,750	F	75	175	2,550	2,750	12	210	
				P	1	4	10	12			
	6	*Vocational Training*									Act. Deputy Director Mr.C.C.Hidellaarachchi
	6.1	*Paints & Painting techniques*	200	F	50	100	150	200	8	320	
				P	2	4	6	8			
	6.2	*Cell phone Repairing*	60	F		30	30	60	2	40	
				P		1	1	2			
	6.3	*Aluminum fittings*	60	F	30	30	60	60	2	50	
				P	1	1	2	2			
	6.4	*Scholarships*	2,020	F	5	1,010	1,515	2,020	32	80	
				P	1	11	22	32			
	6.5	*Training Equipment*	500	F	250	250	500	500	2	50	
				P	1	1	2	2			
	6.6	*Schoolar ships*		F							
				P							
		Total	2,840	F	335	1,420	2,255	2,840	46	540	
				P	5	18	33	46			
		Grand Total	17,000	F		7,595	13,865	17,000	277	8,411	
				P	43	116	218	277			

I. QUESTIONNAIRES TO MINISTRY OF AGRICULTURAL DEVELOPMENT AGRARIAN SERVICES

1. Background 要請背景

1.1 Socioeconomic Conditions 当該国の社会経済情勢

Q-1: We cited the following information[2]. Please confirm the contents and update if necessary.

Sri Lanka's economy was largely based on agriculture during the early 1950's and 1960's. Agriculture contributed between 60 and 70 percent to the GDP (from Central Bank Reports for various years) with agricultural export comprising mainly plantation crops such as Tea, Rubber,Coconut and Spices, accounting for over 70 percent of the income generated by agricultural sector. Much of the labor force (over 60 percent) was employed in the agriculture sector. More importantly, the bulk of foreign exchange earnings (over 70 percent) were earned from agricultural export. With very little industrial development, almost all consumption goods and more than 60 percent of domestic rice requirement were met with imports. Thus, the economy was largely trade dependent, with a highly productive plantation in the hands of large foreign companies co-existing with an inefficient local group that is based on irrigated and rainfed rice cultivation and underutilized labor force, providing only subsistence level income to farmers.

During the 1970's and 1980's, the contribution of the agriculture sector to GDP declined steadily, while that of other sectors increased. In the last two decades, the economy has undergone further transformation from agriculture to a predominantly services based economy, with a slight increase in the level of industrialization. The contribution made to the GDP by agriculture declined from 30 percent to 20 percent over the last two decades. The share of the industrial sector remained stagnant at around 17 to 18 percent, while that of the service sector increased from 44 to 55 percent and that of the construction sector from 4 to 7 percent. Although the labor force in the agriculture sector declined marginally, this sector still retained the bulk of the labor force. Over the last two decades a phenomenal increase in foreign employment has also been witnessed, particularly in the Middle Eastern countries, thus the high level of under employment observed in the rural sector has been somewhat eased.

In 1990, agricultural exports made up 36 percent of total exports, industrial exports accounted for 53 percent. In the year 2000, the value of industrial exports has increased to 78 percent of the total compared to 18 percent for agricultural exports. The highest amount of foreign exchange earnings is from the export of garments and textiles (50 percent of total value of exports), followed by earnings from private transfers (20 percent) from foreign employment. Agricultural exports, which provided the largest source of foreign exchange prior to the 1970's, is now the third largest source of foreign exchange (18 percent of total earnings), with tea exports providing 12 percent of total earnings. Thus, we can observe a gradual decline in importance of the role of the agricultural export sector in the Sri Lankan economy. At the same time, industrial exports, particularly garments and private transfers from foreign employment

have substantially increased their contribution to the economy. The domestic agricultural sector, comprising paddy and other crops, has slightly increased its share in GDP over the last two decades. However, incomes from paddy farming have remained stagnant or have declined in real terms. Contribution to the GDP of other crops has also increased marginally, and farming of other crops generates incomes higher than farming of paddy.

Although Sri Lanka was the first South Asian country to adopt liberal open market policies two decades ago, it lags behind in development when compared with several other Asian countries that adopted these policies much later. This is due to various internal as well as external factors (Central Bank Report, 2000). Various political parties have supported reforms despite their political differences. Consequently, the direction of the policy changes has remained unaltered. The overall results of these reforms in terms of macroeconomic indicators have been positive, although the implementation has been slow or ineffective. Several reasons have been put forward to explain the slow or ineffective implementation of these reforms and the declining rate of growth. These include internal factors, such as ethnic and political conflicts, the diversion of large amounts of financial resources for the war effort aimed at resolving the ethnic conflict; and external factors such as sharp increases in the price of imports, low export prices, rapid increase in energy costs, inflation, and labor unrest. Several issues require the immediate attention of policy makers in order to shore up the economy. These include the problems of inadequate investment and saving levels, high rates of inflation, unemployment and poverty, high crime rate, stagnant agricultural productivity, inadequate demand for industrial goods and other serious macroeconomic imbalances. Some of these problems have further deteriorated in recent years, posing greater risks of marginalization when compared to the outside world.

Q-2: We cited the following information on povoerty[2]. Please confirm the contents and update if necessary.

Although much work has been done to conceptualize, define and measure poverty, there is no official definition of poverty or a designated poverty line in Sri Lanka. Conclusions made in various studies undertaken on poverty in Sri Lanka are not strictly comparable, since different definitions of poverty have been used in determining the poverty line. The Department of Census and Statistics and the Central Bank are the two main sources of data for poverty analysis. Data from periodic Censuses, Socio-economic and Labor Force Surveys, Annual Food Balance Sheets, and Household Income and Expenditure Surveys, of the Census and Statistics Department and Annual Reports, and Consumer Finances and Socio-economic Surveys of the Central Bank provide the basis for inter-temporal analysis of poverty. A generally accepted conclusion of studies based on such data is that about 25 percent of the population lives in poverty, and that abject poverty or destitution does exist in Sri Lanka, but in small pockets.

Poverty in general terms can be defined as inability to maintain a minimal standard of living. Others have defined the poor as "those who do not have adequate resources to meet their basic needs".

(Theoretical basis developed by Harberger (1978; 1983) and Scandizzo and Knudsen (1980). The problem here is to identify core basic versus non-basic consumption goods. The basket comprising basic goods may vary in different communities, countries or over time. Researchers in Sri Lanka have used household income/expenditure as well as dietary intake data to determine poverty lines. Consumption poverty has been defined as those consuming less than a recommended minimal daily dietary intake of calories. In Sri Lanka, most studies have been based either on consumption poverty, or consumption poverty adjusted for basic non-food expenditure, but excluding consumer durable goods. Poverty, defined using household income/expenditure is more complicated as the values have to be adjusted for inflation in order to be comparable over time.

Some general characteristics of the poor can be derived from different studies on poverty undertaken in Sri Lanka. For example, poor households are larger in size and have a high dependency ratio. They have limited access to outside resources and little or no productive assets. There is the higher incidence of female-headed households among the poor. Members of poor households have lower levels of educational attainment and a greater proportion of unskilled labor. The level of underemployment, seasonal employment and unemployment is higher among the poor. There is no relationship between poverty and ethnicity and the type of occupation. The poor can be found among many occupations, including semi-subsistence farmers, low income market oriented farmers, selfemployed individuals, urban workers and self employed in tradable and nontradable sectors (Tudawe, 2000)

The population of Sri Lanka is largely rural with about 85.3 percent (Department of Census and Statistics; and World Bank Sri Lanka Poverty Assessment 1995 (as reported in Gunetilleke, 2000)) living in rural areas (80 percent in rural villages, 5.3 percent in estates in the plantation sector) (World Bank, Recapturing Missed Opportunities, 2000). Thus poverty is largely a rural phenomenon (those in the estate sector are also considered as
rural). As there is no official definition of a poverty line in Sri Lanka, different
researchers have used different reference values in estimating poverty.

Income poverty is high in Sri Lanka, with as much as 25 percent of the population below the poverty line (excluding the North and East, where poverty may have worsened because of the conflict). Poverty is high in rural areas, which has 85 percent of the population and 85 percent of the poor. The declining trend in 20 poverty is probably the result of structural changes and opening of the economy, which has sustained a reasonably high rate of economic growth over the last 15 years. However, there is still a large proportion of the population, who remain susceptible and vulnerable to economic changes and income fluctuations because they are clustered at the borderline of the poverty line. Poverty levels are particularly high among landless laborers, and among casual laborers employed in agriculture, mining, construction and the informal sector. Greater vulnerability and insecurity of the poor and those clustered above the poverty line, may be due to poor targeting of poverty alleviation programs, large increases in temporary and casual employment, and insufficient

attention to risk management in agriculture.

There is evidence to suggest that high agricultural growth can reduce poverty significantly, since a large proportion of the population lives in rural areas. The highest incidence of poverty was recorded (1995/96 data) among households deriving their income from agriculture. Thus, slow per capita growth in agriculture (only 1 percent during 1990-96), major droughts, contraction in the paddy sector; slow growth in rubber and mining sub-sectors may have contributed to the high poverty levels in these sectors. Another factor that may be contributing to the high level of poverty in rural areas is lack of or inadequacy of infrastructure facilities. For example electricity reaches only 55-60 percent of the population, rural-urban road linkages are weak, transport facilities are poor and road networks are not maintained and of poor quality. Distortions in land and labor markets have reduced mobility, and created a large number of low quality, casual and temporary employment contributing to the perpetuation of poverty.

A World Bank Report (1990), which analyzed the links between poverty and unemployment in Sri Lanka, suggests that, there is no conclusive evidence of poverty being related to unemployment, although many believe that unemployment may be a major cause of poverty. Such views have been reinforced by nutrition studies carried out in 1987, which showed that over 25 percent of pre-school children were malnourished and 20 percent of all babies delivered were of low birth weight due to maternal malnutrition. Most of the poor are found in households with a large number of dependents, with a high share of children and pregnant mothers among the poor. The World Bank report argues that unemployment may not be the main cause of poverty since as much as 75 percent of the unemployed came from non-poor households and less than ten percent of the poor were unemployed. The report further states that half of the unemployed are well-educated women, who are being supported by their parents while awaiting high-paying jobs in the formal sector. A subsequent World Bank study on poverty (Recapturing Missed Opportunities, 2000) has not dealt specifically with the relationship between poverty and unemployment, but suggests that poverty levels are high among casually employed persons in agriculture, mining, and construction sectors. The report also indicates that there is evidence to suggest that fluctuation in economic performance leads to large increases in poverty. Sri Lanka has been committed to a well-established social welfare program, providing free health and educational services, since the early 1900s. Public expenditures in health and education grew to 6 percent of the GDP in 1948-52 and remained at this level up to the 1970s (World Bank, 1990). As a result of improved health care and education, mortality rates declined rapidly and population increased at rates close to 3 percent, resulting in a large population increase in the 1950s. However, improved education and other social welfare programs began to have an opposite impact on population growth rates, which started to decline by the early 1980s and has been declining ever since. Apart from education and health services, the Government introduced a food subsidy program to reduce the impacts of World War II. This program, which was initiated in the 1940s and continued up to 1977, provided a fixed amount of rice and wheat flour at a subsidized price to all households in Sri Lanka (World Bank

1990).

With the opening up of the economy in 1977, an attempt was made by the government to target food subsidy programs to the actual poor and needy population. In 1978, the food subsidy program was restructured and redirected to the poorest of the population. Consequently, food subsidies were issued only to households with a monthly income of Rs 300 or less for five or more persons. The number of people receiving food subsidies was halved as a result. Toward the end of 1979, food subsidies in the form of a rationed quantity of food was eliminated and replaced by a food stamp program (FSP), for those earning below Rs 300 per month. An evaluation of the FSP showed that only 38 percent of the total food stamp payments reached the intended poorest 20 percent of the population (World Bank, 1990). The remainder of the subsidy went to higher income groups. The FSP is undergoing restructuring to increase the proportion of the subsidy actuallyreaching the poor from 38 to 80 percent. This would eliminate about half of the number of current beneficiaries of the subsidy scheme.

The opening up of the economy provided an impetus to growth, and the economy grew at 6 percent per annum during the five-year period of 1978-82. However, growth slowed down to around 3 percent over the next seven-year period. Further structural reforms in the economy were needed to accelerate growth. An economic reform program was instituted in 1989, whereby adjustment measures were introduced in order to institute a sustainable macroeconomic framework to accelerate growth, provide an enabling environment for private sector investment and employment. In the long-run, these reforms would facilitate greater participation of the poor in the economy and overall growth process, expand access to resources for economic activity and self employment, eliminate the biases against labor intensive enterprises and reduce unemployment. Some of the reform measures introduced, such as the removal of subsidies, restoration of macroeconomic imbalances, and exchange rate readjustment, would adversely affect the poor in the short-run. It was estimated that the overall consumption levels of the poorest 20 percent of the population would fall by 20 percent or more by the removal of subsidies on wheat flour, rice, bus fares, and sugar, and the devaluation of the rupee (World Bank, 1990). To address this problem, the government decided to set aside 3.0 . 3.5 percent of the GDP every year for programs to increase the living standards of the poorest 20 percent of the population.

The food subsidy program provided free or subsidized food to all households, but the first real attempt at poverty alleviation was the Janasaviya Program (JP) initiated by the Government in 1989. The program intended to transfer Rs 2500 per month to each poor household for a period of two years. In addition, JP included components for credit based entrepreneurial development, and free midday meals, uniforms, and textbooks for school children. An evaluation of the Janasaviya Program (World Bank, 1990) identified its many shortcomings. In addition to the program being too costly to be sustainable, the selection criteria were not defined precisely and the benefits not related to incomes, leading to inequities and the inclusion of non-poor within the program. The

benefits were high compared to prevailing income levels, leading to disincentives to work. Poverty, being a long-term problem, cannot be resolved within the two-year limitation of the JP. There was no provision for the inclusion of families falling into poverty after the selection process was completed.

In addition to the JP, another program, the Mid Day Meal Program (MDMP) targeted towards children was started in 1989. A total of US$ 50 million was spent annually in providing one meal a day to all children in primary and secondary schools under the Mid-Day Meal Program. This program failed because it was too costly to sustain and did not reach the group, which was nutritionally most at risk, i.e. the pre-school children. The Janasaviya Program was scrapped, after the formation of the new Government in 1994.

After the scrapping of the JP, a more ambitious poverty alleviation program. Samurdhi. program, was put into operation by the new government in 1995. This program, which is basically an income transfer program, provides direct cash grants to more than 2 million poor families (55 percent of the population). In addition to cash grants, several other subsidiary activities were being implemented through this program to alleviate poverty. These included community and infrastructure development projects, savings programs, banking and credit programs, social insurance programs, training and entrepreneur programs, and self-employment schemes. About 80 percent of the funds allocated to the program were utilized for income transfers, intended to provide as a consumption supplement. In this case, the amount of transfer was related to the income of the household and ranged from Rs 100 to Rs 1000 per month per family, depending on the household size. The other components of the program were intended to expand the productive asset base of the poor and to create employment and income through community infrastructure development (S.Kelegama, 2001). Both the design and implementation of the Janasaviya and Samurdhi programs have been flawed and their effectiveness in creating opportunities or empowering the poor to overcome economic and social barriers minimized as a result (World Bank, 2000). The major reasons for their ineffectiveness according to the World Bank are:

(1) Political bias of administrators/mobilizers of poverty programs, with party affiliation and voting patterns influencing the allocation of income transfers, which made the poor vulnerable to changes in political climate;

(2) Both programs covered up to 50 percent of the population, or twice the actual percentage living in poverty. The transfers from the poverty programs reached only between 55-65 percent of those in the lowest income groups. Poor targeting resulted in thin spread of income transfers, diverting funds away from the most needy.

(3) Central control of poverty programs has hindered the development of communal social capital, and collaborative social relations, reducing the participation of the poor in development.

(4) The costly poverty programs (up to 1 percent of GDP) have not created sufficient opportunities for the poor. Large expenditures on poorly targeted transfers, lack of sustained rural works

programs, long-term administrative costs of hiring poverty workers (over 30,000 workers in the Samudhri Program), and weak exit mechanisms are some of the issues that have to be addressed.

1.2 Description of Agriculture and Irrigation 対象セクター全体の状況

Q-3: We cited the following information[2]. Please confirm the contents and update if necessary.

About 30 percent of Sri Lanka's total land cover of 6.3 million ha (excluding area under inland waters) is under permanent cultivation and a further 16 percent under shifting or "Chena" cultivation. (Chena means slash and burn agriculture, where forests are cleared and cultivated for one to two years and then allowed to regenerate. The cycle, which usually lasted 10-15 years earlier, has been reduced to 3-5 years due to unavailability of land and due to restrictions on Chena cultivation and the reduction in forest cover.) Thus, about 3.0 million ha, or nearly 50 percent of Sri Lanka'a land surface is under some form of agricultural enterprise, of which 1.8 million ha is under permanent cultivation and 1.0 million ha under Chena cultivation. About a third of the area under permanent cultivation, or 0.6 million ha has been provided with irrigation facilities and is mainly cultivated with paddy. The total extent of land under paddy cultivation is estimated at 0.9 million ha, over 70 percent of which has irrigation facilities, while the rest is rainfed. Of the land with irrigation facilities two thirds, or 0.43 million ha, is under major irrigation schemes and the balance 0.23 million ha under minor irrigation schemes. The Mahaweli irrigation system provides irrigation facilities to almost 0.1 million ha of land under major schemes. The three main plantation crops of Tea, Rubber, and Coconut and other minor export crops occupy 0.8 million ha of rainfed land, mainly in the wet zone of Sri Lanka. Other permanent highland or annual crops occupy 0.2 million ha. The rest of the land area comprises forest, grassland and non-agricultural land (buildings, homes, rock outcrop, etc.). Details of land use are given in the following table.

Table 1.2 Land Use in Sri Lanka

Land Use Category	Area in Million Ha	Percentage of Total	Area Irrigated in Million Ha
Total Area	6.57	100.00	
Inland waters	0.29	4.40	
Buildings, Nonagricultural land, and Homes	0.80	12.20	
Tea	0.18	2.70	0.00
Rubber	0.16	2.40	0.00
Coconut	0.44	6.70	0.00
Paddy	0.90	13.70	0.58
Chena lands	1.00	15.20	0.00
Other permanent /annual crops	0.20	3.00	0.02
Forest cover	2.10	32.00	
Grassland and shrub	0.50	7.60	

Sources: Statistical Abstract 2000, Census and Statistics Dept., Central Bank Reports, Mahaweli Authority Reports.

The bulk (97 percent) of irrigated land is cultivated with paddy, and the rest with other permanent

and semi permanent crops or seasonal crops such as, chillies, onions, pulses, yams, groundnut, potato, maize and other grains, sugarcane, vegetables, coconut, papaya, banana, melon and other fruits. The rainfed area can be categorized into Chena lands and other permanent highlands or lowlands. Due to restrictions imposed on Chena cultivation, by legal and other means, the area under Chena cultivation has not increased in recent years. The existing Chena areas are now being re-used, with a shorter interval for recovery. It is likely that in the future, Chena lands will be converted to permanent rainfed farms. Other permanent highlands and lowlands under rainfed cropping can again, be classified into lands in the wet zone and lands in the dry zone. In the dry zone, permanent rainfed farming is restricted by seasonality of rainfall. A successful cultivation is possible only in the wet season. In the dry season, the rainfall is much less and is insufficient for a complete and successful cultivation, unless supplementary sources of water are available. Thus, rainfed farming in the dry zone is mostly restricted to seasonal crops in uplands and permanent crops, particularly fruit crops such as bananas, papaya, citrus, mango, pomegranate, coconut and timber trees. Permanent crops are usually grown in home gardens and rarely in highland plots outside of home gardens. Crops grown in home gardens do receive some supplementary irrigation from wells, or from adjacent streams and canals. Seasonal crops are also grown in home gardens as well as in highland plots outside of home gardens. But more often seasonal crops, including paddy, are grown during the rainy or Maha season in the highlands. If paddy is not cultivated in the dry or Yala5 season, due to lack of water, a few drought tolerant annual crops may be grown on paddy fields to make use of the left over moisture in the paddy fields, supplemented by whatever rain that may fall during this season.

Maha is the rainy cultivation season in Sri Lanka, which receives rainfall mainly from the North East Monsoon and lasts from October to March (The monsoon proper is from December to February and the inter monsoonal period from March to April) 5 Yala season is the dry cultivation season, which receives rainfall mainly from the South West Monsoon and lasts from April to September. (The monsoon proper is from May to September and the inter monsoonal period from October to November)

In the wet zone, the rainfall pattern is bi-modal, with high intensity rainfall occurring during both the Maha and Yala seasons. Thus the climatic pattern is ideally suited for permanent or seasonal rainfed farming. This region has specialized in export oriented plantation agriculture, with the bulk of the area covered by the three major crops of Tea, Rubber and Coconut. Rice is grown in valley bottoms and on terraced fields in hilly slopes. Some paddy is irrigated using the run of the river irrigation systems, but much of the paddy is rainfed. Other crops grown in this region include vegetables, potatoes, fruit and spice crops, tobacco, timber and medicinal plants. Irrigated farming has been practiced for centuries in Sri Lanka and dates back more than two thousand years. The ancient kings, who had developed highly advanced irrigation technological skills, constructed large numbers of irrigation systems to cultivate rice. In fact, ancient Sri Lanka was once known as the rice bowl of Asia, and was famed for its exports of rice to many parts of the world. These irrigation systems usually consisted of a reservoir to store and regulate water, and a canal system to convey water for

irrigation in both seasons. In some cases, the system comprised of a large reservoir that served as both storage and regulating facility connected via a well-developed canal system to many small reservoirs for the irrigation of fields commanded by these small reservoirs. Under this system, the large storage reservoir did not usually irrigate fields directly. The Yoda Wewa irrigation scheme in the North West coastal area of Mannar in the Northern Province is an example of such a system that is currently operational. Similarly, structures that have survived up to the present include very long canals (some more than 50 miles long), with gradients of one inch to a mile. It is noteworthy that such feats of irrigation engineering have not been emulated even with present day technology.

After thousands of years of use, around 12th Century BC, the highly developed hydraulic civilization started to disintegrate, many of these systems went into disrepair, and farmers abandoned these schemes and moved south. Several theories exist as to the reasons for the apparent decay of the hydraulic civilization that prevailed during this period. These include war between the local kings and invading forces from South India, loss of experienced water management personnel due to war, soil impoverishment, climatic change, famine and diseases such as Malaria, and attraction towards the wetter areas of the country.
Modern irrigation began in the last century during which period a large number of these ancient systems were restored by the British Colonial rulers, and are operational at present. Restoration of these ancient systems continued even after independence by the Government of Sri Lanka. A concerted effort was made to develop the water resources of the country, including the restoration of the ancient schemes, as well the construction of new ones. Major river basin development initiated in the 1950's and includes the Gal Oya, followed by Uda Walawe, Rajangane, and culminated in the Mahaweli program, which aimed to develop the largest river basin in Sri Lanka. One of the objectives of developing these irrigation systems was to resettle the population from the land scarce Wet Zone6 to the sparsely populated Dry Zone7 of the country. Irrigated area increased from about 200,000 ha in 1950 to about 400,000 ha in 1970, and 500,000 ha in 1990 to about 650,000 ha in the year 2000. Over eighty percent of the irrigated land lies in the Dry Zone.

As in ancient times the bulk of the irrigated area is cultivated with rice. A small proportion of the irrigated command areas are cultivated with high value crops such as chillies, onions, pulses, sugar cane, tobacco, fruits and vegetables. The irrigated area can be categorized by the size of the irrigation system into areas irrigated by major schemes and areas irrigated by minor schemes. All schemes with a command area of less than 80 hectares are considered to be minor schemes. It is estimated that the area currently irrigated by major schemes, including Mahaweli schemes, is over 400,000 ha and that by minor schemes over 200,000 ha. The minor schemes are under the administration of the Department of Agrarian Services and operated by farmers. Typically, minor schemes impound run-off from local catchments, using earth dams, to provide supplementary irrigation for a full Maha crop and restricted Yala cultivation. The Mahaweli Authority is responsible for 100,000 ha of irrigated lands under major schemes, while the Irrigation Department is responsible for the balance 300,000 ha, of

lands under major schemes. The Irrigation Department, further classifies the schemes under its control into medium schemes (command area between 80 ha and 400 ha) and major schemes (command area above 400 ha). The management of most major schemes is in the process of being transferred to the farmers. Major schemes provide sufficient water for a full Maha crop and a full or partial Yala crop. Average cropping intensity in major schemes is about 165 percent per annum and in the minor schemes, about 120 percent. The majority of the irrigation systems in the Wet Zone divert water from perennial streams or rivers using anicuts (weirs) for irrigation. Anicut schemes are also found in a few major

6The Wet Zone is classified as areas receiving more than 2500 mm of rainfall per annum at 75 percent expectancy of annual rainfall. The Wet Zone comprises the following districts: Colombo, Gampaha, Kalutara, Kandy, Nuwara-Eliya, Galle, Matara, Ratnapura and Kegalle (About 20% of the land area and 9 of the 25 districts fall within the Wet Zone) The Dry Zone is classified as areas receiving less than 2500 mm of rainfall per annum at 75 percent expectancy of annual rainfall. Within the Dry Zone is included the Intermediate Zone with mean annual rainfall between 1900-2500mm. The Dry Zone included the following districts, Jaffna, Mannar, Vavuniya, Mullaitivu, Batticaloa, Amparai, Trincomalee, Puttalam, Chilaw, Anuradhapura, Polonnaruwa, Hambantota, Moneragala, Badulla, Matale and Kurunegala. Parts of the latter three districts fall within the Intermediate Zone. (About 80% of the land area and 16 of the 25 districts fall within the Dry Zone)

1.3 Government Strategies, Programs and Plans on Agriculture and Irrigation
当該国政府の戦略

Q-5: According to the Application form for Japan's Technical Cooperation (hereinafter referred to "the Application"), the National Development Program is explained in relation to the requested project as follows. We need more detailed information including target issues, proposed solutions and implementation schedules and others.

The National Agricultural Policy recommends environmental-friendly techniques in agriculture, enhancement of the incomes of farmers, applying low cost, good quality agricultural machinery, encouraging the use of efficient water management, and promoting participatory irrigation management.

The current project proposals will ensure the sustainability of newly developed irrigation system in Walawe LB, enhance agricultural production, reduce adverse effect to the environment, reduce consumption of petroleum based energy sources, and thereby contribute to poverty alleviation. Therefore, it will positively impact national development programme.

The Mahinda Chintana 10 year horizon development framework has recognized the importance of supporting the competitiveness of subsidiary food crops. Its agriculture food and nutrition security strategy plans increased involvement of local population in resource mobilization, maintenance and management in order to increase the incomes of farmers.

The Mahinda Chintana policy framework recommends promoting non-chemical agricultural practices. It recognizes the importance of removing the burden of increasing oil prices from poor people, and envisages promoting alternative forms of energy and providing remote areas with electricity.

The Agriculture Policy adopted by the Government aims to increase the productivity of land and water, promote mechanization to make agriculture more efficient and cost effective. Applying environment-friendly techniques in agriculture is one of the main objectives.

1.4 Institutional Framework for the Agricultural and Irrigation Development

In order to define the overall responsible organization of the Ministry of Agricultural Development and Agrarian Service (MADAS), we would like to know the MADAS with the following questions.

Q-6: Please provide a copy of legal documents that stipulate the organizational mandates of MADAS and functions of its Departments including the Mahaweli Authority.

Q-7: Please provide a copy of the organizational chart with indication of the number of staff in each division, section, unit and/or outstation.

Q-8: Does MADAS have any local units such as extension posts or field research stations in the rural areas? ( ) Yes ( ) No

If yes, please indicate the locations, names, functions and staffing of such facilities.

Q-9: Please provide a copy of the latest operational and financial plans of MADAS which indicate, if available, both the regular and special activities of each Department with their implementation schedules, total budget and its breakdown, and so forth.

Q-10: What are the mechanisms of coordination among the different Departments of the Ministry? Please describe the way how intra-departmental coordination is made among different Departments and their affiliated institutions such as research stations, training institutions and so forth.

1.5 Prior and On-going Projects and Assistances

過去・現在行われている政府その他団体の対象分野関連事業

Q-11: According to the Application, the following donor assistance projects are reported as the related activities. If the government domestic projects are implemented or additional information of donor assistance projects are available, please add these projects.

10. Related Activities

Donor	Related field	Project title	Amount (USD)	Year
JBIC	Irrigation rehabilitation and improvement	Uda Walawe Left Bank Development Phase II (SL-P48)	Yen 9393 million	2000-2008
World Bank	Rehabilitation and improvement	Dam Safety and Water Resources Planning Project	US$ 72 million	2008-2012
JICA	Irrigation	Increasing the Capacity of Integrated Management in Irrigated Agriculture in Dry Zone Project	Yen 350 million	2007-2010
JICA	Fertilizer	Promotion of Integrated Plant Nutrition Practice among Famers for Sustainable Improvement of Crop Productivity and Alleviation Poverty	Yen 14 Million	2006 - 2008

2. Problems to be Addressed, the Current Situation

2.1 Problems to be Addressed

Q-12: According to the Application shown below, the addressed problems for the loan aid project area titled Walawe Left Bank Irrigation Upgrading & Extension Project (hereinafter referred to "the Walawe Left Bank loan project") are followings. Are these problems correct for your requests? If your answer is "No" please correct them.

① Lack of institutional mechanism to ensure efficient water management and maintenance of infrastructure

② Lack of training both officers and farmers in irrigation management by farmer organizations under introduction of other field crops and comparatively more sophisticated infrastructure

③ Lack of considering environmental factors in water management procedures and using non-fuel-dependent agricultural machinery

④ Not well functioning logical arrangements to ensure profit margin of other field crops

Description in the Application

The specific problem to be addressed is the lack of an institutional mechanism to ensure good water management and maintenance of infrastructure which ensures the physical and environmental sustainability of the Uda Walawe Left Bank Irrigation Upgrading & Extension (WLBP) Project.

The farmer organizations, especially which are newly organized in the extended area, will face new challenges in the management due to the introduction of OFCs and comparatively more sophisticated infrastructure. Similar challenges will be faced by the officers concerned with irrigation management. As such, there is a need for training both the officers and farmers in irrigation management.

Apart from the above-mentioned issues having a direct impact on the management of infrastructure, environmental sustainability of project operations and the income of the farmers have a secondary impact on the project interventions. The downstream of project area contains some environmentally sensitive wetlands, and excessive drainage flow may adversely impact them. Therefore, it is important that water management procedures take the environmental factors also into consideration.

In addition, the potential for using agricultural machinery that are not fuel-dependent, needs to be investigated. This will support environmental sustainability as well as reduce the production cost.

The project actively promoted the cultivation of OFCs. The OFC cultivation is more capital intensive. Though the profit margin of such crops is higher than that of paddy, the processing and marketing such products is essential to maintain the increased incomes. If the necessary logistical arrangements are not functioning well, there is a danger of farmers converting to comparatively less risky paddy cultivation. Therefore, the institutional mechanism could address shortcomings in this field, while the focus remains on irrigation water management.

2.2 Institutional Framework for the the Walawe Left Bank loan project

Q-13: We understand that the Walawe Left Bank loan project is one of the Mahaweli Development Projects and it is under Mahaweli Authority of Sri Lanka (MASL). Since the major facilities are in operation, the Mahaweli is now in a process of promoting integrated water resource management. Are our understandings correct?

Q-14: According to a paper[3] on MASL, the mission, vision and activities on integrated water resources management are as follows. If you have some more information, please describe them.

Mission and vision

The Vision for MASL for the period 2003 – 2025 is : "A Prosperous Society and Healthy Eco-systems in the Mahaweli Region", while the Mission is to ensure sustainable and productive use of water and other natural resources in the Mahaweli region through management, planning and development with stakeholder participation. Four goals have been identified to achieve the Mission and the Vision. They are as follows:

1) Water and other natural resources in the Mahaweli region which are harnessed and utilized for social and economic development needs following co-ordination and collaborative mechanisms,
2) Water and other natural resources in the Mahaweli region are conserved and protected for the current and future generation, fauna and flora,
3) Water and other natural resources related infrastructure are managed efficiently, cost effectively and productively with minimum adverse environmental and health impacts, and
4) Above three strategic goals are achieved through the efficient and effective functioning of the MASL in line with the National Water Resources Policy and other related national policies.

Activities on integrated water resources management

MASL is now in a process of promoting integrated water resources management within the basins to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems. Integration implies a concern with upstream-downstream relations, including land use (zoning, soil protection, and erosion control, waste management controls etc), coastal zone management, a unified management of surface and groundwater, a shift to management at a catchment or river basin level and harmonizing water management with other sectoral policies with a collateral impacts. The policy of IWRM also takes into consideration the linkages among water and health, water and poverty, water and environment etc.

II. QUESTIONNAIRES TO MAHAWELI AUTHORITY OF SRI LANKA (MASL)

In order to understand the institutional framework on the loan aid project area titled Walawe Left Bank Irrigation Upgrading & Extension Project (hereinafter referred to "the Walawe Left Bank loan project") and the activities done in the loan, we prepared the following questions. Most of the questions are for confirming the planned activities shown in the report[1] by the SAPI Team for JBIC (hereinafter referred to "the Report").

1. Hardware and Software of the Walawe Left Bank loan project

1.1 Hardware

Q-15: The feature of the project is summarized below. Is this correct?

4. Left Bank Irrigation Area (Extension Area) as per contract package (provisional)

Description	Phase I	Phase II	Total
Commanding area	3,580 ha	1,572 ha	5,152 ha
Main canal	14.8 km	4.4 km	19.2 km
Branch canals	11.1 km	12.8 km	12.9 km
D-canals	89.4 km	33.6 km	123.0 km
F-canals	347 km	33 km	380 km
High Tanks	30	15	45
Low Tanks	17	4	21
Main drains			28 km
Branch drains			35 km
Market roads	43.8 km	5.7 km	49.5 km
Buildings	8 centres	4 centres	12 centres

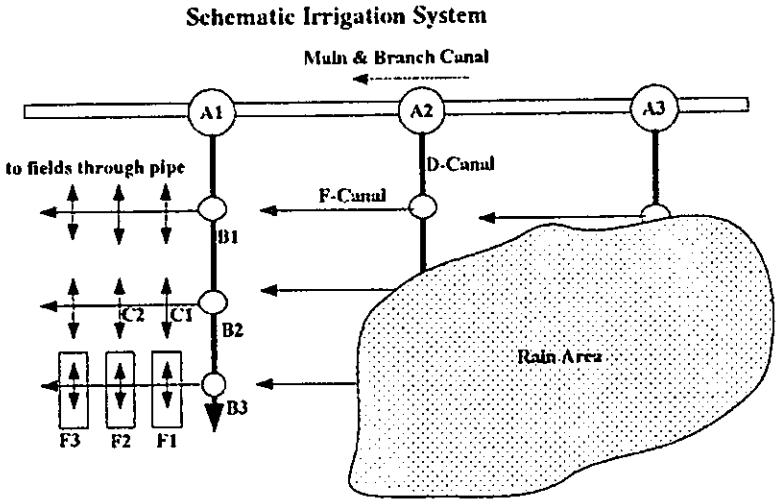
1.2 Water Delivery

Q-16: The Report proposed the modified irrigation method as shown in the next page. Is this method applied?

Q-17: If the proposed method is not applied, what are reasons of no-apply?

(1) Proposed Irrigation Method

In order to increase the irrigation efficiency through introducing water saving irrigation method to the Project area as the Tertiary Scenario for analyses of the development options, the concepts of the irrigation method to be applied are discussed in this section. The irrigation system in the Project area is schematically described as below:



As shown in the above figure, the irrigation canal system of the Project comprises (a) main and branch canals, (b) distribution canals (D-canal), and (c) field canals (F-canal). The field inlet pipes of 3 inch diameter are provided on the F-canals.

The proposed water saving irrigation method may be introduced in the project on a step by step basis considering the present situation surrounding the project, farmers' familiarity with the traditional continuous irrigation, and the required time for training the field staff of MASL and farmers. The following basic concepts lead the proposed irrigation method:

a) Simple rotation irrigation on the large scale canals (main and branch canals) is initially employed. The the head gate of D-canals will be operated by the field staff of MASL.

b) The rotation irrigation with the participation of the farmers/FOs is then introduced in which the gate operation of head gates on the D-canals and inlet pipe on-off will be executed by the farmers themselves.

c) The gate operation is executed on "On-Off" basis without minor adjustment of the gate opening for the change of irrigation water requirement during the cropping season.

d) The field inlet pipe of 3 inch dia. will be replaced by 6 inch dia. for applying an internal rotation in the F-canals due to the design capacity of F-canals and the required time for fulfilling irrigation water in the paddy fields.

e) Quantity of irrigation water supply will be adjusted by the head gate of the RBMC at the intake of Uda Walawe dam depending on the total water requirement for the whole Left Bank area.

The gate operation for the step-wise water saving irrigation method and the required diameter of inlet pipe are as follows:

Gate Operation and Inlet Pipe

	Along Main/ Branch Canal	Along D-Canal	Along F-Canal	C-pipe Dia.
	(A)	(B)	(C)	
Step 1	On-Off (Rotation)	Open (Continuous)	Open (Continuous)	3 inch
Step 2	On-Off (Rotation)	On-Off (Rotation)	Open (Continuous)	3 inch
Step 3	On-Off (Rotation)	On-Off (Rotation)	On-Off (Rotation)	6 inch

Note: (A), (B), (C): gates mentioned in the above schematic irrigation system

(Step 1): This step introduce the primitive rotation irrigation by controlling head gates of D-canals on an On-Off basis. In case of gate "On" condition, the design water flows down in the D-canals and continuous irrigation in F-canal and field inlets is possible as that under the present irrigation method. The On-Off interval is to be determined as the period for fulfilling and for saturating all the fields and water standing period in the fields after irrigation. In this step, the irrigation water will be still wasted because of time lag occurred for fulfilling water in small and large field plots or water conveyance to the near and distant plots from the head gate.

In this step of water saving irrigation, the rain shower with a small rainy area will not be effectively used since the course and rainy area will not cover all the command area of D-canal as illustrated in the previous page, "Schematic Irrigation System". Since the irrigation water is generally taken at the upstream F-canal head gates on the D-canal under the condition of low water season and draught year, the fair water distribution inside D-canal area is hard under the scheduled On-Off operation of head gate of D-canals.

(Step 2): This step of water saving irrigation is mainly based on the rotation irrigation on the D-canals with controlling the head gates of the F-canals on "On-Off" basis. In this step, the irrigation water is continuously supplied to the farm plots through the inlet pipes when the head gate of F-canal is "On". In order to simplify the operation activities, no minor adjustment of the opening of the F-canal head gates is executed.

On-Off operation of head gates of D-canals is required for keeping the scheduled irrigation for the whole Project area and effective use of rainfall with a large rainy area. The flexible On-Off operation of the head gates of F-canals leads the effective use of rainfall with a small rainy area as illustrated in "Schematic Irrigation System".

Even in this step, irrigation water will be wasted due to the different time required for fulfilling the different size of the command areas of F-canal in the same rotation group. The unfair water distribution

may occur in this step inside the F-canal area since upper inlets take more water within the limited time of irrigation interval.

(Step 3): This step for introducing water saving irrigation method is based on the rotation irrigation inside of the F-canal area by controlling pipe field inlets. The head gates of F-canals are to be operated depending on the scheduled interval on On-Off basis with a certain irrigation interval which is to be determined by the required time for fulfilling water in all the farm plots of F-canal. The farmers' participation is required for scheduling the On-Off operation of the head gates of F-canals and inlet piles under the schedule of D-canals operation which will be prepared by MASL.

Since the time required for water issue to the farm plots in this step is shorter than that in Step 2 under the scheduled head gate operation of D-canals and F-canals, the inlet pipes with 3 inches are to be replaced by pipes with the larger diameter (6 inches) for supplying the required water to the plots within the limited time.

The Step 3 has the highest potential of saving water distribution by introducing rotation irrigation inside the F-canal area under the condition of the scheduled gate operation of D-canals and F-canals. The fair water distribution causes water saving in irrigation activities.

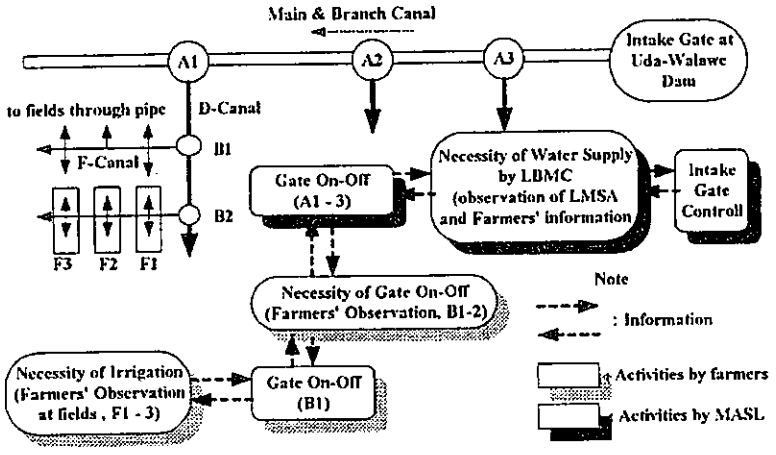
(2) Points to be considered

For introducing the step-wise water saving irrigation method, the following points are to be considered:

a) Institutional set-up and training of MASL field staff and farmers:
Since the proposed simple rotation irrigation requires the scheduled gate operation at the intake gate of Uda Walawe dam and head gate of D-canals (Step-1), the MASL field staff have to be capable of scheduling, managing the gate operation plan, and field performance for the rotation irrigation. Regards Step 2 and Step 3, the farmers participation is the key for successful introduction of the water saving irrigation method. The farmers will also be capable of scheduling, managing, and operating the proper gate operation for the water saving irrigation.

b) Prompt Actions on Gate Operation and Information System
In order to save water under the proposed irrigation method, the prompt actions on gate operation at the intake gate of Uda Walawe and head gates of D-canals are required. When the rain showers would come and pass across the irrigation area, water supply to the farm plots become unnecessary due to the increase of standing water in the farm plots. The farmers and MASL field office have to closely communicate about the field condition or necessity of irrigation to the farm plots after raining for executing proper gates operation. The main concept of this point to be considered is shown below.

Prompt Actions on Information of Irrigation Necessity and Gate Operation



Q-18: The following constraints are reported. Are these still apparent?

3.2.6 Present Constraints

The Walawe basin has been studied extensively in the recent past. However, it proved to be more difficult to assemble a consistent data set than had been expected. Many records of reservoir and irrigation system operations were not available in easily accessible electronic formats. Even where data was already entered in an electronic format, the numerous spreadsheets were found to be difficult to interpret. Those records that were available were often presented in the form of an output, rather than as a time series that could be easily utilized for analysis. This required considerable data manipulation.

Also, it was necessary to enter records of water level observations for many structures from field record books, indicating that although observations are made they are not processed regularly. These records may have some value in day-to-day decision making; however, it is our experience that where records are taken, but not processed and utilized in management decisions and performance evaluation, the reliability of the observations deteriorates rapidly.

Although the ADB funded rehabilitation project in the Right Bank area established numerous monitoring locations and implemented computer based systems for recording and processing the records, this system has degraded considerably over time. The use of spreadsheets as the primary data management tool is not recommended. Current database software provide more reliable and effective data management systems, and can be interfaced easily with both spreadsheets and GIS software to provide managers with up to date and reliable data. The existence of a well-designed and well-maintained database system would have simplified the data preparation task for this study and would provide a valuable management resource for the MASL project management staff.

With regard to the Liyangastota anicut records, these had to be collected from the field record books, maintained by the operator, as the records were not available in the Range Irrigation Office or in the Hydrology Division in Colombo Headquarter. Again the use of a well-designed database system would enable the Irrigation Department to improve the collation and processing of routine hydrological and irrigation system operations data.

2. Institutional/Organizational Framework

2.1 Institutional Framework of MASL

Q-19: The Report describes the MASL organization and re-structuring program as follows. If please describe the present organizational status. .

(1) Present Organization

Mahaweli Authority of Sri Lanka (MASL) was set up by an Act of Parliament (MASL Act No.23 of 1979), to implement the Accelerated Mahaweli Development Program (AMDP). The operational functions of MASL in the declared area are listed below:

- Fostering and securing full and integrated development,
- Optimizing agricultural productivity and employment potential,
- Generating and securing economic and agricultural development,
- Conserving and maintaining the physical environment,
- Furthering the general welfare and cultural progress of the community, and
- Promoting the participation of private capital in economic and agricultural development.

In order to facilitate MASL for carrying out the stipulated functions, the Act conferred on MASL a wide range of powers. Two core organizations were established in MASL: the Mahaweli Engineering and Construction Agency (MECA) and the Mahaweli Economic Agency (MEA). MECA was responsible for all physical development works including planning, designing and construction supervision of the irrigation and construction of social infrastructure. MEA was responsible for integrated development and management of the downstream areas of Mahaweli projects involving settlement of farm families and provision of agricultural and social services for socio-economic upliftment of the community.

Since the commencement of AMDP, several changes have taken place at the ministerial level. MASL functions under the Ministry of Mahaweli Development at present. MASL had acted as an umbrella organization having 17 different agencies with the staff of about 12,500 in number. MEA had the largest staff of 6,600, MECA with 2,200, HAO/M (Headworks, Administration, Operation and Maintenance) with 1,100, LDD (Livestock and Dairy Development) with 400.

(2) Current Restructuring Program

The major component of current restructuring of MASL is the Voluntary Early Separation Package (VESP) to down-size the work force from 10,788 to 4,745. The staff as of 31 December 1999, is 4,570 as shown in the following table:

MASL Staff Reduction by VESP

Category of staff	Before VESP	Selected for VESP	Balance (after VESP)
Permanent	7,248	3,720	3,528
Casual	3,522	2,488	1,107
Contract	18	10	8
Total	10,788	6,218	4,570

Source: Report for the First Mid-Term Review, MRRP, and MASL

After the restructuring, MASL has been managed by an Executive Management Committee headed by DG under the policy guidelines derived from the Secretary of MMD and the MASL Board of Directors. Almost all responsibilities of MASL are now placed on three Executive Directors which are the heads of Finance and Administration, Technical Services, and Development Divisions. The present structure of MASL organization is shown in Figure 3.3.1.1, and the detailed structure of the Technical Services and Development Divisions is given in Figure 3.3.1.2 and 3.3.1.3, respectively. The Resident Project Manager (RPM) of Walawe Special Area is directly responsible to the Division of Technical Services of MASL on the Project and the Right Bank project. The present staffing of RPM office of Walawe Special Area is as shown in Table 3.3.1.1.

Q-20: The Report describes the budgetary situation of 2000 as follows. Please describe the present budgetary situation.

Because of reduction of MASL staff through VESP, the recurrent expenditures decreased as shown in the table below.

Recurrent Budget (Unit: M. Rs.)

Expenditures	1997	1998	1999	'99/'97(%)	1997-1999
Net salary payments	580.2	579.3	412.6	71	1,777.6
Other emoluments	195.8	264.5	169.9	87	25.9
Other recurrent expenses	360.7	422.7	339.1	94	21.6
Total recurrent expenditures	1,136.7	1,266.6	921.6	81	215.1
Total budget	1,798.0	2,250.0	3,012.0	168	-

Source: Cumulative Performance 1999 of MRRP, January 2000, MASL.

The net salary for MASL staff declined by 29%, in comparison with the reduction of staff number by 55%. The total recurrent expenditure bill declined only in 19%, while the total budget increased up to 168%.

Q-21: The Report describes the organization chart as shown in the next page. If any modification has been done, please give us the new chart.

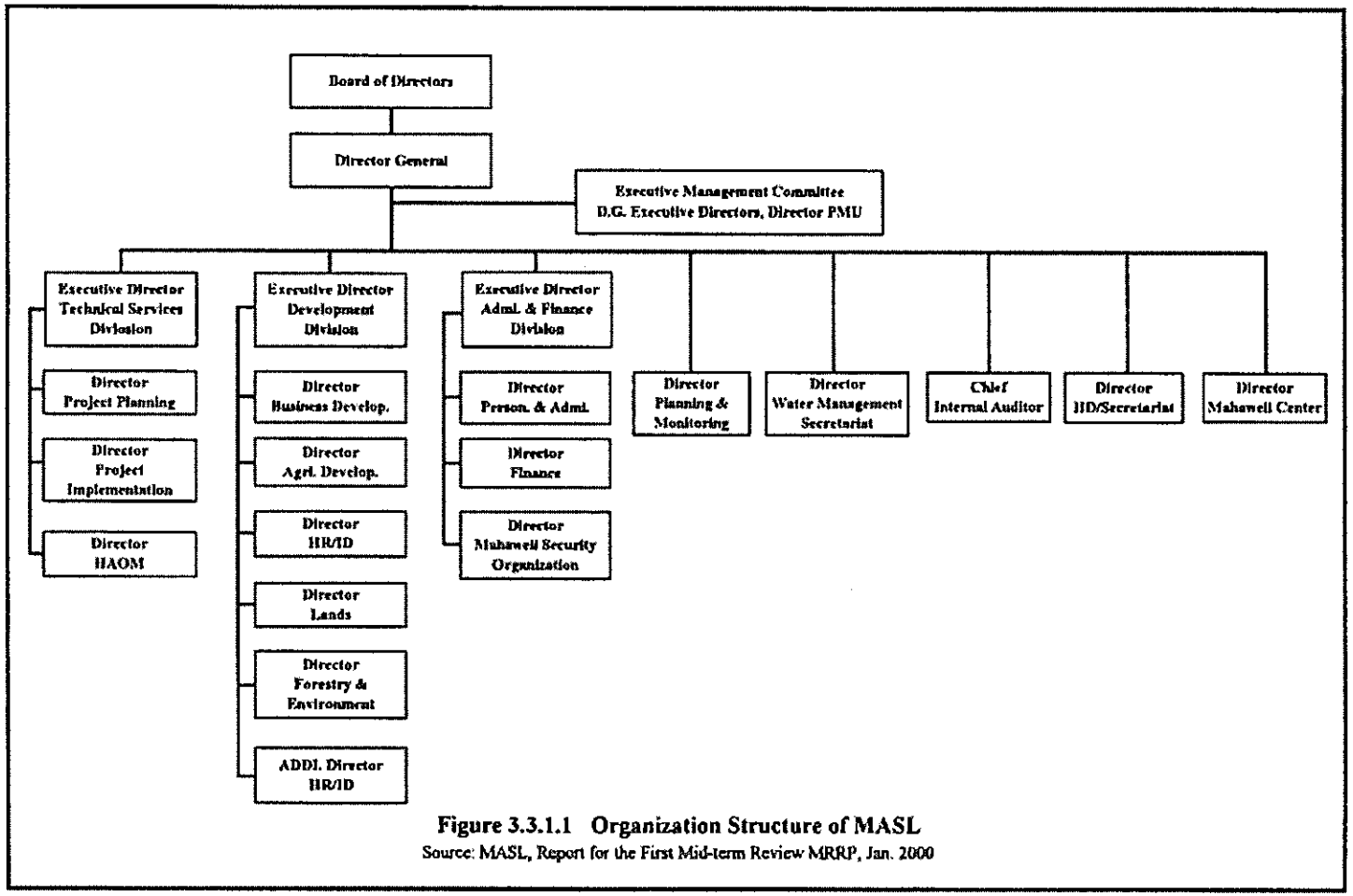


Figure 3.3.1.1 Organization Structure of MASL

Source: MASL, Report for the First Mid-term Review MRRP, Jan. 2000

Fig. 2.1 Organization chart of MASL

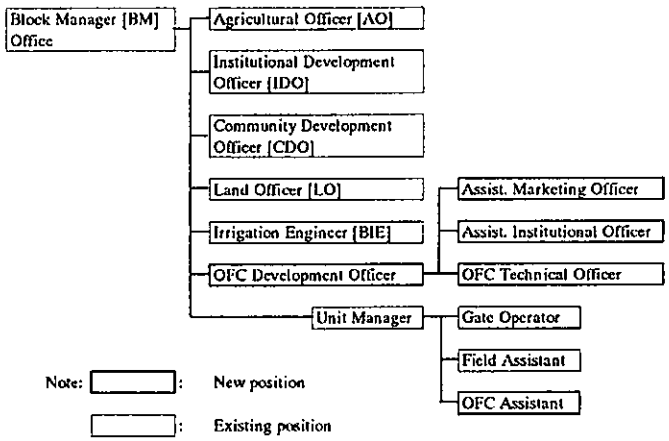
Q-22: The Figure does not describe the field office such as RPM office. Please give us the comprehensive organization chart including the field offices.

Q-23: The Report proposed providing the BM office. Is this realized?

(a) Establishment of new unit in BM Office

The proposed organization structure for the Block Manager Office including the new unit for acceleration of OFC cultivation in the Project area is shown in the following page.

Proposed Structure of BM Office with New Unit



In the new structure of BM Office, an assistant marketing officer will be in charge for supporting the member farmers of OFC production organization (PO) in marketing the OFC products. An assistant institutional officer is the person in charge for leading establishment of the OFC PO and smooth management the PO. In addition to the institutional and marketing issues, the technical support in OFC cultivation will be executed by an OFC Assistant. Actual field works of these officers will be handled by the existing Field Assistants and new OFC Assistants. The required number of new OFC Assistants are to be determined as one OFC Assistant per one Unit Manager Office. The existing Field Assistant should be increased to two Field Assistants in each Unit Manager Office.

2.2 Training System of MASL staff

Q-24 Please give us copies of the documents explaining the staff training plan or programme of MASL.

Q-25 Please provide copies of the annual reports of the training program that explains the staffing,

training courses offered, accomplishment, budget and expenditures, status of facility and equipment, and so forth.

Q-26 Aside from the training program, are there any persons / sections in MASL that are responsible for MASL's staff training? ( ) Yes; specify_____

( ) No

If yes, please answer the following questions in terms of those training activities conducted by such sections in MASL.

Q-27 Please provide the details of training activities for MASL's staff for last year.

Sl	Title / topic of training	No. & Department of staff joined*1	Department / section that conduct the training	Duration of Training	Venue of training	Is the training regularly conducted?
						□Yes □No
						□Yes □No
						□Yes □No
						□Yes □No

*1: Aside from the number, please identify the Department of MASL which the training participants belong to.

Q-28 How much had been the budget allotted for staff training for last five years? How are the training activities funded?

Fiscal Year	Budget		
	Total Amount	Amount from Regular budget	Amount from special budget (ex. project budget)
2006			
2007			
2008			
2009			
2010			

Q-29 Does MASL have its own training programs for the staff? (Internal training arrangement)

( ) Yes ( ) No

If yes, please provide the details in the following table;

Sl	Title / topic of training	Year conduct-ed	Duration of training	Trainers	Venue of training	Is the training regularly conducted?
				☐ MASL staff ☐ Other Institution		□Yes □No

				(specify:)		
				☐ MASL staff ☐ Other Institution (specify:)		□Yes □No
				☐ MASL staff ☐ Other Institution (specify:)		□Yes □No

Q-30 Do the MASL staff participate in any training conducted by other government departments / institutions? ( ) Yes ( ) No

If yes, please provide the details of such training experience for last year in the following table;

Sl	Title / topic of training	No. & Department of staff joined*1	Training organized by	Duration of Training	Venue of training	Is the training regularly conducted?
						□Yes □No
						□Yes □No
						□Yes □No
						□Yes □No
						□Yes □No

*1: aside from the number, please identify the Department of MASL which the training participants belong to.

Q-31 Has MASL ever conducted any training for the personnel of other government departments and institutions? ( ) Yes ( ) No

If yes, please provide the details in the following table;

Sl	Title / topic of training	No. of trainees	Organi-zation of trainees	Year & duration of training	Trainers	Venue of training
					☐ MASL staff ☐ Other Institution (specify:)	
					☐ MASL staff ☐ Other Institution (specify:)	
					☐ MASL staff ☐ Other Institution (specify:)	

Q-32 What would be the topics/subjects necessary for the MASL staff in future training activities? Please specify the training needs that may vary among the staff of different Departments.

2.3 Operation and Maintenance

Q-33: The present operation and maintenance structure is described as below. Is this correct?

(1) Present O/M structure for the Uda Walawe Basin

The O/M of the Project and the Right Bank area is handled by the Resident Project Manager (RPM) office. The RPM office headed by the RPM has five Deputy RPMs (DRPM) for administration, human resources development, agriculture, land, and technical aspects. The DRPM for technical, which position has been vacant after the restructuring, is responsible of O/M of the project. The main office of RPM is responsible for O/M of major irrigation facilities such as intakes at Uda Walawe, Right and Left Bank Main Canals, and branch canals. Six block offices established under RPM Office carry out the O/M of D-canals and F-canals in the command irrigation areas.

The Flow Monitoring and Operation Unit and Construction and Maintenance Unit of RPM office have executed O/M works of the major project facilities with a support of the Electro-Mechanical Unit. A Civil Engineer (CE) manages the unit with Engineering Assistant (EA), Draught Person (DP), Technical Officer (TO), Jalapalaka (Gate Keeper). The O/M of D-canals and F-canals are handled by the Irrigation Engineer (BIE) of Block Manager (BM) office with EA, TO, and Jalapalaka. The gate operation at field level is carried out by the Jalapalaka of the Unit Manager Offices which are established under BM offices. The organization chart for O/M of the Uda Walawe bashin is shown in Figure 3.3.2.1. The present numbers of the O/M staff are shown below.

Numbers of Field Staff of MASL

Position	CE	EA	DP	TO	Jalapalaka	Total
[RPM Main Office]						
DPRM (Tehnical) (Vacant)						
Construction & Maintenance Unit	1	2	2	1	-	6
Flow Monitoring & Operation Unit	1	1	-	3	13	18
Electro-Mechanical Unit	1	1	/	/	/	2
[Left Bank area]						
BM Office (Kiriibanwewa: 1,480 ha)	1	2	-	1	3	7
BM Office (Suriyawewa: 2,460 ha)	0	3	-	2	6	11
BM Office (Extension Area: 5,340 ha)	1	0	0	0	0	1
[Right Bank area]						
BM Office (Chandrikawewa: 3,799 ha)	0	3	-	2	/	(5)
BM Office (Marawasihena: 4,490 ha)	0	2	-	2	/	(4)
BM Office (Anenukolapelessa: 3,737 ha)	0	3	-	2	/	(5)

Note: / : no data, (-) : numbers except for Jalapalaka

Q-34 The following constraints are reported. Are there these constraints even now?

(2) Present Constraints on O/M Organization

The interview survey with the officer of RPM and BM offices revealed the following constraints on the present O/M for the Uda Walawe basin:

a) The position of the DRPM for technical is vacant at present. Since the civil engineer for the Flow Monitoring and Operation Unit holds two posts concurrently, the work efficiency is quite low.

b) The Flow Monitoring and Operation Unit has handled the monitoring works such as flow measurement and gate operation on the Uda Walawe dam, Right and Left Bank Main Canals, and branch canals. Since the management of these works for both Right and Left Bank areas of about 16,000 ha in total has been carried out by one engineer and one EA, staff performance for the O/M works has been ineffective.

c) Four Block Offices out of five have no irrigation engineer who is in charge of planning, scheduling, and management of O/M in the irrigation area of 1,500 ha - 4,500 ha, duties of block offices in O/M works have not been executed effectively.

d) Lack of numbers of field staff in Unit Manager Offices may cause ill-suite operation of the irrigation facilities, lack of close communication to farmers, and difficulty in O/M training to the farmers.

Q-35: If there are the constraints, what solution efforts have been done?

2.4 Number of Farmers and the Organization

Q-36: The Report describes the number of farmer families as follows. Please update the data with the settled years applying the Form-1.

Number of FF to be settled in the Project Area

Project area	Irrigable area (ha)	Present FF (No.)	No. of FF to be settled (No.)	Total FF (No.)
Old area	3,940	5,683	-	5,683
Kiriibanwewa Block	1,480	2,084	-	2,084
Suriyawewa Block	1,420	2,526	-	2,526
Extension area	1,040	1,073	-	1,073
New extension area	5,340	1,440	3,900	5,340
Total	9,280	7,123	3,900	11,023

Source: MASL 1998, F/S Review Report.

Q-37: Please show progress data of number of the settled farmers and their obtained trainings in the Walawe Left Bank loan project. Following table shows an example of our requested data.

Year	2001	2002	2003	2004	Total
Number of settled farm families	1000	1000	1000	2430	5430
Trainings on water management	All the farmers attended two times of a two weeks training program of O&M	All the farmers attended two times of a two weeks training program of O&M	All the farmers attended two times of a two weeks training program of O&M	No training yet.	'-
Trainings on cultivation and others	All the farmers attended a one week training program of rice cultivation	All the farmers attended a one week training program of rice cultivation	All the farmers attended a one week training program of rice cultivation	No training yet.	'-

Q-38: Please list up the training programs prepared for settled farmers.

Q-39: The history and development of Farmers' Organization (FOs) are described as follows. Is there any modification, correction or addition? If any, please describe them.

(1) Historical Background of FOs Establishment

The institutional form of farmers' organization in Mahaweli systems historically have passed three stages: i) activities by the unit level farmers' organizations before political disturbance (1984-1989), ii) activities after political disturbance (1990-1991), and iii) new activities by the D-canal organizations (1992-present). The basic policies and objectives of the institutional development of FOs in the first and second stages are almost the same. All organizations established in the first stage were closed and new organizations were established in 1990 (second stage). In 1992, in conformity with the new policies for overall institutional structure, MEA commenced to establish D-canal organizations in all systems.

Institutional Development Program

In August 1992, MEA worked out a special program of institutional development for strengthening activities of FOs and for accelerating hand-over the O/M activities to the farmers. MEA also established a task force 'Institutional Development Unit' in the MEA head office, Project offices, and Block offices to extend various supporting services for establishment of FOs.

In 1994, the Government enacted a revised Irrigation Ordinance and Agrarian Services Act for water management conducted by the beneficiaries. Under the revised law, the FO is entitled to collect irrigation service fees from its members and to take any action against nonpaying members. The FO handling the O/M of the whole or a part of the D-canal system has been exempted from the irrigation charge imposed under Sub-section (1) of Section 2 in the Irrigation Ordinance. Such a order is published in the Gazette.

Under the Restructuring of MASL, the Institutional Development Unit in RPM Office was re-established and became the Human Resources and Institutional Development Unit by amalgamating with the Human Resource Development Unit. The staff of the unit was once decreased to five members in 1998 and again increased to ten. At the BM office level, the number of IDO (Institutional Development Officer) was decreased to two in 1998 and increased again to five. IDO has dual functions as the IDO and the Community Development Officer (CDO).

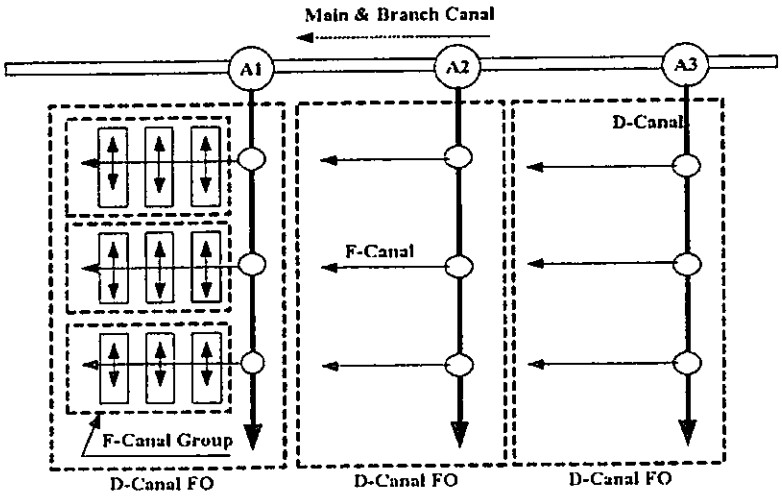
In 1997, 37 IOVs (Institutional Organizer Volunteer) had been recruited and distributed to the Unit Manager offices to promote organization of farmers and to introduce the participatory management of the irrigation system through house-to-house visits. However, there is no activity of IOVs from the next year of IOV system established

Q-40: The FO organization structure is described as below. Is there any modification, correction or addition? If any, please describe them.

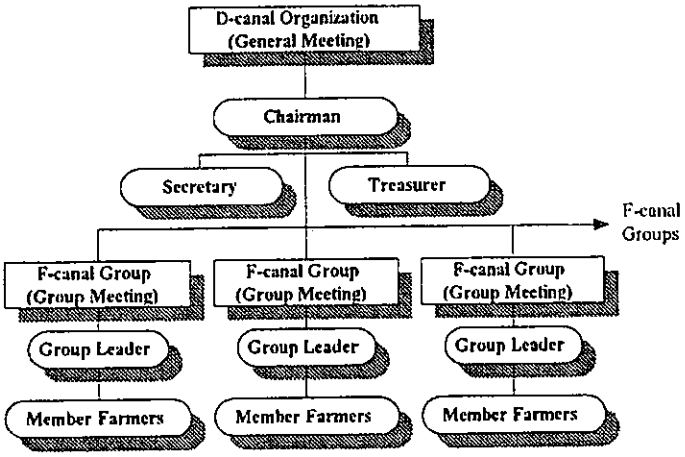
(3) Organization Structure of Farmers' Organization (FO)

The FO is established with the farmers having farm plots in D-canal area. The FO is conducted by the Chairperson, Secretary, and Treasurer under the General meeting of the member farmers. The FO contains some F-canal groups established with the farmers in the F-canal areas. The following figures show the area of FO establishment and typical organization structure of FO.

Establishment of Farmers' Organization



Organization Structure of Farmers' Organization



For the management of the organizations, three office bearers (chairperson, secretary and treasurer) are elected annually among the members.

Q-41: The number and size of D-canal FOs in the Left Bank Area are shown as below. If any correction, modification or addition is necessary, please describe them.

(4) Number and Size of D-canal FOs in the Left Bank Area

The total number of D-canal FOs established in the Uda Walawe Project is 169; 131 in the Right Bank area, and 38 in the Left Bank area. The scale of FO depends on the number of farmers within the command area of D-canals. The

average number of farmers belonging to the D-canal area is 101, 17 at the minimum and 427 at the maximum, as shown in Table 3.3.6.2. The organized member farmers of D-canal FO is 81 % of the whole farmers having farm plots; 86% in Kiriibanwewa Block and 77% in Suriyawewa Block. The ratio of organized members against the size of D-canal FO is illustrated below and details are shown in Table 3.3.6.2 and illustrated below:

Q-42: The FO activities are described as below. If any correction, modification or addition is necessary, please describe them.

(5) Activities of FOs

The objective of FO was exclusively to operate and manage the irrigation facilities. In addition, the FOs have executed various activities depending on the members' request. The FOs activities are generally as follows:

a) operation of Suramadana (voluntary labor work for O/M of irrigation facility as well as community activities),
b) distribution of fertilizers and chemicals,
c) community development works,
d) loan arrangement for farm operation and cultivation,
e) solving members' problems, and others.

Since the turnover of the O/M activities to the farmers has not been made in the Project area, the operation of gates in D-canals and F-canals has not been executed by the farmers/FOs. The interview survey results revealed that the FOs/farmers carried out the primary repair and cleaning of the canal and facilities.

The activities of FOs other than O/M of the irrigation facilities in the Uda Walawe area are mostly arrangement of cultivation loans and distribution of the agricultural inputs as shown in Table 3.3.6.3 and 3.3.6.4. However, in the Left Bank area, a very limited number of FOs deal with loans and inputs supply. Only two FOs in the Left Bank area (Kiriibanwewa) arranged cultivation loans, and no activities of input supply in accordance with information derived from RPM office.

Q-43: Please give a list of FOs.

2.5 Training institutions

Q-44: The existing training institutions are described below. If any correction, modification or addition is necessary, please describe them.

(1) In-service Training Institute, Angunakolapalessa

The institute is providing wide range of training program to agricultural extension staff and farmer as shown in Table 3.3.7.1. The institute is a member of Regional Technical Working Group (RTWG) and it conducts the Pre-seasonal Training twice a year not only for the Department's extension worker but also for Agriculture Officers (AOs) of MASL.

(2) School of Agriculture, Angunakolapelessa

The school is the other institution located in the Project area. The school covers the following fields with qualified staffs:

- Horticulture
- Crop science
- Agr. Engineering
- Chemistry
- Food science
- Botany

3. Water Management System

Q-45: The desired water management system is described as below. If any correction, modification or addition is necessary, please describe them.

(6) Participatory Management and Coordinating Committees

(a) Participatory Management

Participatory management has been applied for the Mahaweli Systems since 1992. According to the policy, the management of the Irrigation Systems has been executed jointly by the RPM office and FOs on the basis of the mutual sharing of roles and responsibilities. The main features of joint management are:

a) All activities related to water management and O/M in the entire System are coordinated and managed jointly by appropriate 'Coordination Committees' set up at several levels in the project implementation organization. Within these committees, RPM officials and FOs representatives share decision-making and management responsibilities in respect of the irrigation infrastructure and production plans.
b) The irrigation networks at the D-canal level and subordinate canal level are operated and maintained by the FOs, and
c) The RPM office operates and maintains the Main and Branch canals.

The main purpose of the participatory management system is to ensure the success of the "production phase" of the project by securing the sustainability of an efficient irrigation system to be managed by the farmers. Through initiation and support in developing strong independent FOs, their participation in the processes of irrigation management at all levels would be secured; particularly for decision-making as the owner of the irrigation system. The FOs participation will aim at:

a) encouraging and motivating FOs in carrying out any responsibilities entrusted to them,

b) making the MASL officials be more responsive to the feelings and needs of farmers,

c) creating greater chances of cooperation with farmers in implementing the various plans and programs, and

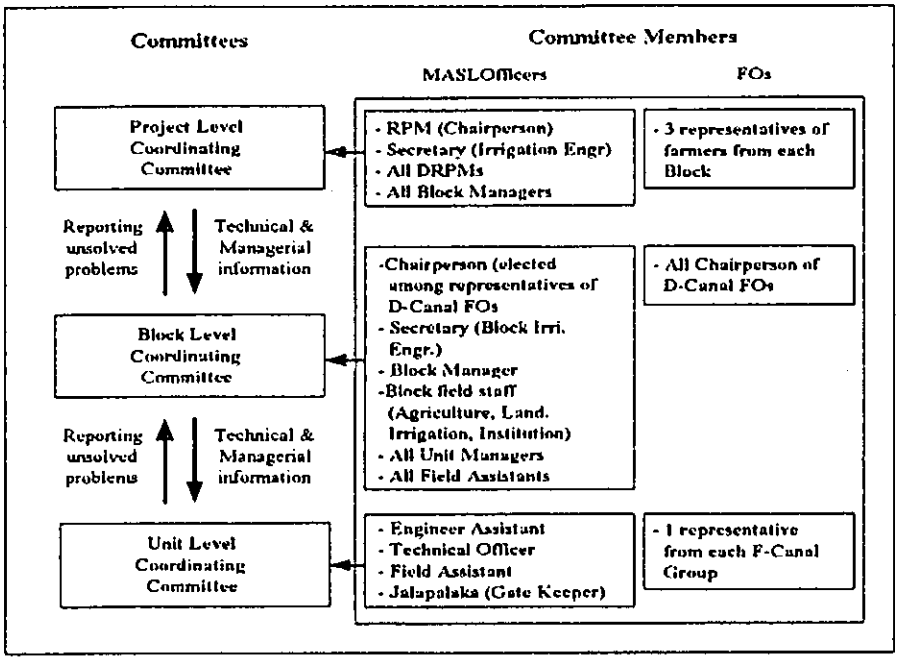
d) making farmers' representatives be aware of the constraints faced by MASL officials in carrying out their duties.

As the participatory management will proceed, the role of MASL may shift from "controller" to "facilitator". The strong self-reliant FOs will manage not only the irrigation water but also the economic activities.

(b) Management (Coordinating) Committees

A coordinating committee system was established in the Project level, Block level, and Unit level, to facilitate participatory management by MASL officials and farmers' representatives. The committee system aims at resolving problems on water distribution, cropping patterns, prioritization of canal maintenance work, improvement and modernization of the canal system, as well as participation in monitoring and evaluation. The composition and the institutional mechanism of participatory management in the Uda Walawe Project executed under the coordinating committee system are illustrated as follows:

Present Coordination Mechanism of Participatory Management



a) Project Level Coordinating Committee

The Project level coordination committee is chaired by RPM while the secretary is the irrigation engineer. The meeting is held once every three months or as required with the members. The representatives of farmers are appointed through the Block Coordinating Committee for one year term of service. One of them is for Deputy Chairperson, and one is for Deputy Secretary.

b) Block Level Coordinating Committee

This committee is organized at the Block level with the chairperson elected from the chairpersons of D-canal FOs in the Block, while the secretary is the block irrigation engineer. The meeting is held every month and as required with the members.

c) Unit Level Coordinating Committee

This committee is organized at the Unit level, the chairperson is elected from the field canal representatives while the secretary is the Unit Manager. The meeting is held every month and as required with the members.

d) Agenda for the Meeting

The topics discussed frequently at the meeting other than O/M of canals are as follows:

- Land matters
  - Encroachment, illegal activities,
  - Delay of deeds,
  - Allocation of land for common use,
- Marketing
  - To maintain appropriate prices of agricultural products,
- Crop insurance promote to insure crops against disasters,
  - Agricultural loans,
  - Market information, packing, quality, quantity, prices, etc.
  - Inputs supply,
- Infrastructure development
  - Road, electricity, playground, nursery school, cemetery, furniture for Sunday school,
- Second generation employment
  - Training programs by MASL for milk processing, purchasing, and sale of products, typing, sewing, bridal dressing,
- Other training programs
  - Accounting, book keeping, auditing, nursery school teachers, water management,

Q-46: Following the desired system, the turn-over has done as described below. What is the present progress of this turning-over?

(7) Turnover Program

Under the participatory management policy and the institutional Coordinating systems described above, the Turnover Program has been launched with the three stages: 'Institution- building', 'Joint-operation' and 'Turnover'.

Step I : Institution-building:

In this stage, FOs are formed and strengthened using 'Institutional Organizers'.

Step II : Joint operation:

When the MASL and FO agree that both parties are ready for joint operation, they sign a Memorandum of Understanding (MOU) under which the roles and responsibilities of both parties are clearly defined in respect of operation and maintenance.

Step III : Turnover

When the FO is ready and agreeable to take over O/M responsibilities completely, a 'turnover agreement' is signed between both parties. The agreement specifies the respective responsibilities of MASL and the FO. The role of MASL at this stage may be limited to providing technical and management advice, and financial assistance to improve canals beyond the financial capacity of FOs.

According to information obtained through RPM Office of Uda Walawe Project, the progress of the turnover program in the area as of the end of October 1999, is as shown in the table below:

Progress of Turnover Program

Area	No. of DCO	Registered under 56A	Registered under 56B	1st agreement	2nd agreement
Left Bank	38	38	17	29	0
Right Bank	131	131	31	127	65
Total	169	169	48	156	65

Source:MASL Head Office. 1st agreement means step of joint operation, 2nd agreement means step of turnover, respectively. See Table 3.3.6.5 for details.

The registration status of 56A and 56B shows registered numbers of farmers under sections of 56A and 56B of Agrarian Services (Amendment) Act, No. 4 of 1991. The former (56A) means registration at the Mahaweli Office, the later (56B) at the office of Agrarian Services. The difference of the status of FOs between registration under 56A and 56B is referred to the provision as shown below:

Provision of 56A and 56B of Agrarian Services Act No.4, 1991

Section 56A

(ellipsis)

(3) The commissioner may register any Farmers' Organization if an application in that behalf is made to him by the Organization: Provided that the Commissioner may register a Farmers' Organization in any area under a major irrigation scheme with the concurrence of the Secretary to the Ministry of the Minister in charge of the subject of Irrigation.

(4) The purposes of any Farmers' Organization registered under this section shall include----

(a) the formulation and implementation of the agricultural program for the area;

(b) carrying out village level construction work and effecting repairs to irrigation works;

(c) marketing of produce and distribution of seed, fertilizer and agro-chemicals;

(d) promoting of cooperation between, and the co-ordination of agricultural activities of government organizations and the farmers of the area; and

(e) engaging in any other activity approved by the Commissioner as being beneficial to the farming community.

Section 56B

(ellipsis)

(2) From and after the date of registration of a Farmers' Organization under subsection (1), such Organization shall be a body corporate with perpetual succession and a common seal and may sue and be sued by the name by which it is registered.

(3) The commissioner shall publish a notification in the *Gazette* of every registration of a Farmers' Organization made under this section.

(4) The purposes of every Farmers' Organization registered under this section shall be the purposes specified in subsection (4) of section 56A.

Q-47: Supporting systems for FOs by other agencies are described below. If any correction, modification or addition is necessary, please describe them.

(8) Supporting Systems for FOs by Other Agencies

(a) General administration

The Project area is administratively composed of a part of three provinces as shown in the following table:

Local Administration in the Project Area

Provinces	District	Divisional Secretariat	Block	Unit
Uva	Monaragara	Thanamalwiwa	Kiriibanwewa	Habaraluwewa Kiriibanwewa Mahagama
Southern	Hambantota	Suriyawewa	Suriyawewa	Samaja Sena Pura Viharagala Baddewewa Alioluara Bedigantota
			Mayurapura	Andarawewa Pilimagala Nabadagaswewa - -
		Angunukolaplessa	Angunukolaplessa	Pahalagama Binkama Kanukatiya Janidura
			Muravashena	Siyanbalagoda Muravasihena Mamadala Helekinda
Sabaragamuwa	Ratnapura	Embilipitiya	Cahandrikawewa	Timbolketiya Moraketiya Tunkama Kuttigala

Source: RPM Office of Walawe Project.

In the Project area, Kiriiban Block falls under the Monaragara District of Uva Province, while the Suriyawewa and Mayurapura Blocks belong to the Hambantota District of Southern Province, respectively. There is the Office of Divisional Secretariat, Ministry of Public Administration and Home Affaires, in Suriyawewa town. The Office of Divisional Secretariat carries out welfare, social, economy and cultural services such as rural development, youth activities, cashew and coconut cultivation, and coordinates all divisional offices in the division.

(b) Rural credit

In Suriyawewa town, a branch office of the Rural Development Bank (Ruhuna Development Bank) locates. The branch office is one of 11 branch offices of Regional Office of Ambalantota. One branch office is also located in Angunakolapelessa on the Right Bank of the Walawe area. The bank supplies a wide range of rural credit schemes such as self employment loan, cultivation loans for paddy and OFCs, inland fisheries development loan, agricultural machinery and implements loan, industry loan, purchasing agricultural products (mainly paddy) loan, consumer loans, public officers loan, and housing loan. The Ceylan People's Bank and other commercial banks also have a variety of loan schemes to

support farmers activities. Most of these loans require collateral or a guarantor.

(c) Other supporting agencies

In the areas other than Mahaweli Special Area, supporting services related to development and operation of agriculture and irrigation are extended by the line agencies, such as Department of Agrarian Services, Department of Irrigation, Department of Irrigation Management, Department of Agriculture, and others. Since the Project area belongs to the Mahaweli Special Area, most of these supporting services are provided through unified project office of MASL instead of those line agencies. A few samples of support services extended to farmers and FOs in the area outside of the Mahaweli Special Area are described below:

a) IMD Ridiyagama Project on the Walawe Left Bank (Liyangastota Anicut Project Left Bank area)

The Project Office provides training to farmers on financial administration and enterprise development through promoting farmers' participation to FOs activities. The office manage and give guarantee to apply for credit of fertilizers and the fertilizer company supply fertilizers to farmers in credit. Turnover program has completed 100% in the area, and FOs carry out operation and maintenance of FCs, and ID provides small amount of money to FOs and the money is saved in bank account. FOs collect water charge of 8kg paddy/acre/crop, 20% is kept for FOs and the rest is paid for the water manager (Jalakalamonakaru). Each member of FO contributes 50 Rs/year and this is kept as fund for development, together with rehabilitation cost paid by ID.

b) District Office of Agrarian Services of Hambantota

The office is the registry office of FOs to the government, the office carries out rehabilitation of small-scale irrigation tanks and networks less than 200 acres. The office also provides support services to FOs such as provision of inputs (paddy seed, fertilizers), hire of machinery for agricultural operation, and training of farmers and office bearer of FOs.

c) Agricultural Extension

Agrarian Service Center is established as the base of field extension team composed of line agencies to integrate extension activities. The Center has a dual function, firstly as retail outlet of farm inputs, and secondly as Coordinating points of officers working for the extension services. The organization is complex and it is difficult to get coordination among the institutions. A number of institutions engage in agricultural extension and support services. These are Extension & Training Division of DOA, Extension Development Unit of MOLA, Department of Agrarian Services, Department of Animal Production & Health, Provincial Department of Agriculture, Provincial Department Animal Production & Health, Department of Export Agriculture, Sri Lanka Aqua-culture Development Authority, Coconut Cultivation Board, Cashew Corporation, and Agricultural Development Authority.

4. Questions on the Problems to be Addressed

In order to clarify the specific problems addressed to the technical cooperation project titled "Integrated Irrigation and Environmental Management of the Uda Walawe Left Bank Project" (hereinafter referred to "the Project"), the following questions are prepared for MASL.

4.1 Institutional Mechanism

Q-48: According to the Application, lack of institutional mechanism to ensure efficient water management and maintenance of infrastructure is suggested. Please describe the details on this problem with real data and examples.

Q-49: According to the Application, lack of training both officers and farmers in irrigation management by farmer organizations under introduction of other field crops and comparatively more sophisticated infrastructure is suggested. Please describe the details on this problem with real examples.

Q-50: According to the Application, lack of considering environmental factors in water management procedures and using non-fuel-dependent agricultural machinery is suggested. Please describe the details on lacking the considering environmental factors in water management procedures with real examples. On the non-fuel-dependent agricultural machinery, please show some examples of the machinery with photos or illustrations for us to have a concrete image.

Q-51: According to the Application, not well functioning logical arrangements to ensure profit margin of other field crops is suggested. Please describe the details on this problem with real examples.

QUESTIONNAIRES TO AGRICULTURAL EXTENSION SECTION

1. INSTITUTIONAL FRAMEWORK OF THE AGRICULTURAL EXTENSION
（制度的枠組み）

Q-63: What is MASL's institutional framework of extension program? Please describe relationship with local offices and related institutes and other organizations.

Example answer

The Ministry of Agriculture (MA) conducts Agricultural Extension Program on agriculture so that farmers can apply new technologies with the suited modification to individual regional condition. The program is carried out under a basic direction that is determined by the MA. Guiding order of the program is the Headquarters (HQ) – Provincial office – District office – Township office – Extension camp. The Provincial office has a Manager, a Deputy Manager, subject matter specialists and administrative staffs. The District office has a Manager, Deputy Manager, subject matter specialists and administrative staffs. The Township office has a Township Manager, a Deputy Township Manager and administrative staffs. Extension agents stay at Extension camps at a Village tract or a Village. For research of extension, the MA and Department of Agricultural Research (DAR) have coordination and cooperation each other. Trial and demonstrations are being conducted on farmers' fields under the supervision of Extension agents. There are other departments that are concerned with farming, such as Irrigation Department (ID), Water Resource Utilization Department (WRUD), Sugarcane Enterprise (SE), MMM Jute Industry (MJI), MMM Perennial Crop Enterprise (MPCE), MMM Farms Enterprise (MFE) and MMM Agricultural Development Bank (MADB).

These departments have similar organization structure. But MFE formed with regional officer instead of provincial manager. The guiding order is Headquarters (HQ) – Provincial office – District office – Township office – Frontline unit and each department has its own research organization (unit in case of MADB) although some departments do not have the Frontline agents. In order to coordinate these departments, there are coordinating committees at Province level, District level and Township level. This coordinating body is called "Province department agricultural supervision committee" and the chairman will mostly be a senior person from different institution.

The Province Agricultural Institute (PAI) is under Department of Agricultural Planning (DAP) and has no stable connection to farmers. The DAP has connection with Ykon Agricultural University (YAU). DAP is responsible for selection of outstanding students from PAIs who want to join YAU to attend B. Agri. Science course.

Q-64: What are name of extension agents who directly contact with farmers almost every day and carry out technical dissemination.

Q-65: Fig.1 describes the institutional framework in Japan. Please indicate differences from your country's framework or show another figure showing your country's framework.

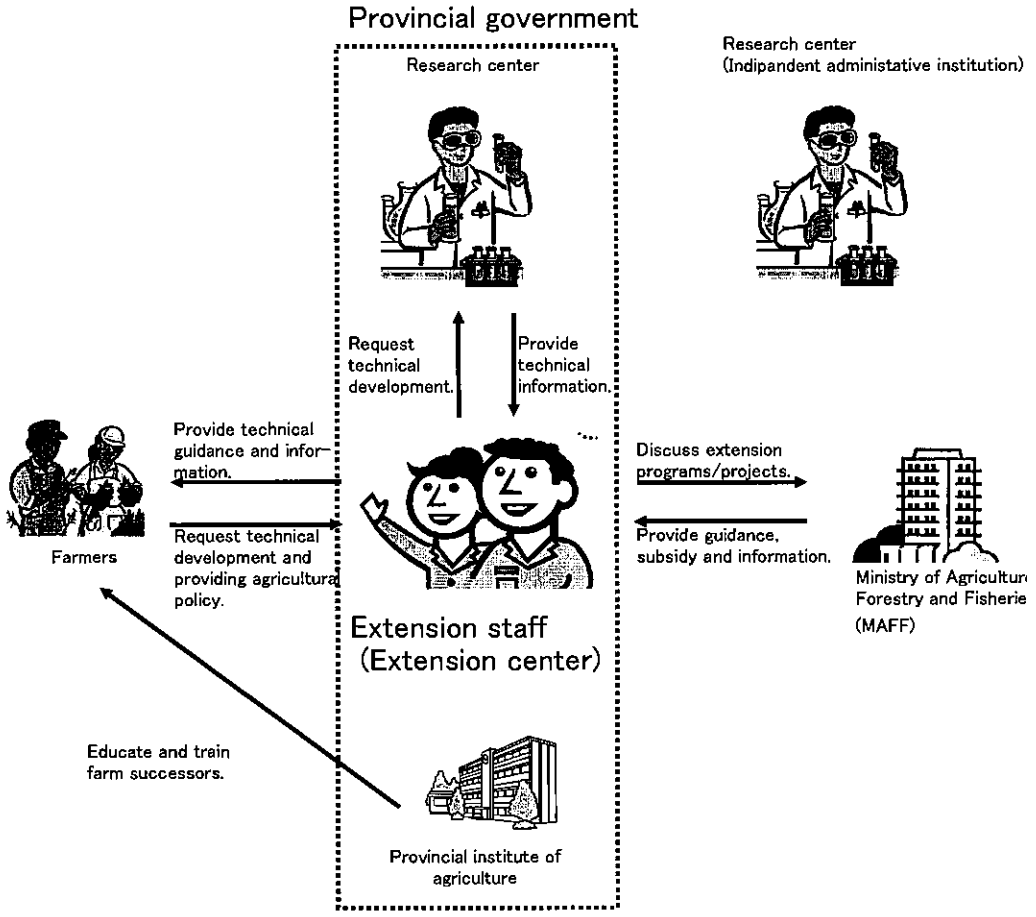


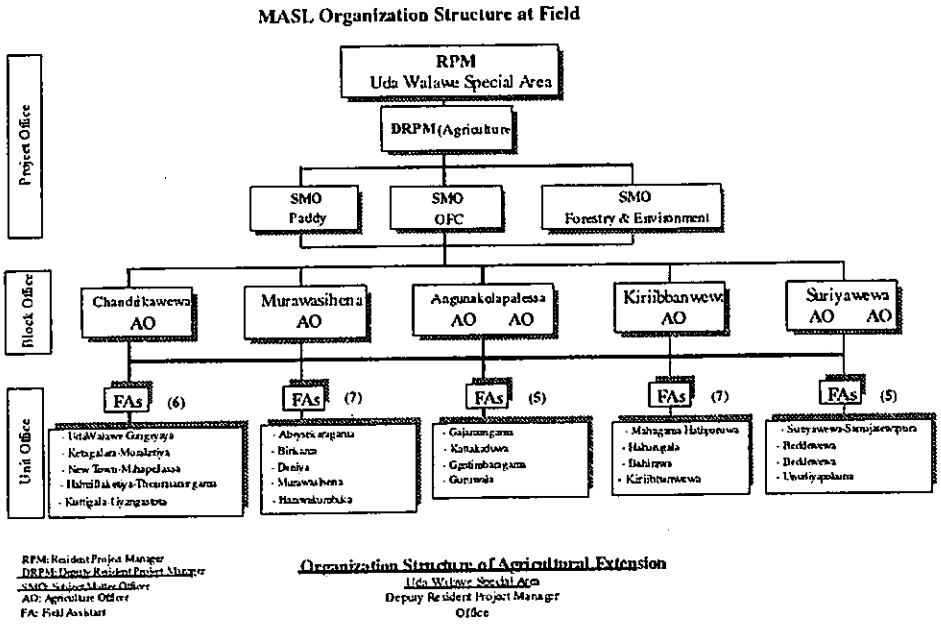
Fig. 1 Extension system in Japan

Q-66: The Report describes the agricultural extension system as follows. Is this correct?

3.3.3 Agricultural Extension Services

(1) Structure

DRPM (Agriculture) office of MASL Uda Walawe is responsible for agricultural extension services in the Project area. The organization structure for agricultural extension services consists of (a) project office headed by DRPM for agriculture and three Subject Matter Officers (SMO), (b) Agriculture Officers (AO) in the BM office, and (c) Field Assistants (FA) in the Unit Manager Offices. The structure of the office in MASL Project office, Block offices and Unit offices is shown below.



Q-67: Since the following re-structuring program has been done, we think that the extension service system has been modified. If any modifications have been done and the above description is not correct, please describe them.

(2) Effect of the Restructuring Program on staff allocation

Present structure of DRPM (Agriculture) was organized in October 1999 under the MASL restructuring project. Positions of DRPM and SMOs are allocated the same in number as before the restructuring. While, the number of irrigation blocks was changed from seven to five. An AO was allocated to each block. The FA, contacting directly with farmers, was reduced in number, 33 to 30 in the Project. The 50% of FAs are recruited after the restructuring and they have no enough experiences in agricultural extension services. The experienced FAs have resigned (12) or been promoted to Unit Manager (UM). Among the FAs with experience over five years, only 38 % remain at present. Background of formal educational level of new recruits is high, however none of them has a professional qualification of agriculture. The present numbers of field staff in BM and UM offices are shown below.

Q-68: Please show roles of the Central Government and MASL on implementation of the extension program.

Example answer

Centrall Government	MASL

① Provide a guideline to manage the Program. ② Provide subsidy for the extension activities carried out by the Provincial government. ③ Conduct examination of qualifying externs ion workers. ④ Provide information network over the country.	① Provide a guideline to carry out the Program. ② Carry out the program. ③ Assign Extension agents in the extension centers and research centers. ④ Provide extension services for farmers by Extension agents.

Q-69: The Report shows the number of Extension agents (Extension officers) as follows. Please update the data.

No. of Field Staff Allocation

Block	Before the Reform		After the Reform	
	AO	FA	AO	FA
Embilipitiya	1	5	1	2
Chandrikawewa	1	5	1	4
Maruwasihena	1	5	1	5
Binkama	1	3		3
Angunakolapalessa	1	4	2	4
Kiriibanwewa	1	5	1	7
Suriyawewa	1	6	2	5
Total	7	33	8	30

It is recognized in DRPM office as an urgent matter to train those new recruits the basic and practical knowledge of agriculture and field practices for agricultural extension.

Q-70: Can an Extension agent spend full time of duty for agricultural extension? If not, please describe the jobs other than agricultural extension and approximate percentage of spending for agricultural extension to the full time of duty.

Example answer Extension agents can spend only 40% of their total time of duty for agricultural extension activities including organization of training camps, field demonstration, field visits for farmers, soil sample collection and crop cutting equipments, because they have to spend more time in distributing inputs (seeds, materials, equipment) and maintaining the regular accounts for the input distribution

Q-71: Please describe the way of administrating the agricultural extension department in the Ministry.

Example answer
- Minister visits the department at least once per year at the HQ.

- Monthly, quarterly and annual meetings are held at particular Province for the district managers and township managers. Monthly, quarterly and annual meetings are held at district for the township manager. At township level, monthly, quarterly and annual meetings are held for all the Extension agents under a particular township office.

Q-72: Please describe how the Ministry headquarters (HQ) supports the provincial or local extension offices.

Example answer

- Hold the national seminar for Provincial manager and Deputy Manager at once per year.
- Hold annual workshop at HQ and the institute once per year for subject matter specialists from concerned department in Provincial offices and district offices.
- Hold technical workshop for Extension agents, researchers and subject matter specialists at HQ, at Provincial office, or research center.
- Provide regional task force for special item, for specific area or crop.

Q-73: What is the monitoring and supervision system?

Example answer

- Monitoring the extension activities is done by the HQ, province and district by step-by-step at every season.
- Extension agents are monitored by Township manager once per month; the Township manager is by the District manager once per month; the District manager is by the State/Province manager once per month.

Q-74: How does your government collect data and information from villages?

Example answer

During cropping season, it is done at once per week on progress of cultivation. The information is sent from Village, Township, District or Province to the HQ.

Q-75: According to the Report[1], the following NGOs are working in this area. In order to know more, please report their activities applying the table below. If more NGOs are working, pleases add these NGOs.

Several NGOs are extending support to the farmers in the Project area. Sarvodaya, SANASA, Self Bank, World Vision, etc. The Sarvodaya provides educational programs to the various groups such as farmers, women's, mother's and children's group. They are particularly aiming at community development through participation. They also help to establish organizations and register with the government so that they can involve in economic activities and obtaining loans. In the Left Bank area, there are around 300 members organized into three active societies formulate by the Sarvodaya. Approximately 60% of the members are granted with the group loans.

No.	Name of NGO	Main activities	Target provinces	Funding	Remark

2. EXTENSION SYSTEM, METHOD AND TECHNIQUE （普及システム・方法・手法）

We define the extension system, method and technique as follows. After understanding these definitions, please answer the following questions.

Extension system is a combination of extension methods forming a strategic entity.

Extension method is a way of doing something applied extension techniques to conduct a technical guidance for a specific objective.

Extension technique is a practical method applied to a particular task.

Q-76: What is MASL's extension system?

Example answer

Our system is T&V (Training and Visit) system. This system is a repeating system of training Extension agents and visiting farmers with two-week cycle (10 working days). Specific system is described as follows.

① An Extension agent attends a meeting at office for one day, attends a specific training for one day and visits farmers for the remaining eight days.

② The Extension agent makes a group with 10-15 farmers and selects one farmer as a contact farmer.

③ The Extension agent holds a regular weekly meeting with these contact farmers to make farming schedule and to give training or demonstration.

④ The Extension agent visits each contact farmer at once per two-weeks; on the other hand a Subject matter specialist (SMS) visits the village at twice per 4 weeks to inspect and evaluate the results of the Extension agent's work.

Q-77: What are jobs of Extension agents?

Example answer

① The Extension agents introduce new technologies to farmers and work together with farmers to improve technologies. In advance, the Extension agents verify the applicability of new technologies at a extension field; the field is a part of a farm provided by rent.

② The Extension agents provide guidance to new farmers.

③ The Extension agents conduct coordination activities to make and develop the locality in cooperation with agricultural cooperatives and city/town/village government offices. Consumer survey at cities

④ For environmental protection, the Extension agents provide technical guidance and training meetings for farmers to control application of fertilizers and chemicals.

⑤ For less application of chemicals, the Extension agents provide technical guidance and trading advices to farmers.

⑥ The Extension agents support family farm management by advising to make the management rule of individual family and to start new marketing.

Q-78: The following methods are available extension methods in Japan and other countries. Which methods do your country's Extension agents apply?

①Farmers' Field School

②Observation tour to advanced areas

③Provision of a demonstration farm: In order to exhibit the verified results in the trial activities, Extension agent(s) provides a demonstration farm or plot and hold meetings for the technical guidance.

Q-79: The following table shows available extension techniques in the U.S and Japan. Which techniques are applied by the Extension agents in your country?

No.	Classification	Name of techniques
1	Objective methods	Method demonstration
2		Result demonstration
3		Audiovisual materials -slides, and movies-
4		Posters and charts
5		Exhibits and contests
6	Oral methods	Farm and home visit
7		Telephone calls
8		Meetings
9		Short training courses
10		Radio
11	Written methods	Bulletins, leaflets and circulars
12		Correspondence and circular letters
13		Newspapers

Q-80: Please list up extension materials such as posters, leaflets and others available in your office/department. And please indicate the materials made in the Walawe Left Bank loan project.

Q-81: Who does make the extension materials?

Example answer

Department of Agricultural Service (DAS) provides all the materials and delvers to extension stations through provincial offices. Total 5000 copies are prepared at once for posters and leaflets. The DAS has a section called Communication section, which produces the materials. Photos are prepared by the section; drawings are made by professional illustrators by contract.

Q-82: How does the Ministry select a technology to be extended?

Example answer

There are five steps of selecting technology to be extended.

①. Research institute develops a technology and propose extension to Agricultural Extension Department (AED) in Ministry of Agriculture (MA).

②. The Department sends this technology to Provincial offices. The offices choose the test place (township, village area, contact farmers) and conduct verification study with farmers.

③. They report to the HQ after at least three years' verification tests.

④. The AED submits the proposal of the technology to the research conference that consists of DAR, MA and Provincial manager, according to the report from the Provincial offices.

⑤. AED reports it to the Minister. The Minister approves it in consultant with experienced advisers, Academy and related Ministries. Then the Minister allows publishing the technology.

Q-83: What are problems faced by the Extension agents?

3. IN-SERVICE TRAINING （普及員の強化研修）

Q-84: Please describe outline of the way of in-service training?

Example answer

The central extension training center (CETC) is only one institute for in-service training. Total 287 Extension agents were trained for production and extension technique last year, except one-day seminar. Major trained crops are same every year, but technology is different from year by year for technical improvement.

Q-85: Please show data of in-service trainings done for recent five years, applying the following

form.

Year	Classification of training contents	No.	Name of training course	Duration (days)	Number of participants
	Production technique				
	Extension technique				
	Others*				
	Total				
	Production technique				
	Extension technique				
	Others*				
	Total				

* Others include accounting, office management, etc.

Q-86: Does the training include topics to improve the extension attitude? If your answer is Yes, please describe the topic contents.

Example answer

Yes. We provide one topic called "Extension attitude" in which we teach to hear farmers' opinions carefully, to keep the training time and others.

Q-87: What are the methods of trainings?

Example answer

Methods are workshop, lecture and exercise at laboratories and demonstration plots.

Q-88: How does the training institute select the trainees?

Example answer

There are two criteria of the selection, i.e. not older than 45 years old and degree holders of Bachelor except accountant and administration. The Department manager

selects trainees with these criteria.

Q-89: What are problems faced on training Extension agents?

4. RESEARCH AND EXTENSION （研究と普及の関係）

Q-90: Please list up the research institutes that assist agricultural extension, applying the following form.

Form of listing research instututes

No.	Name of institute	Main crops/technologies	Location	No. of researchers

Q-91: Please describe the processes of determining new research topics of the major research institutes.

Example answer

Department of Agricultural Research (DAR): The next year research topics are topics from the last year and new topics. The new topics are suggested by researchers and Department managers (17 agricultural departments) of the Ministry. These topics are suggested in the Annual research meeting. The Annual research meeting is held, including all the researchers from 24 branch institutes of DAR. In addition, the meeting sometimes includes researchers from Vegetable Research Center and Central Agricultural Extension Training Center and extension side persons such as general manager, managing director and/or Provincial office department manager, and researchers from University. Everybody discuss and makes comments. If everybody agrees, the Director General of the Department of Planning decides to approve the research topics of the next year.

Q-92: What are processes of recommending new technology for extension?

Example answer

There are five steps of selecting technology to be extended.

①. Research institute develops a technology and propose extension to Agricultural Extension Department (AED) of the Agricultural Extension Department (AED) in the Ministry.

②. The Department sends this technology to Provincial offices. The offices choose the test place (township, village area, contact farmers) and conduct verification study with farmers.

③. They report to the HQ after at least three years' verification tests.

④. The AED submits the proposal of the technology to the research conference that consists of

DAR, AED and Department manager, according to the report from the Provincial offices.
⑤. AED reports it to the Minister. The Minister approves it in consultant with experienced advisers, Academy and related Ministries. Then the Minister allows publishing the technology.

Q-93: What are relationship between research institutes and Extension agents?

Example answer
The institutes provide new technologies for extension, organize in-service training courses for Extension agents and make consultation of technical difficulty faced by the Extension agents.

5. MARKETING

Q-94 The Report describe the market in the project area as follows. If correction, modification and/or addition are necessary, please describe them.

(1) Marketing Place in the Project area

Local market called "Pola" is the typical marketing place in the Project area.

There are sixteen Polas in and around the Project area; eight in Chandrikawewa block, two in Marawasihena, two in Angunakolapelessa and nearby. In the Left bank, three are in Suriyawewa block and one is in Kiriibanwewa. Figure 3.5.6.1 shows locations of the sixteen Polas.

The following table shows the features of the existing Polas in and around the Project area.

Existing Polas in and around the Project Area

	Name of Pola	Block	Type		Operating Organ	Operation Day	
						Retail	W/sale
1	Uda Walawe (Town area)	Embilipitiya	Retail		Pradeshiya Saba	Wed & Sat	
2	Galwunguwa	Embilipitiya	Retail	W/Sale	Pradeshiya Saba	Sat	Sat
3	Embilipitiya (New town)	Embilipitiya	Retail	W/Sale	Pradeshiya Saba	Wed & Sun	Tue
4	Canal-8(Morokatiya)	Embilipitiya		W/Sale	Canal-8 FO		Mon&Sun
5	Danduma	Embilipitiya		W/Sale	Pradeshhiya Saba	Tue	Tue
6	Kethsirigama	Embilipitiya		W/sale	Pradeshiya Saba		Mon
7	Tunkama	Chandrikawewa	Retail	W/Sale	Pradeshiya Saba	Fri	Thu
8	Padalangala	Chandrikawewa	Retail	W/Sale	Pradeshiya Saba	Tue	Tue
9	Barawkumbuka	Murawesihena	Retail	W/Sale	Pradeshiya Saba	Sun	Tue&Sat
10	Mamadala	Murawesihena	Retail		Pradeshiya Saba	Sat&Wed	
11	Angunakolapallessa (Town	Angunakolapallessa	Retail	W/Sale	Pradeshiya Saba	Wed&Sun	Wed&Sun
12	Ranna	Angunakolapallessa(out si	Retail	W/Sale	Pradeshiya Saba	Tue&Fri	Tue&Fri
13	Kiri ibbanwewa	Kiri ibbanwewa	Retail	W/Sale	Pradeshiya Saba	Sun	Sun
14	Mahagama	Suriyawewa	Retail	W/Sale	Pradeshiya Saba	Tue	Mon
15	Hatporuwa	Suriyawewa	Retail	W/Sale	Hatporuwa FO	Tue	Mon
16	Suriyawewa (Town)	Suriyawewa	Retail	W/Sale	Pradeshiya Saba	Sat	Fri

The Pola is generally an open space without any market facilities, such as flooring, roofed stall, water supply system, and latrine. In addition to these, roads, communication facilities, lighting, and parking spaces are poor in the existing Polas.

The existing Polas are classified into two types, wholesale and retail. Normally wholesale is held very early in the morning from five to six o'clock. Retails sales take place later. Pola is normally held by Pradeshiya Saba (the local government). There are two Polas managed by farmers' organizations for Banana wholesale. Polas operated by Pradeshiya Saba collects an entry fee from sellers and lorries. Farmers who bring and sell their products pay 5% of gross sales and lorry owners pay Rs. 60 to Rs. 70 per lorry. While, Polas managed by FO are generally free markets. In the Pola at Hathporuwa, one of the FO manages it with farmers paying Rs. 10 to Rs.15 per sale as donation for maintenance of Pola. The members of Banana producers association pay Rs.

25 every month for maintaining the Pola at Canal 8 (Molaketiya).

(2) Marketing system

Pola manager, trader, collector, and rice miller are the major stakeholders for agriculture commodities marketing. Buyers join the Pola marketing from various places as Colombo, southern cities as Matara, Galle, and Hambantota, upcountry as Nuwara Eliya, and the Eastern cities as Monenagala and Ampara. The largest number of trader comes from the central market of Colombo. Then the huge quantity of Banana and Papaya is brought to the capital city by the traders. Local collectors, shoppers, and farmers also bring the commodities to the markets in Colombo and in its suburbs.

Banana, vegetable, fruits, condiment crop and tuber crops are treated in the Polas. Pulses and other course grains such as Maize, Kurakkan (finger millet), Sesame are sold to local traders in the town area. Then, the local traders sell the agricultural products to middlemen who bring the products to larger markets. Paddy is mainly sold to local rice millers and local traders then they bring the milled rice to the larger markets. Public marketing organization as SANASA and CWE seasonally buy agricultural commodities in the Uda Walawe area and bring them to their own markets.

Price of OFC in Pola is basically decided through direct negotiation between farmer and buyer individually. Trader and collector offer the price to the farmers on the basis of the daily market prices obtained from the staff in their own markets.

6. FARM MANAGEMENT

Q-95 The Report[1] indicated the following constraints on farm management before the Walawe Left Bank loan project. Have all the constraints been solved? If not, please describe the remaining constraints and the reasons.

4.1.4 Present Constraints on Farm Management

The main constraint of this sector is "insufficient extent of OFC cultivation" in the project area. Since the sectorial target is to increase the OFC area in the project, the constraints are to be defined as obstacles to expansion of OFC area as well as those

(3) Constraints on Marketing

a) Market places as Polas may be sufficient in the Right Bank with the Pola density of 1/600 ha on average. In the Left Bank, there are still four Polas and the density of Pola is less than 1/1,000 ha. As the construction works for the Phase 1 project proceed, the Polas are to be established in the Phase 1 area; Kiriibanwewa and Suriyawewa blocks.

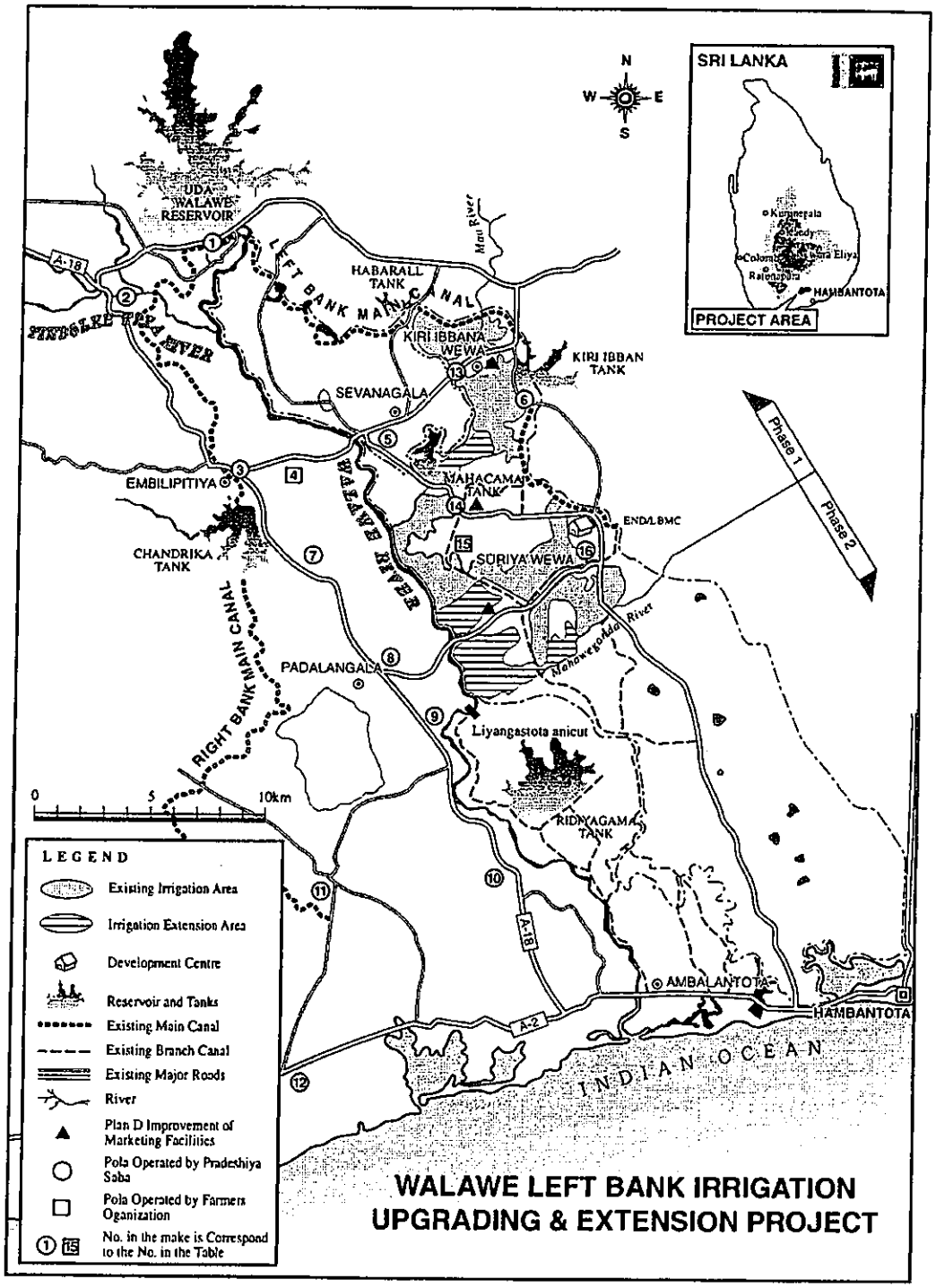
b) The present Polas are held as the open space markets without any market facilities. As mentioned in the previous subsection, the market facilities such as floor, roof, water supply facilities, latrine, lighting facilities, and communication facilities like telephone are required for keeping quality

of agricultural products and smooth activities for trading and marketing. In addition to these, the poor condition of roads connecting the Polas and the trunk roads are to be improved for smooth transportation of the agricultural products.

c) The agricultural produets (OFCs) traded at the Polas in the Project area may not be the highest quality in the country. The prices of products having close relation with the quality is still low level in the Project area. Improvement of the marketability of the agricultural commodities through quality improvement of the products is required for keeping competitiveness against the rival products in other domestic production area.

d) Lack of awareness of farmers and MASL staff for extension services on marketing of agricultural commodities and marketing system is the constraint in managing OFC production as well as introducing new OFCs in the Project area. No awareness on the marketing may lead to no measures against the unstable prices of OFC commodities. The institutional support for providing the required information on the marketing and trading is necessary.

Figure 3.5.3.1 Location of Existing OFC Market (Pola) in Uda Walawe Area



3．質問票　回答（農民組織）

Walaw Q-1　MIWRM からの回答

I. QUESTIONNAIRES TO MINISTRY OF AGRICULTURAL DEVELOPMENT AGRARIAN SERVICES

1. Background 要請背景

Socioeconomic Conditions 当該国の社会経済情勢

Q-1: We cited the following information[2]. Please confirm the contents and update if necessary.

Sri Lanka's economy was largely based on agriculture during the early 1950's and 1960's. Agriculture contributed between 60 and 70 percent to the GDP (from Central Bank Reports for various years) with agricultural export comprising mainly plantation crops such as Tea, Rubber,Coconut and Spices, accounting for over 70 percent of the income generated by agricultural sector. Much of the labor force (over 60 percent) was employed in the agriculture sector. More importantly, the bulk of foreign exchange earnings (over 70 percent) were earned from agricultural export. With very little industrial development, almost all consumption goods and more than 60 percent of domestic rice requirement were met with imports. Thus, the economy was largely trade dependent, with a highly productive plantation in the hands of large foreign companies co-existing with an inefficient local group that is based on irrigated and rainfed rice cultivation and underutilized labor force, providing only subsistence level income to farmers.

During the 1970's and 1980's, the contribution of the agriculture sector to GDP declined steadily, while that of other sectors increased. In the last three decades, the economy has undergone further transformation from agriculture to a predominantly services based economy, with a slight increase in the level of industrialization. The contribution made to the GDP by agriculture declined from 30 percent to 12 percent over the last three decades. The share of the industrial sector grew up to 28 percent, while that of the service sector increased from 44 to 59 percent. Although the labor force in the agriculture sector declined marginally, this sector still retained the bulk of the labor force. Over the last three decades a phenomenal increase in foreign employment has also been witnessed, particularly in the Middle Eastern countries, thus the high level of under employment observed in the rural sector has been somewhat eased.

In 1990, agricultural exports made up 36 percent of total exports, industrial exports accounted for 53 percent. In the year 2009, the value of industrial exports has increased to 75 percent of the total compared to 24 percent for agricultural exports. The highest amount of foreign exchange earnings is from private transfers (USD 3,330 million) from foreign employment, followed by earnings from.the export of garments and textiles (USD 3,274 million). Agricultural exports, which provided the largest source of foreign exchange prior to the 1970's, accounts for 23.9 percent of total export earnings, with tea exports providing 16.7 percent. Thus, we can observe a gradual decline in importance of the role of the agricultural export sector in the Sri Lankan economy. At the same time, industrial exports, particularly garments and private transfers from foreign employment have substantially increased their contribution to the economy. The domestic agricultural sector, comprising paddy and other crops, has slightly increased its share in GDP over the last three decades. However, incomes from paddy farming have remained stagnant or have declined in real terms. Contribution to the GDP of other crops has also increased marginally, and farming of other crops generates incomes higher than farming of paddy.

Sri Lanka recorded an economic growth rate of well above 6%. In 2009, although there was a negative impact of the intensified conflict in the North as well as the fallout of global financial crisis, the economy exhibited its resilience by achieving a growth of 3.5%. Its Gross Domestic Product (GDP) per capita has notably increased from US$914 in 2000 to US$2,053 in 2009. As a result of such a robust growth, Sri Lanka has come to receive recognition from IMF as a middle income country.

Q-2: We cited the following information on poverty[2]. Please confirm the contents and update if necessary.

Still being on arguments, the poverty or poor is expressed as lack of access to basic human needs, including food, safe drinking water sanitation facilities, health, shelter, education etc. The poverty line specifies the minimum standard of living condition in the society to which everybody should be entitled. A person is identified as poor if he or she cannot enjoy this minimum condition. Thus the poverty line is the threshold line that identifies who the poor are, is the starting point of poverty analysis (DCS, 2009).

Sri Lanka used several poverty lines made on different surveyed data using diverse approaches until her acceptance of the poverty line established on the Household Income and Expenditure Survey (HIES) 2002 data by the Department of Census and Statistics (DCS) as the Official Poverty Line (OPL) for Sri Lanka in June 2004. The OPL is an absolute poverty line which is fixed at a specific welfare level to compare over time with household food and non-food consumption and expenditure data hence call consumption poverty line as well and the Cost of Basic Needs (CBN) approach was used to determine its value. The surveyed household consumption expenditure values used to determine the OPL and compare with the OPL are standardized using Laspires price indexes caluculated for each district using local unit prices of items most preferred (food basket) by households in survey periods. Therefore the value of the OPL is a real value which is free from effects of commodity price difference over districts.
The year 2002 value of the OPL which was Rs. 1423 real total expenditure per person per month is updated for the inflation of prices through Colombo Consumer Price Index (CCPI) calculated monthly by the DCS. According to price index values 3176 in 2002 and 4983 in 2006/07 as reported by CCPI the value of the OPL for 2006/07 is Rs. 2233 real total expenditure per person per month. (DCS, 2008)

Poverty Head Count Index is commonly used to measure poverty incidence in Sri Lanka. The proportion of poor population to total population is defined as Head Count Index (HCI) and it is generally represented a percentage. According to the survey results, it is revealed that the poverty in terms of urban sector is the lowest (6.7 percent) and estate sector is the highest (32.0 percent) while in rural sector it records 15.7 percent. In Sri Lanka the biggest contribution (82 percent) comes from rural sector, reflecting its highest population share. Thus the highest number of poor persons is recorded from rural sector (2303 thousands). Although poverty in estate sector is the highest among all three sectors in Sri Lanka, out of a total of 2805 thousands poor persons in Sri Lanka only 318 thousand persons (11.3 percent) are recorded as poor in the estate sector.

The national poverty head count for Sri Lanka, which declined from 26.1 percent in 1990/91 to 15.2 percent in 2006/07. But the gap in poverty incidence between sectors widened from 1990/91 to 2006/07. Urban and rural poverty declined by 59 percent and 47 percent respectively, while the inverse trend shows in estate sector, which increased by about 56 percent over the last 15 years.
(DCS, 2009)

Poverty levels are particularly high among landless laborers, and among casual laborers employed in agriculture, mining, construction and the informal sector. Greater vulnerability and insecurity of the poor and those clustered above the poverty line, may be due to poor targeting of poverty alleviation programs, large increases in temporary and casual employment, and insufficient attention to risk management in agriculture.

There is evidence to suggest that high agricultural growth can reduce poverty significantly, since a large proportion of the population lives in rural areas. The highest incidence of poverty was recorded (2006/07 data) among households deriving their income from agriculture. Another factor that may be contributing to the high level of poverty in rural areas is lack of or inadequacy of infrastructure facilities. For example electricity reaches only 54.1 percent of the rural poor households, rural-urban road linkages are weak, transport facilities are poor and road networks are not maintained and of poor quality. Distortions in land and labor markets have reduced mobility, and created a large number of low quality, casual and temporary employment contributing to the perpetuation of poverty.

A World Bank Report (1990), which analyzed the links between poverty and unemployment in Sri Lanka, suggests that, there is no conclusive evidence of poverty being related to unemployment, although many believe that unemployment may be a major cause of poverty. Such views have been reinforced by nutrition studies carried out in 1987, which showed that over 25 percent of pre-school children were malnourished and 20 percent of all babies delivered were of low birth weight due to maternal malnutrition. Most of the poor are found in households with a large number of dependents, with a high share of children and pregnant mothers among the poor. The World Bank report argues that unemployment may not be the main cause of poverty since as much as 75 percent of the unemployed came from non-poor households and less than ten percent of the poor were unemployed. The report further states that half of the unemployed are well-educated women, who are being supported by their parents while awaiting high-paying jobs in the formal sector. A subsequent World Bank study on poverty (Recapturing Missed Opportunities, 2000) has not dealt specifically with the relationship between poverty and unemployment, but suggests that poverty levels are high among casually employed persons in agriculture, mining, and construction sectors. The report also indicates that there is evidence to suggest that fluctuation in economic performance leads to large increases in poverty.

Sri Lanka has been committed to a well-established social welfare program, providing free health and educational services, since the early 1900s. Public expenditures in health and education grew to 6 percent of the GDP in 1948-52 and remained at this level up to the 1970s (World Bank, 1990). As a result of improved health care and education, mortality rates declined rapidly and population increased at rates close to 3 percent, resulting in a large population increase in the 1950s. However, improved education and other social welfare programs began to have an opposite impact on population growth rates, which started to decline by the early 1980s and has been declining ever since.

Apart from education and health services, the Government introduced a food subsidy program to reduce the impacts of World War II. This program, which was initiated in the 1940s and continued up to 1977,

provided a fixed amount of rice and wheat flour at a subsidized price to all households in Sri Lanka (World Bank 1990).

With the opening up of the economy in 1977, an attempt was made by the government to target food subsidy programs to the actual poor and needy population. In 1978, the food subsidy program was restructured and redirected to the poorest of the population. Consequently, food subsidies were issued only to households with a monthly income of Rs 300 or less for five or more persons. The number of people receiving food subsidies was halved as a result. Toward the end of 1979, food subsidies in the form of a rationed quantity of food was eliminated and replaced by a food stamp program (FSP), for those earning below Rs 300 per month. An evaluation of the FSP showed that only 38 percent of the total food stamp payments reached the intended poorest 20 percent of the population (World Bank, 1990). The remainder of the subsidy went to higher income groups. Since 1991, the FSS was gradually scaled down; it was replaced by the Janasaviya Programme wherever the former was implemented. With the nationwide introduction of Samurdhi in 1994, the FSS was fully abandoned (JICA, 2010).

The opening up of the economy provided an impetus to growth, and the economy grew at 6 percent per annum during the five-year period of 1978-82. However, growth slowed down to around 3 percent over the next seven-year period. Further structural reforms in the economy were needed to accelerate growth. An economic reform program was instituted in 1989, whereby adjustment measures were introduced in order to institute a sustainable macroeconomic framework to accelerate growth, provide an enabling environment for private sector investment and employment. In the long-run, these reforms would facilitate greater participation of the poor in the economy and overall growth process, expand access to resources for economic activity and self employment, eliminate the biases against labor intensive enterprises and reduce unemployment. Some of the reform measures introduced, such as the removal of subsidies, restoration of macroeconomic imbalances, and exchange rate readjustment, would adversely affect the poor in the short-run. It was estimated that the overall consumption levels of the poorest 20 percent of the population would fall by 20 percent or more by the removal of subsidies on wheat flour, rice, bus fares, and sugar, and the devaluation of the rupee (World Bank, 1990). To address this problem, the government decided to set aside 3.0-3.5 percent of the GDP every year for programs to increase the living standards of the poorest 20 percent of the population.

The food subsidy program provided free or subsidized food to all households, but the first real attempt at poverty alleviation was the Janasaviya Program (JP) initiated by the Government in 1989. The program intended to transfer Rs 2500 per month to each poor household for a period of two years. In addition, JP included components for credit based entrepreneurial development, and free midday meals, uniforms, and textbooks for school children. An evaluation of the Janasaviya Program (World Bank, 1990) identified its many shortcomings. In addition to the program being too costly to be sustainable, the selection criteria were not defined precisely and the benefits not related to incomes, leading to inequities and the inclusion of non-poor within the program. The benefits were high compared to prevailing income levels, leading to disincentives to work. Poverty, being a long-term problem, cannot be resolved within the two-year limitation of the JP. There was no provision for the inclusion of families falling into poverty after the selection process was completed.

In addition to the JP, another program, the Mid Day Meal Program (MDMP) targeted towards children was started in 1989. A total of US$ 50 million was spent annually in providing one meal a day to all children in primary and secondary schools under the Mid-Day Meal Program. This program failed because it was too costly to sustain and did not reach the group, which was nutritionally most at risk, i.e. the pre-school children. The Janasaviya Program was scrapped, after the formation of the new Government in 1994.

After the scrapping of the JP, a more ambitious poverty alleviation program, Samurdhi program, was put into operation by the new government in 1995. This program, which is basically an income transfer program, provides direct cash grants to more than 2 million poor families (55 percent of the population). In addition to cash grants, several other subsidiary activities were being implemented through this program to alleviate poverty. These included community and infrastructure development projects, savings programs, banking and credit programs, social insurance programs, training and entrepreneur programs, and self-employment schemes. About 80 percent of the funds allocated to the program were utilized for income transfers, intended to provide as a consumption supplement. In this case, the amount of transfer was related to the income of the household and ranged from Rs 100 to Rs 1000 per month per family, depending on the household size. The other components of the program were intended to expand the productive asset base of the poor and to create employment and income through community infrastructure development (S.Kelegama, 2001). Both the design and implementation of the Janasaviya and Samurdhi programs have been flawed and their effectiveness in creating opportunities or empowering the poor to overcome economic and social barriers minimized as a result (World Bank, 2000). The major reasons for their ineffectiveness according to the World Bank are:

(1) Political bias of administrators/mobilizers of poverty programs, with party affiliation and voting patterns influencing the allocation of income transfers, which made the poor vulnerable to changes in political climate;

(2) Both programs covered up to 50 percent of the population, or twice the actual percentage living in poverty. The transfers from the poverty programs reached only between 55-65 percent of those in the lowest income groups. Poor targeting resulted in thin spread of income transfers, diverting funds away from the most needy.

(3) Central control of poverty programs has hindered the development of communal social capital, and collaborative social relations, reducing the participation of the poor in development.

(4) The costly poverty programs (up to 1 percent of GDP) have not created sufficient opportunities for the poor. Large expenditures on poorly targeted transfers, lack of sustained rural works programs, long-term administrative costs of hiring poverty workers (over 30,000 workers in the Samudhri Program), and weak exit mechanisms are some of the issues that have to be addressed.

The government policy towards poverty eradication and rural development came under criticisms as the "civil war" escalated throughout the country since the mid 1980s. The major critique was that the war was an outcome of widespread poverty and exclusion of certain ethnic and marginal communities from the mainstream development efforts. Thus donor agencies that supported growth oriented programmes and projects for poverty and rural development began to influence the Government of Sri Lanka to reformulate their policy focusing on social justice, equity and regional disparities as core issues for continued increase

in the poverty levels among certain groups of the society. The Tamils in the North and East and Estate plantations, in particular, were considered as poor, vulnerable and excluded in the mainstream development programmes that were targeted for poor and rural communities. Thus donor agencies became key players in determining poverty and rural development and began to fund more on regional and pro-poor rural infrastructure development projects in the North and East after the ceasefire agreement in 2002. NEIAP, NEHRP and NECORD are some of the major projects that fall under this category. One of the key elements of these programmes was the "Participatory" nature of project planning and implementation.

Gamaneguma is the latest initiative by the Sri Lankan Government to improve the livelihood and infrastructure in rural areas. Gamaneguma meaning "Village Upliftment" is a central theme of the present President's Manifesto- Mahinda Chintana. This programme focuses on three aspects: Infrastructure development; Livelihood assistance and Moral and skill development of rural poor. At present this programme is implemented through the Divisional Secretary offices with the assistance of the Planning Department who have engaged in rural development activities in the past. Gamaneguma concept basically involves planning, decision making and implementation of rural development activities through a participatory approach with the poor. In each Grama Niladhari division, people are involved in problem identification and preparation of "Village Development Plan" (VDP). They prioritize activities implemented from the government decentralized budget. It has been observed in many rural areas, local roads leading to rural villages and isolated communities have been constructed and renovated under this programme. (JICA, 2010)

1.2 Description of Agriculture and Irrigation 対象セクター全体の状況

Q-3: We cited the following information[2]. Please confirm the contents and update if necessary.

Answer: The minor schemes are under the administration of the Department of Agrarian Development and Provincial Councils and operated by farmers

The management of a part of most major schemes is in the process of being transferred to the farmers (i.e. the whole system including the dam is not transferred).

The rest is confirmed subject to the above comments

About 30 percent of Sri Lanka's total land cover of 6.3 million ha (excluding area under inland waters) is under permanent cultivation and a further 16 percent under shifting or "Chena" cultivation. (Chena means slash and burn agriculture, where forests are cleared and cultivated for one to two years and then allowed to regenerate. The cycle, which usually lasted 10-15 years earlier, has been reduced to 3-5 years due to unavailability of land and due to restrictions on Chena cultivation and the reduction in forest cover.) Thus, about 3.0 million ha, or nearly 50 percent of Sri Lanka'a land surface is under some form of agricultural enterprise, of which 1.8 million ha is under permanent cultivation and 1.0 million ha under Chena cultivation. About a third of the area under permanent cultivation, or 0.6 million ha has been provided with irrigation facilities and is mainly cultivated with paddy. The total extent of land under paddy cultivation is estimated at 0.9 million ha, over 70 percent of which has irrigation facilities, while the rest is rainfed. Of the land with irrigation facilities two thirds, or 0.43 million ha, is under major irrigation schemes and the balance 0.23 million ha under minor irrigation schemes. The Mahaweli irrigation system provides

irrigation facilities to almost 0.1 million ha of land under major schemes. The three main plantation crops of Tea, Rubber, and Coconut and other minor export crops occupy 0.8 million ha of rainfed land, mainly in the wet zone of Sri Lanka. Other permanent highland or annual crops occupy 0.2 million ha. The rest of the land area comprises forest, grassland and non-agricultural land (buildings, homes, rock outcrop, etc.). Details of land use are given in the following table.

Table 1.2 Land Use in Sri Lanka

Land Use Category	Area in Million Ha	Percentage of Total	Area Irrigated in Million Ha
Total Area	6.57	100.00	
Inland waters	0.29	4.40	
Buildings, Nonagricultural land, and Homes	0.80	12.20	
Tea	0.18	2.70	0.00
Rubber	0.16	2.40	0.00
Coconut	0.44	6.70	0.00
Paddy	0.90	13.70	0.58
Chena lands	1.00	15.20	0.00
Other permanent /annual crops	0.20	3.00	0.02
Forest cover	2.10	32.00	
Grassland and shrub	0.50	7.60	

Sources: Statistical Abstract 2000, Census and Statistics Dept., Central Bank Reports, Mahaweli Authority Reports.

The bulk (97 percent) of irrigated land is cultivated with paddy, and the rest with other permanent and semi permanent crops or seasonal crops such as, chillies, onions, pulses, yams, groundnut, potato, maize and other grains, sugarcane, vegetables, coconut, papaya, banana, melon and other fruits. The rainfed area can be categorized into Chena lands and other permanent highlands or lowlands. Due to restrictions imposed on Chena cultivation, by legal and other means, the area under Chena cultivation has not increased in recent years. The existing Chena areas are now being re-used, with a shorter interval for recovery. It is likely that in the future, Chena lands will be converted to permanent rainfed farms. Other permanent highlands and lowlands under rainfed cropping can again, be classified into lands in the wet zone and lands in the dry zone. In the dry zone, permanent rainfed farming is restricted by seasonality of rainfall. A successful cultivation is possible only in the wet season. In the dry season, the rainfall is much less and is insufficient for a complete and successful cultivation, unless supplementary sources of water are available. Thus, rainfed farming in the dry zone is mostly restricted to seasonal crops in uplands and permanent crops, particularly fruit crops such as bananas, papaya, citrus, mango, pomegranate, coconut and timber trees. Permanent crops are usually grown in home gardens and rarely in highland plots outside of home gardens. Crops grown in home gardens do receive some supplementary irrigation from wells, or from adjacent streams and canals. Seasonal crops are also grown in home gardens as well as in highland plots outside of home gardens. But more often seasonal crops, including paddy, are grown during the rainy or Maha season in the highlands. If paddy is not cultivated in the dry or Yala5 season, due to lack of water, a few drought tolerant annual crops may be grown on paddy fields to make use of the left over moisture in the paddy fields, supplemented by whatever rain that may fall during this season.

Maha is the rainy cultivation season in Sri Lanka, which receives rainfall mainly from the North East

Monsoon and lasts from October to March (The monsoon proper is from December to February and the inter monsoonal period from March to April) 5 Yala season is the dry cultivation season, which receives rainfall mainly from the South West Monsoon and lasts from April to September. (The monsoon proper is from May to September and the inter monsoonal period from October to November)

In the wet zone, the rainfall pattern is bi-modal, with high intensity rainfall occurring during both the Maha and Yala seasons. Thus the climatic pattern is ideally suited for permanent or seasonal rainfed farming. This region has specialized in export oriented plantation agriculture, with the bulk of the area covered by the three major crops of Tea, Rubber and Coconut. Rice is grown in valley bottoms and on terraced fields in hilly slopes. Some paddy is irrigated using the run of the river irrigation systems, but much of the paddy is rainfed. Other crops grown in this region include vegetables, potatoes, fruit and spice crops, tobacco, timber and medicinal plants. Irrigated farming has been practiced for centuries in Sri Lanka and dates back more than two thousand years. The ancient kings, who had developed highly advanced irrigation technological skills, constructed large numbers of irrigation systems to cultivate rice. In fact, ancient Sri Lanka was once known as the rice bowl of Asia, and was famed for its exports of rice to many parts of the world. These irrigation systems usually consisted of a reservoir to store and regulate water, and a canal system to convey water for irrigation in both seasons. In some cases, the system comprised of a large reservoir that served as both storage and regulating facility connected via a well-developed canal system to many small reservoirs for the irrigation of fields commanded by these small reservoirs. Under this system, the large storage reservoir did not usually irrigate fields directly. The Yoda Wewa irrigation scheme in the North West coastal area of Mannar in the Northern Province is an example of such a system that is currently operational. Similarly, structures that have survived up to the present include very long canals (some more than 50 miles long), with gradients of one inch to a mile. It is noteworthy that such feats of irrigation engineering have not been emulated even with present day technology.

After thousands of years of use, around 12th Century BC, the highly developed hydraulic civilization started to disintegrate, many of these systems went into disrepair, and farmers abandoned these schemes and moved south. Several theories exist as to the reasons for the apparent decay of the hydraulic civilization that prevailed during this period. These include war between the local kings and invading forces from South India, loss of experienced water management personnel due to war, soil impoverishment, climatic change, famine and diseases such as Malaria, and attraction towards the wetter areas of the country.

Modern irrigation began in the last century during which period a large number of these ancient systems were restored by the British Colonial rulers, and are operational at present. Restoration of these ancient systems continued even after independence by the Government of Sri Lanka. A concerted effort was made to develop the water resources of the country, including the restoration of the ancient schemes, as well the construction of new ones. Major river basin development initiated in the 1950's and includes the Gal Oya, followed by Uda Walawe, Rajangane, and culminated in the Mahaweli program, which aimed to develop the largest river basin in Sri Lanka. One of the objectives of developing these irrigation systems was to resettle the population from the land scarce Wet Zone6 to the sparsely populated Dry Zone7 of the country. Irrigated area increased from about 200,000 ha in 1950 to about 400,000 ha in 1970, and 500,000 ha in 1990 to about 650,000 ha in the year 2000. Over eighty percent of the irrigated land lies in the Dry Zone.

As in ancient times the bulk of the irrigated area is cultivated with rice. A small proportion of the irrigated command areas are cultivated with high value crops such as chillies, onions, pulses, sugar cane, tobacco, fruits and vegetables. The irrigated area can be categorized by the size of the irrigation system into areas irrigated by major schemes and areas irrigated by minor schemes. All schemes with a command area of less than 80 hectares are considered to be minor schemes. It is estimated that the area currently irrigated by major schemes, including Mahaweli schemes, is over 400,000 ha and that by minor schemes over 200,000 ha. The minor schemes are under the administration of the Department of Agrarian Services and operated by farmers. Typically, minor schemes impound run-off from local catchments, using earth dams, to provide supplementary irrigation for a full Maha crop and restricted Yala cultivation. The Mahaweli Authority is responsible for 100,000 ha of irrigated lands under major schemes, while the Irrigation Department is responsible for the balance 300,000 ha, of
lands under major schemes. The Irrigation Department, further classifies the schemes under its control into medium schemes (command area between 80 ha and 400 ha) and major schemes (command area above 400 ha). The management of most major schemes is in the process of being transferred to the farmers. Major schemes provide sufficient water for a full Maha crop and a full or partial Yala crop. Average cropping intensity in major schemes is about 165 percent per annum and in the minor schemes, about 120 percent. The majority of the irrigation systems in the Wet Zone divert water from perennial streams or rivers using anicuts (weirs) for irrigation. Anicut schemes are also found in a few major

6The Wet Zone is classified as areas receiving more than 2500 mm of rainfall per annum at 75 percent expectancy of annual rainfall. The Wet Zone comprises the following districts: Colombo, Gampaha, Kalutara, Kandy, Nuwara-Eliya, Galle, Matara, Ratnapura and Kegalle (About 20% of the land area and 9 of the 25 districts fall within the Wet Zone) The Dry Zone is classified as areas receiving less than 2500 mm of rainfall per annum at 75 percent expectancy of annual rainfall. Within the Dry Zone is included the Intermediate Zone with mean annual rainfall between 1900-2500mm. The Dry Zone included the following districts, Jaffna, Mannar, Vavuniya, Mullaitivu, Batticaloa, Amparai, Trincomalee, Puttalam, Chilaw,
Anuradhapura, Polonnaruwa, Hambantota, Moneragala, Badulla, Matale and Kurunegala. Parts of the latter three districts fall within the Intermediate Zone. (About 80% of the land area and 16 of the 25 districts fall within the Dry Zone)

Government Strategies, Programs and Plans on Agriculture and Irrigation
当該国政府の戦略

Q-5: According to the Application form for Japan's Technical Cooperation (hereinafter referred to "the Application"), the National Development Program is explained in relation to the requested project as follows. We need more detailed information including target issues, proposed solutions and implementation schedules and others.

Answer: The following target issues and proposed interventions were extracted from Mahinda Chintana Ten Year Development Plan (2006-2016), Mahinda Chintana – A Brighter Future, and The National

Agriculture Policy.

Mahinda Chintana Ten Year Development Plan recognizes agriculture as the main source of livelihood of the rural population, and pledges the sector will be more efficient to increase the return to labor, which will also contribute to reducing rural poverty. The government is directed towards transforming traditional subsistence agriculture to one which maximizes productivity. The goals of agricultural policy are to achieve sustainable earnings, food security, and higher incomes for those dependent on this sector reduce the cost of living of the population as a whole, and provide adequate diet at an affordable price for the poor. The government places high priority on achieving a broad based shift from low-value to high-value agriculture, accompanied by sustained improvements in productivity and competitiveness, which will launch the agriculture sector into a significantly higher growth trajectory. The following policy measures and actions are proposed:

a. Productivity enhancement,
b. Facilitating marketing and related infrastructure
c. Technology dissemination
d. Participation of community based organizations for equity-based development
e. Minimizing environmental degradation
f. Transforming low-productive subsistence farming to high productive advanced agriculture
g. Increasing productivity, production and competitiveness of export based agricultural sectors
h. Increasing return to labor, land and other factors of production in agriculture sector which would directly contribute to rural poverty reduction
i. Enhancing agricultural productive efficiency through mechanization and technological transformation whereby agriculture labor could be released for off-farm employment as an improved livelihood strategy, and
j. developing market mechanisms and introducing favorable trade rules

In the field of irrigation, the target issues are as follows:

a. Low productivity in terms of yields, cropping intensity and water use efficiency
b. Poor or inefficient management of water for agricultural production
c. Inadequate or inefficient maintenance systems
d. Lack of modernization of irrigation technology

The following strategies and interventions are proposed:

a. Productivity can be increased through optimal input use including water, more balanced distribution of water, high yielding varieties, improved systems of water management, better operation and maintenance through farmer participation, and use of modern irrigation technology.

b. Essential to improve productivity is to stabilize and improve the marketability of the produce. This may involve upward linkages to input market and downward linkage to seller, storage and processing.

c. Currently the irrigation sector investments are overwhelmingly public. Farmer investment in pumps and tube wells is emerging as an area of substantial private sector input.

The above interventions are supported by the "Mahinda Chintana-A Brighter Future", the policy statement of 2010. In particular, regarding the water pollution and wastage, it states that Steps will be taken to eliminate the pollution of water resources and wastage".

The National Agriculture Policy (2007) provides the following policy guidance:

a. Encourage the use of efficient water management and moisture retention techniques to achieve high productivity in agriculture

b. Conserve the existing water resources for sustainable agricultural development

c. Promote participatory irrigation management in maintaining and improving irrigation and drainage systems

The National Agricultural Policy recommends environmental-friendly techniques in agriculture, enhancement of the incomes of farmers, applying low cost, good quality agricultural machinery, encouraging the use of efficient water management, and promoting participatory irrigation management.

The current project proposals will ensure the sustainability of newly developed irrigation system in Walawe LB, enhance agricultural production, reduce adverse effect to the environment, reduce consumption of petroleum based energy sources, and thereby contribute to poverty alleviation. Therefore, it will positively impact national development programme.

The Mahinda Chintana 10 year horizon development framework has recognized the importance of supporting the competitiveness of subsidiary food crops. Its agriculture food and nutrition security strategy plans increased involvement of local population in resource mobilization, maintenance and management in order to increase the incomes of farmers.

The Mahinda Chintana policy framework recommends promoting non-chemical agricultural practices. It recognizes the importance of removing the burden of increasing oil prices from poor people, and envisages promoting alternative forms of energy and providing remote areas with electricity.

The Agriculture Policy adopted by the Government aims to increase the productivity of land and water, promote mechanization to make agriculture more efficient and cost effective. Applying environment-friendly techniques in agriculture is one of the main objectives.

Institutional Framework for the Agricultural and Irrigation Development

In order to define the overall responsible organization of the Ministry of Agricultural Development and Agrarian Service (MADAS), we would like to know the MADAS with the following questions.

Q-6: Please provide a copy of legal documents that stipulate the organizational mandates of MADAS and functions of its Departments including the Mahaweli Authority.
Answer: Since the change to the Cabinet of Ministers in April 2010, the subject matter under the proposal will come under the new Ministry of Irrigation and Water Resources Management. A copy of the gazette is attached.

Q-7: Please provide a copy of the organizational chart with indication of the number of staff in each division, section, unit and/or outstation.
Answer: Proposed Ministry organization structure is attached.
Q-8: Does MADAS have any local units such as extension posts or field research stations in the rural areas? ( ) Yes (X) No
If yes, please indicate the locations, names, functions and staffing of such facilities.

Q-9: Please provide a copy of the latest operational and financial plans of MADAS which indicate, if available, both the regular and special activities of each Department with their implementation schedules, total budget and its breakdown, and so forth.
Answer: The new Ministry financial plan is being prepared.

Q-10: What are the mechanisms of coordination among the different Departments of the Ministry? Please describe the way how intra-departmental coordination is made among different Departments and their affiliated institutions such as research stations, training institutions and so forth.
Answer: The different departments are coordinated at the Secretary level. The coordination mechanisms

include staff meetings and meeting of the Institutional Heads. In the case of Projects, Steering Committee and Progress Review Meeting are the coordination mechanisms.

Prior and On-going Projects and Assistances

過去・現在行われている政府その他団体の対象分野関連事業

Q-11: According to the Application, the following donor assistance projects are reported as the related activities. If the government domestic projects are implemented or additional information of donor assistance projects are available, please add these projects.

10. Related Activities

Donor	Related field	Project title	Amount (USD)	Year
JBIC	Irrigation rehabilitation and improvement	Uda Walawe Left Bank Development Phase II (SL-P48)	Yen 9393 million	2000-2008
World Bank	Rehabilitation and improvement	Dam Safety and Water Resources Planning Project	US$ 72 million	2008-2012
JICA	Irrigation	Increasing the Capacity of Integrated Management in Irrigated Agriculture in Dry Zone Project	Yen 350 million	2007-2010
JICA	Fertilizer	Promotion of Integrated Plant Nutrition Practice among Famers for Sustainable Improvement of Crop Productivity and Alleviation Poverty	Yen 14 Million	2006 - 2008

2. Problems to be Addressed, the Current Situation

Problems to be Addressed

Q-12: According to the Application shown below, the addressed problems for the loan aid project area titled Walawe Left Bank Irrigation Upgrading & Extension Project (hereinafter referred to "the Walawe Left Bank loan project") are followings. Are these problems correct for your requests? If your answer is "No" please correct them.

Answer: Yes

① Lack of institutional mechanism to ensure efficient water management and maintenance of infrastructure

② Lack of training both officers and farmers in irrigation management by farmer organizations under introduction of other field crops and comparatively more sophisticated infrastructure

③ Lack of considering environmental factors in water management procedures and using non-fuel-dependent agricultural machinery

④ Not well functioning logical arrangements to ensure profit margin of other field crops

Description in the Application

The specific problem to be addressed is the lack of an institutional mechanism to ensure good water management and maintenance of infrastructure which ensures the physical and environmental sustainability of the Uda Walawe Left Bank Irrigation Upgrading & Extension (WLBP) Project.

The farmer organizations, especially which are newly organized in the extended area, will face new challenges in the management due to the introduction of OFCs and comparatively more sophisticated infrastructure. Similar challenges will be faced by the officers concerned with irrigation management. As such, there is a need for training both the officers and farmers in irrigation management.

Apart from the above-mentioned issues having a direct impact on the management of infrastructure, environmental sustainability of project operations and the income of the farmers have a secondary impact on the project interventions. The downstream of project area contains some environmentally sensitive wetlands, and excessive drainage flow may adversely impact them. Therefore, it is important that water management procedures take the environmental factors also into consideration.

In addition, the potential for using agricultural machinery that are not fuel-dependent, needs to be investigated. This will support environmental sustainability as well as reduce the production cost.

The project actively promoted the cultivation of OFCs. The OFC cultivation is more capital intensive. Though the profit margin of such crops is higher than that of paddy, the processing and marketing such products is essential to maintain the increased incomes. If the necessary logistical arrangements are not functioning well, there is a danger of farmers converting to comparatively less risky paddy cultivation. Therefore, the institutional mechanism could address shortcomings in this field, while the focus remains on irrigation water management.

Institutional Framework for the the Walawe Left Bank loan project

Q-13: We understand that the Walawe Left Bank loan project is one of the Mahaweli Development Projects and it is under Mahaweli Authority of Sri Lanka (MASL). Since the major facilities are in operation, the Mahaweli is now in a process of promoting integrated water resource management. Are our understandings correct?

Answer: Yes, MASL is in the process of promoting integrated water resource management. But, in parallel, some major facilities such as Moragahakanda Kaluganga Projects are being implemented.

Q-14: According to a paper[3] on MASL, the mission, vision and activities on integrated water resources management are as follows. If you have some more information, please describe them.

Answer: The vision is:

"Harnessed rivers, well managed basins moved from agrarian to prosperous society and promoted economic development"

The Mission is:

"Improvement of human life in Mahaweli impacted areas and assigned areas".

Generally in agreement with the goals. However, it may be noted that a National Water Resources Policy is not implemented yet.

Mission and vision

The Vision for MASL for the period 2003 – 2025 is : "A Prosperous Society and Healthy Eco-systems in the Mahaweli Region", while the Mission is to ensure sustainable and productive use of water and other natural resources in the Mahaweli region through management, planning and development with stakeholder participation. Four goals have been identified to achieve the Mission and the Vision. They are as follows:

1) Water and other natural resources in the Mahaweli region which are harnessed and utilized for social and economic development needs following co-ordination and collaborative mechanisms,
2) Water and other natural resources in the Mahaweli region are conserved and protected for the current and future generation, fauna and flora,
3) Water and other natural resources related infrastructure are managed efficiently, cost effectively and productively with minimum adverse environmental and health impacts, and
4) Above three strategic goals are achieved through the efficient and effective functioning of the MASL in line with the National Water Resources Policy and other related national policies.

Activities on integrated water resources management

MASL is now in a process of promoting integrated water resources management within the basins to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems. Integration implies a concern with upstream-downstream relations, including land use (zoning, soil protection, and erosion control, waste management controls etc), coastal zone management, a unified management of surface and groundwater, a shift to management at a catchment or river basin level and harmonizing water management with other sectoral policies with a collateral impacts. The policy of IWRM also takes into consideration the linkages among water and health, water and poverty, water and environment etc.

II.　QUESTIONNAIRES TO MAHAWELI AUTHORITY OF SRI LANKA (MASL)

In order to understand the institutional framework on the loan aid project area titled Walawe Left Bank Irrigation Upgrading & Extension Project (hereinafter referred to "the Walawe Left Bank loan project") and the activities done in the loan, we prepared the following questions. Most of the questions are for confirming the planned activities shown in the report[1] by the SAPI Team for JBIC (hereinafter referred to "the Report").

1.　Hardware and Software of the Walawe Left Bank loan project.

1.1 Hardware

Q-15: The feature of the project is summarized below.

Left Bank Irrigation Area (Extention Area)

Description	Unit	Sub Phase I & II	Sub Phase III	Total
Commanding Area	ha	3580	1572	5152
Main canal	km	15	4	19
Branch canals	km	11	12.1	23.1
Distributory canals	km	69	33	102
Field canals	km	239	111	350
High tanks	Nos	28	16	44
Low tanks	Nos	10	9	19
Main & lateral drainages	km	72	38	110
Market roads	km	29	17	46
Buildings	Centres	7	3	10

1.2 Water Delivery

Q-16: The Report proposed the modified irrigation method as shown in the next page. Is this method applied?

Answer: Generally the irrigation method shown is applied except slight modifications. In the phase I of the Walawe Left Bank Project, 6 inch diameter pipes were introduced for the first time in Walawe area to introduce on-off rotation but it needed lot of efforts to make the farmers used to the new system and faced great difficulty in that exercise as the u-shaped concrete canal sections restricted the flow of the distributary canals. However in the Phase II of the project, 4 inch diameter pipes were introduced for continuous operation with trapezoidal concrete lined sections, which had more flexibility in canal operations and more acceptable to farmers as no rotation was involves.

Q-17: If the proposed method is not applied, what are reasons of no-apply?
Answer: As explained above.

Q-18: The following constraints are reported. Are these still apparent?

Answer: Constraints have been almost avoided by the introduction of a computer software under Walwe Left Bank Project (Phase II), for water management in the main system and establishing a Flow Monitoring Unit at the project head quarters, attached to the technical services division,

2. Institutional/Organizational Framework
2.1 Institutional Framework of MASL
Q-19: The Report describes the MASL organization and re-structuring program as follows. If please describe the present organizational status.

Answer: The organization structure that was introduced after restructuring continued to operate until the recent past, where three executive directors were present as described herein. After recently proposed organization structure which has been referred to the salaries and cadre commission and is being reviewed by them, comprises only two Executive Directors namely, ED(Engineering & Technical) and ED(Economic Development) operating under the directions of the Director General of MASL. There are no major changes proposed in down the ladder than that prevailed after restructuring in 1997 - 2000.
Q-20: The Report describes the budgetary situation of 2000 as follows. Please describe the present budgetary situation.
Answer: Present budgetary status is given in the table below.

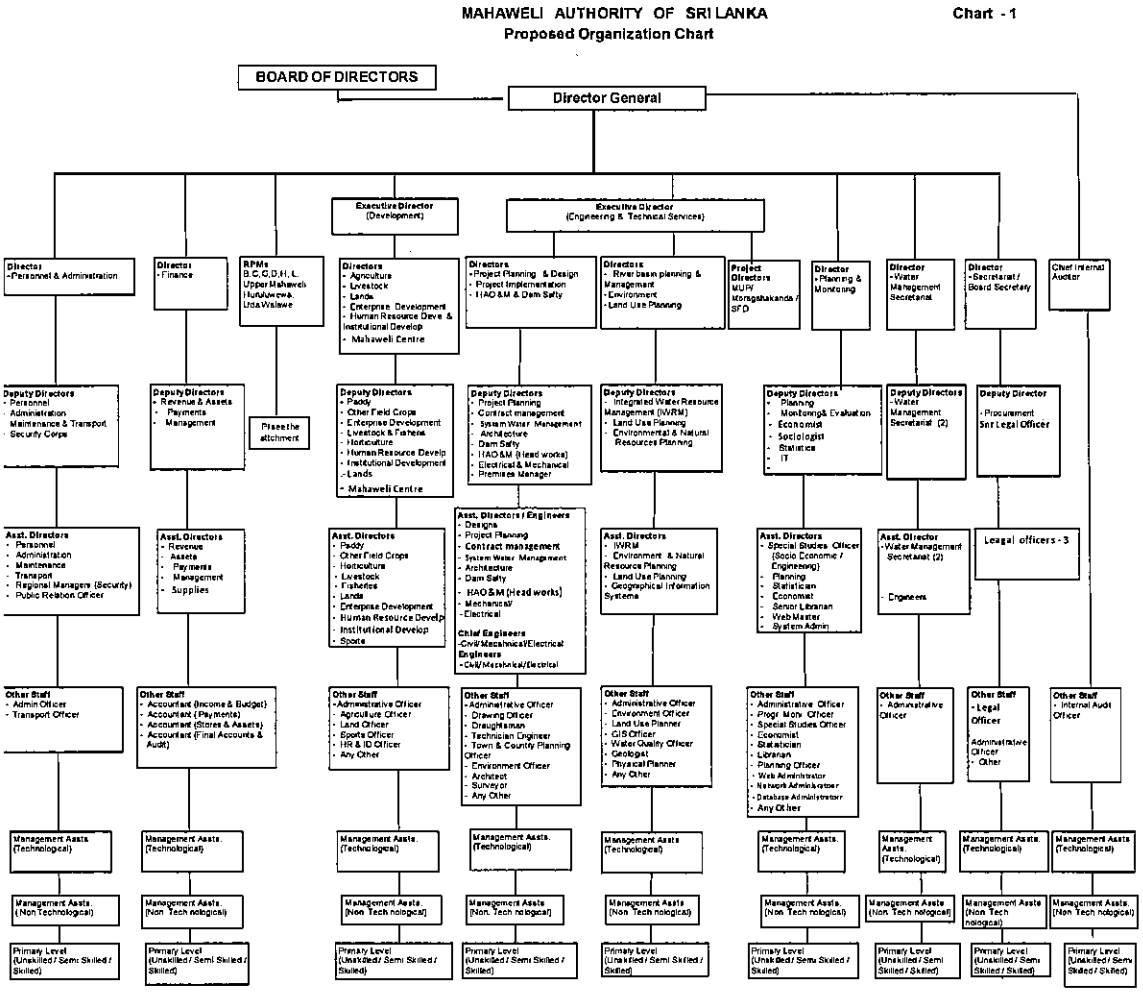
Recurrent Budget of MASL (Rs. Millions)

Expenditure	1997	2007	2008	2009	2009/1997(%)	1997-2009
Net salary.	580.2	1426.2	1564.6	1654.0	285.1	(1073.8)
Other Emulations.	195.8	26.9	22.4	24.5	12.5	171.3
Other Recurrent.	360.7	112.6	138.8	139.6	38.7	221.1
Total Recurrent.	1136.7	1565.7	1725.8	1818.3	159.9	(681.6)
Total Capital	1798.0	4815.0	5271.5	4016.6	223.4	(2218.6)

Note: MASL Staff as of March 2010 – (Permanent-4644, Trainees-156)

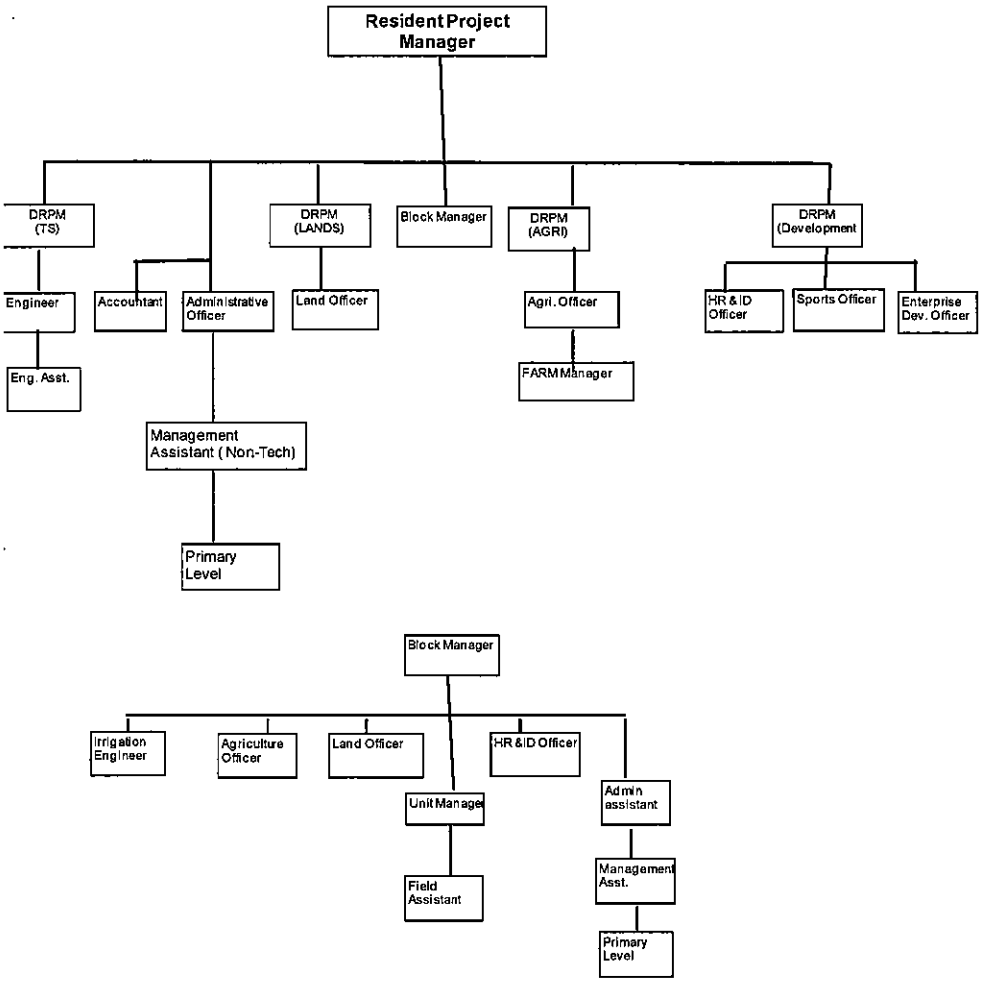
Q-21: The Report describes the organization chart as shown in the next page. If any modification has been done, please give us the new chart.
Answer: See annexed new organization chart (Chart-1).

Fig. 2.1 Organization chart of MASL



MAHAWELI AUTHORITY OF SRI LANKA Chart - 2

Proposed Organization Chart - Resident Project Manager's Office



Q-22: The Figure does not describe the field office such as RPM office. Please give us the comprehensive organization chart including the field offices.
Answer: Please see annexed Organization Chart. (Chart-2 above)

Q-23: The Report proposed providing the BM office. Is this realized?
Answer: OFC development officer's structure has not been established.

2.2 Training System of MASL staff.

Four kind of Training Programme were conducted by Mahaweli Authority of Sri Lanka. Conducting thouse programmes are responsible for Human Resource & Institutional Development Unit. (HRID)

01. In House Training Programme
02. Outside Training Programme (Collaboration with other Government and Private Sector

    Training Institutions)
03. Local scholarship programme (certificate courses, Diploma & Master's Degree Programme.
04. Foreign Training Programme.

HIDU has responsible for develop knowledge, attitude and skills in settler farmers, second generation and MASL Staff members.

Our Vision

Mahaweli Resources optimally utilized for sustainable development for Sri Lanka.

Our Mission

Quality of life of empowered inhabitants in Mahaweli settlements enhanced and sustained.

Objectives

Human Resource Development interventions among MASL Bureaucracy effect paradigm shift in their role form authoritative administrators to facilitators of service delivery and change.

Targeted HRD interventions among MASL settlers (men, women and youth) empower them economically, socially, culturally and politically.

HRD interventions among MASL Farmer Organization effect paradigm shift of farmer organization from dependent welfare mode to independent, commercial mode capable of meeting impact of globalization.

Q - 24 Please give us copies of the documents explaining the staff training plan or programme of MASL.

After the training need analysis preparation 2010 Training Plan following main activities. (Please refer annexe-1)

- Awareness Programme
- Capacity Building
- Skill Development
- Institutional Development
- Microfinance
- Women Development
- Vocational Training
- Agricultural Development
- 2010 Detailed Training Plan are enclosed **Annexure 01.**

Q-25. Please provide copies of the annual reports of the training program that explains the staffing, training courses offered, accomplishment, budget and expenditures, status of facility and equipment, and so forth.

Annual Training Reports are not prepared separately. Details given in a part of the MASL Annual Report.

The Training facilities are available but available training equipment are not adequate.

Q-26

Aside from the training program, are there any persons/sections in MASL that are responsible for MASL's staff training? (✓) Yes; specify Human Resource & Institutional Development Division.

Q - 27 Please provide the details of training activities for MASL's staff for last year.

Please refer **Annex – 02** below

Q-28 How much had been the budget allotted for staff training for last five years? How are the training activities funded?

Fiscal Year	Budget		
	Total Amount	Amount from Regular budget (Million)	Amount from special budget (ex. project budget)
2006		12.90	
2007		57.25	
2008		138.65	
2009		70,26	
2010		21.75	

Q-29 Does MASL have its own training programs for the staff? (Internal Training arrangement)

( ) Yes (✓) No

If yes, please provide the details in the following table:

Q-30 Do the MASL staff participate in any training conducted by other government departments/institutions?

(✓) Yes ( ) No

If yes, please provide the details of such training experience for last year in the following table;

Please refer annex – 03 below.

Annex - 02

Mahaweli Authority of Sri Lanka

Human Resources & Institutional Development Unit

Details of training Activities for MASL's Staff for 2009

Sl.	Title/ topic of training	Department /System of Participants	No. & Department of Staff joined	Department/section that conduct the training	Duration of Training	Venue of training	Is the training regularly conducted?	
							Yes	No
01	Strengthening of Farmer Organization methodology	System G, B, H, HURU., UW	1150	HRID	02 days	Development Center Entitu system	*	
02	Financial & officer Management systems	System G, B, H, HURU., C	1650	"	02 days	do '	*	
03	Leadership quality Development	System G,, H, HURU., C	1400	"	01 day	do '	*	
04	Productivity Development & Positive thinking	System G, D, UW, L, C	469	"	02 days	DC / Bakamuna	*	
05	Participatory management techniques	System L	40	"	02 days	System L	*	
06	Human Resource Management for middle Managers	System C, Vic.	25	"	03 days	DC / G' Kotte	*	
07	Human Resource Management for middle Management Assistant	Head offices	25	"	03 days	Colombo	*	
08	Training of Trainers	System L	25	"	05 days	System L	*	
09	Data collecting and Progress Monitoring Technique	System G, B, H, C	68	"	01 day	DC/ Enter Project	*	
10	Enhancement of new Technology.	System B	41	"	01 day	Project DC	*	
11	Water Management & Maintenance of canal system	All project selected	110	HRID	7 days	Irrigation training Institute/galgamuwa	*	
12	Introduction performance appraisal system	HU.	48	HRID	1 day	R.P.M. Office	*	
13	Diploma in sport development	HO.	1	Ministry of sports	4 months	Ministry of Sports		*

14	Concept & Application of GIS	HO.	1	Open University	06 months	OPUS/NAWALA		*
15	Seminar an Adjudication in construction contracts	HO.	1	ICTAD	01 day	BATHARAMULLA		*
16	Social security for enter Labour efficiency	HO.	2	NILS	1 day	NUGEGODA		*
17	Public Private partner ship	HO.	2	EDB	2 day	COLOMBO		*
18	Government Procumbent procedures	All division	35	HRID	1 day	COLOMBO	*	
19	Auditing practices	C,B,H,L,UW, HO	25	CO-OP SCHOOL	1 day	POLGOLLA, KANDY	*	
20	Land Administration	All project	30	HRID	3 days	RATHKINDA TRAINING CENTRE	*	
21	Pre Seasonal training	H, UW, D, L, C, G, Hu.	420	Department of Agriculture	2 days	ISTI Aralaganwila, Mahailuppallama	*	
22	Cultivation of Banana	D	35	MASL/ Agri. D	1 day	RPM Offices Medirigiriya		*
23	Paddy Cultivation	H,D,HU,C, G	240	Department of Agriculture	1 day	Balangoda Rice Institute		*
24	Integrated Pest Management	C, G	60	MASL/Agri.	3 days	DC/GK. SY. C		*
25	Upgrading knowledge and skills for FAA	H, HU, D, L, C, G, UW	1040	MASL/Agri.	1 day	RPM Offices	*	
26	Poultry Management	C	30	MASL/Agri.	1 day	RPM Offices Medirigiriya		*
27	Dairy Development	C	60	MASL/Agri.	1 day	RPM Offices Medirigiriya		*
28	Micro Irrigation	H, C	60	MASL/Agri.	1 day	RPM Offices Medirigiriya		*
29	Aquaculture	C	30	MASL/Agri.	1 day	RPM Offices Medirigiriya		*

Annex - 03

Sl	Title / topic of training	No. & Department of staff joined	Training organized by	Duration of training	Venue of training	Is the training regularly conducted?	
						Yes	No
01	International computer Driving License	All Project	MASL/HRID	**6 months (part time)**	Colombo, Kandy	*	
02	Auto Cad Computer Aided Drafting	All Project	MASL/HRID		University of Colombo		*
03	Diploma in Human Resources Management	System G / Head Office	HRID	One year part time	NIBM		*
04	Diploma in Sport Management	Head Office	HRID	06 month part time	Sport Ministry		*
05	Higher Diploma in Human Resources Management	Head Office	HRID	06 month part time	NIBM		*
06	B.Sc. In Natural Science - Degree Part - 01	Environmental Division	HRID	01 year	Open University of Peradeniya	*	
07	Diploma in English	Head Office	HRID	06 month part time	Sri Jinarathana Technical College		*
08	Diploma in Library & Information Science Level - 01	Head Office	HRID		Sri Lanka Library Society		*
09	e - Learning courses on GP and the environment Management system	Head Office	HRID	05 days	Asia Productivity Organization		*
10	Secretarial skill Development	Head Office - 02	MASL	05 days	National Productivity Secretariat		*
11	Data analysis using SPSS	Head Office - 02	MASL	02 days	SLAAS		*
12	Course on effective Communication for engineers	Head Office - 02	MASL	06 month part time	University of Colombo		*
13	Workshop on conflict Resolution in the workplace	Head Office - 07	MASL	03 days	Sri Lanka foundation Institute		*

14	GIS and it's applications	KOBO	MASL	05 days	University of *Peradiniya*		↑
15	Seminar on ICTAD Price formation formula	Technical Service Division	MASL	02 days	ICTAD		↑
16	Workshop on section of consultants	Technical Service Division	MASL	02 days	SLIT		↑
17	Seminar on adjudication in construction contracts	Technical Service Division	MASL	02 days	ICTAD		↑
18	Training on Industrial safety & Health	Head Office & all Project	MASL	02 days	Department of Labour		↑
19	Diploma in Agriculture	All Project	MASL	02 years (full time)	Department of Agriculture		↑

Q – 31. Has MASL ever conducted any training for the personnel of other government departments and institutions? ( ) Yes (✓) No

If yes, please provide the details in the following table.

Q-32 What would be the topics/subjects necessary for the MASL staff in future training activities?

Please specify the training needs that may vary among the staff of different Departments.

(1) Economic Development

Social Mobilization

Small group formation

Micro Finance

Woman Development

(2) Agricultural Development

- Newly improved nursery management
- Improved agronomy practices of horticultural crops and field crops
- Integrated Pest management for horticultural crops
- Post harvest technologies for horticultural crops and field crops
- Designing and installation of micro irrigation system
- Appropriate on farm and off farm irrigation practices.
- Agricultural extension methodology
- Integrated homestead development
- Paddy, vegetable and other field crops cultivation
- Animal Husbandry
- Inland fish production

(3) Management & Administration

- Human Resource Management
- Regional Development Planning
- Productivity Development
- Participatory Learning & Action
- Institutional Development
- Training of Trainer (TOT)

- Improved Planning and communication skills.
- Awareness of Newly Technology

Institutional Development

Improved Leadership qualities

Micro Finance

Social Mobilization

Small group's formation

Participatory Learning & action

Agricultural Marketing

Agro based Industries

Institutional Development

Farmer Companies

Irrigation and Water Management.

Operation of Reservoirs/Headworks and Main canal system.
Maintenance of Electro/Mechanical equipment involved in O&M work.
Improvement of irrigation efficiency.
Improvement of efficiency of water usage in agriculture.
On farm and off farm water management.
Operation of tertiary irrigation system.
Water Conserving Technologies.
Design of Micro Irrigation systems.

2.3 Operation and Maintenance.

Q-33: The present operation and maintenance structure is described as below. Is this correct?

Answer: Present O&M structure in Walawe area is as follows;

Updated Number of field staff of MASL.

Position	CE	EA	DP	TO	Jalapaiaka	Total
[RPM Office]						
DRPM (technical)	1					1
Construction & Maintenance Unit	1	2	3	1	_	7
Flow Monitoring & Operation Unit	2	2	_	3	13	20
Electro Mechanical Unit	2	_	_	_	_	2
[Left Bank area]						
BM Office(Kiriibbanwewa)	1	2	_	3	_	6
BM Office(suriyawewa)	_	1	_	2	2	5
BM Office(Maurapura)	1	3	_	3	2	9
BM Office(Chandrikawewa)	_	3	_	3	5	11

BM Office(Murawasihena)	1	1	_	4	5	11
BM Office(A'pelassa)	_	3	1	4	8	16

Q-34 The following constraints are reported. Are there these constraints even now?
Answer: Almost all constraints are solved except the shortage of some irrigation engineers and field staff.
Q-35: If there are the constraints, what solution efforts have been done?

Answer: Every effort on the part of MASL is being taken to retain the technical staff at field offices.

2.4 Number of Farmers and the Organization

Q-36: The Report describes the number of farmer families as follows. Please update the data with the settled years applying the Form-1.
Answer: Updated data is as follows.

Number of FF to be settled in the Project Area

Project area	Irrigable area (ha)	Present FF (Nos.)	No of FF to be Settled(Nos.)	Total FF (Nos.)
Old area	3,940	5,683		5,683
Kiribbanwewa Block	1,480	2,084		2,084
Sooriyawewa Block	1,420	2,526		2,526
Extension area	1,040	1,073		1,073
New extension area	5,340	4,524	945	5,469
Total	13,220	15,890	945	16,835

Q-37: Please show progress data of number of the settled farmers and their obtained trainings in the Walawe Left Bank loan project.

Answer: Please refer to the Tables -1, 2 and 3.

Agriculture Training Programs conducted under Walwe Left Bank Project

Table -1

No.	Description of Task / Activity	Up to end 2006		2007		2008		2009		2010		TOTAL	
		Nos. of Progra	Nos. of Participant	Nos. of Progra m	Nos. of Participant	Nos. of Progra m	Nos. of Participant	Nos. of Progra m	Nos. of Participant	Nos. of Progra m	Nos. of Participant	Nos. of Progra m	Nos. of Participant
1	Training & filed day programs on paddy cultivation under "Parachute" system for farmers	16	475	43	143	85	2,717	85	2,198	0	0	229	5,533
2	Purchasing of trays for demonstrations on paddy cultivation under "Parachute" system	323	323	28	28			143	22,630	0	0	494	22,981
3	Cross visit and field day programs on paddy cultivation	45	1,490	34	1,453	114	3,645					193	6,588
4	Training programs and field-day program on seed paddy	9	186	63	2,703	8	360	10	235			90	3,484
5	Farmer field school	0	0	95	2,792	124	2,462					219	5,254
6	Training & cross visit programs on animal husbandary (Cattle, Poultry, Goat)	28	805	34	1,376	21	253					83	2,434
7	Training on on-farm development	35	552	0	0	42	1,696					77	2,248
8	Training on fruit crop promotion & value addding program	2	50	193	8,711	186	3,546					381	12,307
9	Awareness on post harvest technology	1	40	0	0	17	552					18	592
10	Cross visit and field day programs on post harvesting technology	2	91	0	0	0	0					2	91
11	Training program on homestead development	29	932	52	2,140	6	282					87	3,354
12	Training program on local food production	0	0	42	1,519	142	5,315					184	6,834
13	Cross visit and field day program for officers and farmers (OFCs & Paddy cultivation and micro irrigation)	43	1,576	133	5,111	0	0					176	6,687
14	Training program on agro-base bakery products	1	15	0	0	0	0					1	15
15	Training program on mushroom production	5	172	8	290	3	150					16	612
16	Training program on beekeeping	2	60	10	332	13	205					25	597
17	Training program on nursery management and flower plant production	0	0	11	288	1	50					12	338
18	Training program on inland fisheries	3	63	7	250	14	400					24	713
19	Arrangements for agricultural exihibitions	2	1,460	6	30,037	3	25,000					11	56,497
20	Vegetable & fruit drying program and fruit processing	0	0	0	0	11	207					11	207
21	IPM paddy Adarsha Yaya	0	0	0	0	11	568					11	568
22	Soil fertility management	0	0	0	0	44	1,692					44	1,692
23	Cross visits	0	0	0	0	1						1	0
	TOTAL	546	8,290	759	57,173	846	49,100					2,151	**114,563**

Institutional Development Programs conducted under Walwe Left Bank Project. **Table -2**

No.	Description of Task / Activity	Up to end 2006		2007		2008		2009		2010		Total	
		Nos. of Program	Nos. of Participant	Nos. of Program	Nos. of Participant	Nos. of Program	Nos. of Participant	Nos. of Program	Nos. of Participant	Nos. of Program	Nos. of Participant	Nos. of Program	Nos. of Participant
1	Strengthening of D-canal organization	18	2,465	50	1,451	96	1,891					164	5,807
2	Training of field canal leaders	0	0	12	111	29	1,182					41	1,293
3	Training of Jalaparaka	43	3,026	19	372	6	240					68	3,638
4	Establishment of new FOs	0	0	15	300	21	756					36	1,056
5	Training on financial management for farmers and monitoring (including auditing)	21	422	132	745	14	320					167	1,487
6	Auditing of FO's	0	0	163	452	94	470					257	922
7	Establishment of model level FOs	0	0	30	2,239	33	1,129					63	3,368
8	Establishement of intrigued FOs	0	0	27	2,340	7	167					34	2,507
9	Cross visit (inter-zone and in the zone for farmers)	0	0	12	608	3	160					15	768
10	Awareness on water management for farmers	35	1,265	0	0	0	0					35	1,265
11	Monitoring program on training of field canal leaders	191	5,626	0	0	0	0					191	5,626
12	Facilitation to improve financial management (book keeping) of FOs	91	182	29	300	9	72					129	554
13	Provide memorandum and articles for FO	0	0	1	800							1	800
	Provide office equipments for best performing FO's	0	0	0	0	1	721					1	721
14	Capacity building trainings for FOs	0	0	5	70	33	1,358					38	1,428
15	Awareness of women groups and strengtening of women groups	11	297	6	456	5	295					22	1,048
16	Strengthening of women organizations	0	0	14	528	5	168					19	696
17	Educational tours in the zone	0	0	4	198	4	180					8	378
18	Educational tour out side the zone	0	0	1	37	1	52					2	89
19	Training youth and women entrepreneurs	2	65	5	169	3	96					10	330
20	School based leadership development from Mahaweli soil for better tommorow	0	0	0	0	8	1,200					8	1,200
21	Establishment of Bolhida Bio diversification Association	0	0	0	0	1	30					1	30
22	Re stenthning of Community Drinkingg watewr projects in Wediwewa and Andarawewa	0	0	0	0	2	1,200					2	1,200
23	Re awikening & Stenthning Moral of farmer leaders by dgiving Pranama for slected best farmers leaders	0	0	0	0	1	92					1	92
	TOTAL	412	13,348	525	11,176	376	11,779					1,313	**36,303**

Enterprise Development Programs conducted under Walwe Left Bank Project. **Table -3**

	No.	Up to end 2006		2007		2008		2009		2010		Total	
		Nos. of Program	Nos. of Participant	Nos. of Program	Nos. of Participant	Nos. of Program	Nos. of Participant	Nos. of Program	Nos. of Participant	Nos. of Program	Nos. of Participant	Nos. of Program	Nos. of Participant
1	Vocational training (Two wheel tractor)	1	20	1	25	1	25					3	70
2	Vocational training (Four wheel tractor)	1	20	1	25	1	25					3	70
3	Vocational training (Heavy vehicle driving license)	1	18	25	1	1	25					27	44
4	Communication and leadership for officers	0	0	2	100	2	123					4	223
5	Productivity and management	0	0	3	75	2	87					5	162
6	Computer literacy improvement program	0	0	3	54	5	110					8	164
7	Coordination for integrated workshops	0	0	2	154	3	410					5	564
8	Training on audio visual for officers	4	118	0	0	0	0					4	118
9	Cross visits (officers and farmers)	16	565	0	0	3	115					19	680
10	Training on business development based training for entrepreneurship development	18	543	4	165	2	80					24	788
11	Rice promotion village	0	0	2	66	2	68					4	134
12	Local food product based training	0	0	5	83	5	72					10	155
13	Workshop on existing entrepreneurs	0	0	9	75	2	36					11	111
14	Rice based food product value additing training	0	0	4	80	2	34					6	114
15	Market promotion training	0	0	5	174	2	29					7	203
16	Establishment of agro based product collecting and marketing centers	0	0	4	160	1	80					5	240
17	Packing and packaging awareness program	0	0	1	100	1	36					2	136
18	Technology transfer training - Logo, Web, basic	0	0	1	24	0	0					1	24
19	Promotion of brand name, logo, packing improvement and conduct trade fair (Walawe Agri-Biz 2007)	0	0	1	40	0	0					1	40
20	Promotion of brand name, logo, packing improvement and conduct trade fair (Walawe Agri-Biz 2007)	0	0	1	40	0	0					1	40
21	Provide rice grinding machines for groups	0	0	8	89	8	85					16	174
41	Provide Exsisting Enterprice promortion machines	0	0	0	0	3	19					3	19
42	Link with lending institute (bank's) workshops	0	0	0	0	2	124					2	124
	TOTAL	41	1,284	82	1,530	48	1,583					171	**4,397**

Q-38: Please list up the training programs prepared for settled farmers.
Answer: Please refer to the tables above.

Q-39: The history and development of Farmers' Organization (FOs) are described as follows. Is there any modification, correction or addition? If any, please describe them.

Answer: The above description is correct.

Q-40: The FO organization structure is described as below. Is there any modification, correction or addition? If any, please describe them.

Answer: The organization structure is correct.

Q-41: The number and size of D-canal FOs in the Left Bank Area are shown as below. If any correction, modification or addition is necessary, please describe them.
Answer: The total number of D-canal FOs established in the Uda Walawa Project is 277. 136 in the Right Bank area and 141 in the Left Bank area. Table 3.3.6.2 is not available for comparison and to analyze further.

Q-42: The FO activities are described as below. If any correction, modification or addition is necessary, please describe them.

Answer: Description is correct.
Q-43: Please give a list of FOs.
Answer: The list of FOs is as follows.

List of Farmer Organizations in Walawa Left Bank Area

	Block	Unit	Name of Farmer Organization	Address
1	Maurapura	Nabadagaswewa	UD -1	Ruhunupura, Ambalanthota
2			PD-02 Mahawalipura	Ruhunupura, Ambalanthota
3			PD-03 Gajaba	Ruhunupura, Ambalanthota
4			Sawasakthi Dodampaya	Ruhunupura, Ambalanthota
5			UD-04 Suriya	Ruhunupura, Ambalanthota
6			Mahasen	Ruhunupura, Ambalanthota
7			UD-05 Hasthipura	Ruhunupura, Ambalanthota
8			Aldiyapokuna	Ruhunupura, Ambalanthota
9			UD-06 Kawanthissa	Ruhunupura, Ambalanthota
10			UD-07 Samagi	Ruhunupura, Ambalanthota
11			Wijaya Old Baddewawa	Ruhunupura, Ambalanthota
12			PFC 01- 02 Ekabadda	Ruhunupura, Ambalanthota
13	Maurapura	Andarawewa	UD -08 Viharamahadevi	Andarawawa, Sooriyawawa

14			UD -09 Mahasen	Andarawawa, Sooriyawawa
15			PD-10-11 Ekamuthu	Andarawawa, Sooriyawawa
16			PD-12 Gamunu	Andarawawa, Sooriyawawa
17			UD-13 Ruhunu	Talavilla., Ambalanthota
18			PD-14	Talavilla., Ambalanthota
19			UD-15 Parakum	Ruhunupura, Ambalanthota
20			PD-16	Ruhunupura, Ambalanthota
21			PD-17 Sakthi	Ruhunupura, Ambalanthota
22	Maurapura	Thalawilla	UD-26 Sirisagabo	Ruhunupura, Ambalanthota
23			UD-27 Nawoddaya	Ruhunupura, Ambalanthota
24			UD-27 SD-1	Ruhunupura, Ambalanthota
25			UD-28 Jaya sri	Ruhunupura, Ambalanthota
26			UD-18 Gamunu	Ruhunupura, Ambalanthota
27			UD-19 Isuru	Galwawa, Ambalanthota
28			PD-20 Saruketha	Galwawa, Ambalanthota
29	Maurapura	Ruhunupura	PD-21 Dutugamunu	Galwawa, Ambalanthota
30			H.T. Parakum	Ruhunupura, Ambalanthota
31			PD-22	Galwawa, Ambalanthota
32			PD-23 UD-24 Hasthi	Galwawa, Ambalanthota
33			UD-25 Parakum	Ruhunupura, Ambalanthota
34			UD-29 Suriya	Ruhunupura, Ambalanthota
35			UD-30-PD-31 Samagi	Ballagaswawa, Ambalanthota
36			HT-11 RuhunuUdara	Ruhunupura, Ambalanthota
37			HT-15 JayaUdana	Ruhunupura, Ambalanthota
38	Maurapura	Kaluwarawewa	PD-34 Mahasen	Ruhunupura, Ambalanthota
39			UD-35 Aruna	Ranamaurapura, Ambalanthota
40			UD-37 Amila	Ranamaurapura, Ambalanthota
41			PD-38-39 Sakthi	Ranamaurapura, Ambalanthota
42			UD -40 Nelum	Kaluwarawawa, Ambalanthota

43	Maurapura	Bolhida	HT-20 UFC-1 Purogami	Bolhida, Ambalanthota
44			UD-41 Minikirula	Bolhida, Ambalanthota
45			UD-42 Purogami	Bolhida, Ambalanthota
46			UD-43 Suriya	Bolhida, Ambalanthota
47			UD-44 Saruketha	Bolhida, Ambalanthota
48			PD-47 Aruna	Bolhida, Ambalanthota
49	Maurapura	Galwewa	PD-51 Ekamuthu	Bolhida, Ambalanthota
50			UD-49 Randiya	Galwawa, Ambalanthota
51			UD-48 Samagi	Galwawa, Ambalanthota
52			UD-46 Wawsiripura	Galwawa, Ambalanthota
53			PD-61 Saruketha	Galwawa, Ambalanthota
54			UD-60 Suriyawawa	Galwawa, Ambalanthota
55			UD-49-SD-01 Mahasen	Galwawa, Ambalanthota
56			PD-58	Galwawa, Ambalanthota
57			PD-59 Gamunu	Galwawa, Ambalanthota
58	Maurapura	Bellagaswewa	UD-68 Ranketha	Ballagaswawa, Ambalanthota
59			UD-67 Nidahas	Ballagaswawa, Ambalanthota
60			PD-57 Bopalewawa	Ballagaswawa, Ambalanthota
61			PD-55 Ekamuthu	Ballagaswawa, Ambalanthota
62			PD-52 Pitawalagoara	Ballagaswawa, Ambalanthota
63			UD-54 Dewmaga	Ballagaswawa, Ambalanthota
64			UD-56 Pubudu	Ballagaswawa, Ambalanthota
65	Maurapura	Ranamaurapura	UD-62 Ranamaurapura	Ranamaurapura, Ambalanthota
66			UD-74 Vimukthi	Ranamaurapura, Ambalanthota
67			UD-45 Darmavijaya	Ranamaurapura, Ambalanthota
68			PD-65 Tissa	Ranamaurapura, Ambalanthota
69			Pd-66 Katanwawa	Ranamaurapura, Ambalanthota
70			UD-64 Ekamuthu	Ranamaurapura, Ambalanthota
71	Maurapura	Katuwewa	UD-69	Katuwawa, Ambalanthota

72			UD-77 Samadee	Katuwawa, Ambalanthota
73			UD-78 Haritha	Katuwawa, Ambalanthota
74			PD-70	Katuwawa, Ambalanthota
75			PD-73 Gotabaya	Katuwawa, Ambalanthota
76			PD-71 PD-72 Weera	Katuwawa, Ambalanthota
77			PD-86 Ekamuthu	Katuwawa, Ambalanthota
78	Maurapura	Thissapura	UD-75 Nindagala	Tissapura, Ambalanthota
79			UD-76 Tisara	Tissapura, Ambalanthota
80			LT-16 Patalayagama	Tissapura, Ambalanthota
81			Diwlgaswakada	Tissapura, Ambalanthota
82			LT-14 Samarakonwawa	Tissapura, Ambalanthota
83	Suriyawewa	Suriyawewa	MD-15 Parakum	Viharagala, Sooriyawawa
84			MD-16 Muditha	Viharagala, Sooriyawawa
85			MD-17 Udara	Viharagala, Sooriyawawa
86			MD-18 Suriya	Viharagala, Sooriyawawa
87			BBD-03 Suhada	Viharagala, Sooriyawawa
88			Randiya weeriyagama	Weeriyagama Sooriyawawa
89			Jagath	Weeriyagama Sooriyawawa
90			Mahasen	Weeriyagama Sooriyawawa
91	Suriyawewa	Beddewewa	BBD-02	Baddewawa, Sooriyawawa
92			BBDSB-01 Weeramuni	Baddewawa, Sooriyawawa
93			BBDSBD-01 Ranketha	Baddewawa, Sooriyawawa
94			Tank NO 01 Mahanagapura	Baddewawa, Sooriyawawa
95			BBSB01-02 Ekamuthu	Baddewawa, Sooriyawawa
96	Suriyawewa	Viharagala	BBD-04 Sampath	Viharagala, Sooriyawawa
97			BBD-05 Parakum	Viharagala, Sooriyawawa
98			BBD-07 Jayasetha	Viharagala, Sooriyawawa
99			BBD-08 Randiya	Viharagala, Sooriyawawa
100			BBD-09 Gamunu	Viharagala, Sooriyawawa

101			BBD-10	Viharagala, Sooriyawawa
102	Suriyawewa	Alioluara	Tank NO 04 Eksath BBD-13	Alioluara, Sooriyawawa
103			Tank No 06 Ranketha	Alioluara, Sooriyawawa
104			BBD-11	Alioluara, Sooriyawawa
105			BBD-03 Suhada	Alioluara, Sooriyawawa
106			Tank No 07	Alioluara, Sooriyawawa
107	Suriyawewa	Bedigantota	Dinuda	Badiganthota, Sooriyawawa
108			Tank No 02 Saruketha BB-SB2	Badiganthota, Sooriyawawa
109			Tank No03 Gamunu	Badiganthota, Sooriyawawa
110			Suriya Sudath	Badiganthota, Sooriyawawa
111			Yodaadiyawawa BB-SB-2-D-3	Badiganthota, Sooriyawawa
112			Tank No 05 Parakkrama	Badiganthota, Sooriyawawa
113	Kiriebbanwewa	Haburugala	MD-11 Pubudu	Habaraluwawa, Sewanagala
114			MD-12 Pragathi	Habaraluwawa, Sewanagala
115			MD-13	Habaraluwawa, Sewanagala
116			MD-14 Keththarama	Habaraluwawa, Sewanagala
117			MD-14 Samagi	Habaraluwawa, Sewanagala
118			MD-14 Eksath	Habaraluwawa, Sewanagala
119	Kiriebbanwewa	Habaraluwewa	MD-1 Sewana	Habaraluwawa, Sewanagala
120			MD-02 Weera mahasen	Habaraluwawa, Sewanagala
121			MD-3 Runketha	Habaraluwawa, Sewanagala
122			MD-4 Weeragamunu	Habaraluwawa, Sewanagala
123			MD-5-6 Weera Parakum	Habaraluwawa, Sewanagala
124			MD-7 Sirimewan	Habaraluwawa, Sewanagala
125			Tissa	Habaraluwawa, Sewanagala
126	Kiriebbanwewa	Kiriebbanwewa	MD-8 Suhada	Kiribbanwawa, Sewanagala
127			MD-09	Kiribbanwawa, Sewanagala
128			MD-10 Samagi	Kiribbanwawa, Sewanagala
129			Left Canal	Kiribbanwawa, Sewanagala

130			South Canal	Kiribbanwawa, Sewanagala
131			MD-12 Pragathi	Habaralugala , Sewanagala
132			MD-13 Samagi	Habaralugala , Sewanagala
133			MD-14 Keththarama	Habaralugala , Sewanagala
134			MD-14 Samagi	Habaralugala , Sewanagala
135			MD-14 Eksath	Habaralugala , Sewanagala
136	Kiriebbanwewa	Mahagama	MBD-1-2-3-4 Urusitana	Mahagama, Sewanagala
137			Mahanaga MBD-5-6-7-8	Mahagama, Sewanagala
138			D-1-Eksath weera MBD-9-10	Mahagama, Sewanagala
139			D-50 Parakkrama MBD-11	Mahagama, Sewanagala
140			D-65 - Gamunu MBD-12	Mahagama, Sewanagala
141			Sakkthi	Bahirawa, Sewanagala

List of Farmer Organizations in Walawa Right Bank Area

	Block	Unit	Name of Farmer Organization	Address
1	Angunukolapellessa	Kattakaduwa	Yaya 18/D1 Weerapura	Welangathwela, Angunukolapellessa
2			Yaya 18/D3 samgi	Kattakaduwa, Ranna
3			Yaya 18-D-4 Sawasakthi	Kattakaduwa, Ranna
4			Yaya 18-D-5 Samagipura	Kattakaduwa, Ranna
5			Yaya 18-D-6 Weera	Kattakaduwa, Ranna
6			Yaya 18- D- 7 Gamunu	Kattakaduwa, Ranna
7			Yaya 18-D-2 Eksath	Kattakaduwa, Ranna
8			Yaya 18- D-1 warayaya Nelum	Eraminiyaya, Agunakolapalassa.
9			Yaya 18 - D-1 Pragathi	Eraminiyaya, Agunakolapalassa.
10			Yaya 19- D-2 Suhada	Eraminiyaya, Agunakolapalassa.
11			Yaya 19- D-2 Udara	Kattakaduwa, Ranna
12			Yaya 19- D-7 Ekamuthu	Bataatha, Hungama
13	Angunukolapellessa	Gajamangama	Yaya 15- D- 2 Parakum	Hale kade South, Agunakolapalassa

14			Yaya 15 - D- 3 Weerawkkrama	Yakagala, Agunaklapalassa
15			Yaya 15 - D- 4 Gamunu	Achariyagama, Agunakolapalassa
16			Yaya 15-D-5 Mahasen	Ranna Road , Agunakolapalassa
17			Yaya 15- D- 6 Samagi	Eraminiyaya, Agunakolapalassa.
18			Yaya 16- D- 1 Parakum	Kanukatiya, Agunakolapalassa
19			Yaya 16-D-3 Galekoratuwa	Kanukatiya, Hungama
20			Yaya 16- D-4 Ekamuthu	Gajamangama, Hungama.
21			Yaya 16-D-4 S-1 Gamunu	Gajamangama, Hungama.
22			Yaya 16-D-5-6 Parakum	Agunakolapalassa
23			Yaya 16 D-7-Ekamuthu	Gajamangama, Agunakolapalassa
24			Yaya 16- D-2 Pubudu	Kanukatiya- Hungama
25	Angunukolapellessa	Gotaimbaragama	D-1 Kawantissa	Gotaimbaragama, Agunakolapalassa.
26			D-2 Pubudu	Gotaimbaragama, Agunakolapalassa.
27			D-3 Ranahansa	Gotaimbaragama, Agunakolapalassa.
28			D-4 Parakum	Gotaimbaragama, Agunakolapalassa.
29			D-5 Gamunu	Gotaimbaragama, Agunakolapalassa.
30			D-5 Eksath	Gotaimbaragama, Agunakolapalassa.
31			D-4 S-1 Ekamuthu	Adupalana, Ranna
32			D-4 S-2 Samagi	Gotaimbaragama, Agunakolapalassa.
33	Angunukolapellessa	Guruwala	D-1 No-1 Aruna	Guruwala, Agunakolapalassa
34			D-1 No-2 Parakum	Guruwala, Agunakolapalassa
35			D-1 No -3 Singhe	Guruwala, Agunakolapalassa
36			D-1 No- Gamunu	Guruwala, Agunakolapalassa
37			14 D-2	Guruwala, Agunakolapalassa
38			14-D-3 Amila	Guruwala, Agunakolapalassa
39			14-D-4	Guruwala, Agunakolapalassa
40			14 D-5 Kakulu	Guruwala, Agunakolapalassa
41			14 D- 1 Gamunu	Guruwala, Agunakolapalassa

42			14 RBK-D-1 Sakthi	Guruwala, Agunakolapalassa
43			Yaya 13-D-2 Gamunu	Guruwala, Agunakolapalassa
44			Yaya 13-D-2 Gamunu- 3-4 Parakum	Guruwala, Agunakolapalassa
45			Yaya 13 -D-5 Gajaba	Guruwala, Agunakolapalassa
46			Yaya 13-D-6 Mahasen	Guruwala, Agunakolapalassa
47			Yaya 14-Rantharu	Guruwala, Agunakolapalassa
48	Chandrikawewa	Udawalawa	RBD-5	Udawalawa , Kolabageara
49	Chandrikawewa	Gageyaya	RBD-7-8-9	Gageyaya, Embilipitiya.
50			RBD- 10	Gageyaya, Embilipitiya.
51			RDB-11-12	Gageyaya, Embilipitiya.
52			RBD-13-14	Gageyaya, Embilipitiya.
53			RBD-15 Ananda	Gageyaya, Embilipitiya.
54			RBD-16	Gageyaya, Embilipitiya.
55			RBD-16 SI	Gageyaya, Embilipitiya.
56	Chandrikawewa	Ketagalara	RBD-17-18	Ketagalara, Embilipitiya
57			RBD-19-20	Ketagalara, Embilipitiya
58			RBD-21	Ketagalara, Embilipitiya
59			RBD-22	Ketagalara, Embilipitiya
60	Chandrikawewa	Moraketiya	MKD-1	Morakatiya, Embilipitiya.
61			MKD-2	Morakatiya, Embilipitiya.
62			MKD-3	Morakatiya, Embilipitiya.
63			MKD-4	Morakatiya, Embilipitiya.
64			MKD-5	Morakatiya, Embilipitiya.
65			MKD-6	Morakatiya, Embilipitiya
66			MKD-7	Morakatiya, Embilipitiya
67			MKD-8	Morakatiya, Embilipitiya
68			MKD-9	Morakatiya, Embilipitiya
69			CWD-1-5	Halmillakatiya, Thunkama
70			CWD-6-7	Halmillakatiya, Thunkama

71	Chandrikawewa	Halmillaketiya	CWD-8	Terunnansegama, Thunkama
72			CWD-9 Ekamuthu	Weerakkuttigama, Thunkama
73			CWD-10 Nawajeewana	Terunnansegama, Thunkama
74	Chandrikawewa	Kuttigala	CWD-11-12	Hagala , Thunkama
75			CWD-13-14	Hagala , Thunkama
76			CWD-5-16	Kuttigala,Padalangala
77			CWD-17 Parakum	Hospital Pales, Padalangala
78			CWD-18 Nawoda	Hospital Pales, Padalangala
79			CWD-20	Julangate, Padalangala
80			CWD-21	Julangate, Padalangala
81			CWD-22	Liyangasthota, Padalangala
82			Kosatuara	Welangahawela, Padalangala
83	Murawesihena	Barawakumbuka	D-01	Murawesihena, Barawakubuka
84			D-02, Samanalagama	Murawesihena, Barawakubuka
85			D-03	Murawesihena, Barawakubuka
86			D-4-5	Murawesihena, Barawakubuka
87			D-06	Murawesihena, Barawakubuka
88			D-07	Murawesihena, Barawakubuka
89			D-8-9	Pallerota, Mamadala
90			D-10	Pallerota, Mamadala
91			D-11	Pallerota, Mamadala
92			D-12	Pallerota, Mamadala
93			D-13-14	Pallerota, Mamadala
94			D-15	Pallerota, Mamadala
95	Murawesihena	Yaya - 08	MM-8-D3-S1	Thoragala, Padalangala
96			MM-8-D2	Thoragala, Padalangala
97			MM8-FC-6-II	Thoragala, Padalangala
98			MM8-D3-S2	Thoragala, Padalangala

99			MM8-D3-S3	Thoragala, Padalangala
100			MM8-D4	Thoragala, Padalangala
101			MM8- D5	Welanduwa, Barawakubuka
102			MM8-D6	Welanduwa, Barawakubuka
103			MM8-D3-S4-5	Warayaya, Padalangala
104			MM8-FC-16-22	Warayaya, Padalangala
105	Murawesihena	Murawesihena	Yaya 10-D1 Gamunu	Murawesihena, Barawakubuka
106			Yaya10 -D2 Ekamuthu	Murawesihena, Barawakubuka
107			Yaya10- D2-S1 Jayawimala	Left Canal, M/Hena
108			Yaya10-D3 Ranmuthuduwa	Ranmuthuduwa, Murawasihena
109			Yaya10 D-4 Abasewana	Abasewana, Murawasihena
110			Yaya 11- D-01 Athbatuwa	Athbatuwa,Hungama
111			Yaya 10 Mahajadura Parakkrama	Mahajadura, Agunakolapalassa
112			Yaya 10 Mahajadura Sakthi	Mahajadura, Agunakolapalassa
113	Murawesihena	Uswewa	RBK-D1	Uswawa, Kilawalpottawa
114			RBK-D 2-3	Uswawa , Tangalle
115			RBK -D4	Uswawa , Tangalle
116			RBK-D05-06	Uswawa , Tangalle
117			GU-D1	Uswawa , Tangalle
118			GU-D2	Uswawa , Tangalle
119			GU-D03-05	Uswawa , Tangalle
120			GU-D4	Uswawa , Tangalle
121			Gu-D06	Uswawa , Tangalle
122	Murawesihena	Deniya	Yaya 11,Nelumpura	Athbatuwa,Hungama
123			Yaya 11-D02	Athbatuwa,Hungama
124			Yaya 11-D3	Pallerota, Mamadala
125			Yaya 11- D-04	Pallerota, Mamadala
126			Yaya 11-D5	Pallerota, Mamadala

127			Yaya 11-D-6	Allegoda, Mamadala
128			Yaya 11-D-7	Deniya,Hungama
129	Murawesihena	Binkama	D-07-09	Binkama, Agunakolapalassa.
130			D-08-10	Binkama, Agunakolapalassa.
131			D12-14	Binkama, Agunakolapalassa.
132			D11	Binkama, Agunakolapalassa.
133			D13	Binkama, Agunakolapalassa.
134			D16-02	Kankanam gama, Agunakolapalassa.
135			D16-02	Kankanam gama, Agunakolapalassa.
136			D-15-01	Binkama, Agunakolapalassa.

2.5 Training institutions

Q-44: The existing training institutions are described below. If any correction, modification or addition is necessary, please describe them.
Answer: No.
3. Water Management System

Q-45: The desired water management system is described as below. If any correction, modification or addition is necessary, please describe them.
Answer: The water management system described below is correct and compatible with the one is being practiced.
Q-46: Following the desired system, the turn-over has done as described below. What is the present progress of this turning-over?

Answer: Progress of turn over is as follows.

Progress of Turnover Programme						
Area	No. of DCO	Registered under 56A	Registered under 56B	Registered under 2000 Agrarian service act	1st Agreement	2nd Agreement
Left Bank	129	73	18	73		60
Right Bank	141	141	38	117		128
Total	**270**	**214**	**56**	**190**	**0**	**188**

Q-47: Supporting systems for FOs by other agencies are described below. If any correction, modification or addition is necessary, please describe them.

Local Administration in the Project Area

Provinces	District	Divisional Secretariat	Block	Unit
Uva	Monaragala	Thanamalvila	Kiribbanwewa	Habaraluwewa
				Kiribbanwewa
				Mahagama
Southern	Hambantota	Sooriyawewa	Sooriyawewa	Samaja sewapura
				Viharagala
				Baddewewa
				Alioluara
				Bedigantota
			Mayurapura	Nabadagaswewa
				Andarawewa
				Thalawilla
				Ruhunupura
				Kaluwarawewa
				Bolhida
				Galwewa
				Bellagaswewa
				Ranamurapura
				Katuwewa
				Thissapura
				Samarakoonwewa
				Ballagaswewa
				Tissapura
		Angunakolapalassa	Angunakolapalassa	Pahalagama
				Binkama
				Kanukatiya
				Janidura
			Muravasihena	Siyanbalagoda
				Muravasihena
				Mamadala
				Helekinda
Sabaragamuwa	Rathnapura	Embilipitiya	Cahandrikawewa	Timbolkatiya
				Moraketiya
				Tunkama
				Kuttigala

4. Questions on the Problems to be addressed
In order to clarify the specific problems addressed to the technical cooperation project titled "Integrated Irrigation and Environmental Management of the Uda Walawe Left Bank Project" (hereinafter referred to "the Project"), the following questions are prepared for MASL.

4.1 Institutional Mechanism
Q-48: According to the Application, lack of institutional mechanism to ensure efficient water management and maintenance of infrastructure is suggested. Please describe the details on this problem with real data and examples.

Answer: Farmer organizations were established recently. They require additional training to execute efficient water management and maintenance of infrastructure.

Q-49: According to the Application, lack of training both officers and farmers in irrigation management by farmer organizations under introduction of other field crops and comparatively more sophisticated infrastructure is suggested. Please describe the details on this problem with real examples.
Answer: Project introduced new concept of Dual Canal System under which separate canals are introduced for paddy and other field crops. The concept is based on to achieve maximum productivity from the available land and water resources as both are scares. Since this is a new concept introduced in Sri Lanka, farmers and officers have no previous experience. Therefore in order to have the project sustainability more follow up, close monitoring and further studies to be carried out.

Q-50: According to the Application, lack of considering environmental factors in water management procedures and using non-fuel-dependent agricultural machinery is suggested. Please describe the details on lacking the considering environmental factors in water management procedures with real examples. On the non-fuel-dependent agricultural machinery, please show some examples of the machinery with photos or illustrations for us to have a concrete image.

Answer: Agriculture sector has tried to reduce the fuel-dependency in agriculture and environment-friendly agricultural practices. It is proposed that such interventions will be more sustainable when combined with water management and linked to a community organization. As the strengthening of farmer organizations is planned, it is proposed to introduce such non-fuel-dependent methods and environment-friendly agricultural practices during the process of training. The following methodologies are considered initially, to be evaluated, and pilot tested through the TA Project:

a. Micro hydropower generation: such power generation projects are undertaken by the rural communities in Sri Lanka. Many such projects have been carried out by the estates in hilly areas. But there is an unused potential in irrigation systems. A preliminary survey by JICA expert attached to the Ministry of Agriculture identified a few potential sites in Walawe Scheme. For details in Sri Lanka please visit http://microhydropower.net/download/esd_smallhydro.pdf and website of the Sri Lanka Sustainable Energy Authority.
b. Bio gas: The interest in bio gas generation is increasing in Sri Lanka due to high cost of electrical energy as well as due to difficulties in disposing of waste. In 2008, a "Lanka Biogas Association was formed. This is linked to NGOs . Sri Lanka Sustainable Energy Authority initied a prject to have a plant at Narahenpita "Jathika Pola" recently, where a large volume of agricultural produce is traded. The technology for this is available in the Department of Agriculture as well. Universities of Peradeniya, Moratuwa and Ruhuna have carried out research on the subject. It is estimated that about 5000 bio gas generators

installed in Sri Lanka. NERD Centre of Sri Lanka has produced a digester, and imported types are also available. Since the potential for bio gas generation in agricultural areas is not fully exploited, it is very useful to pilot test it in the TA Project area. It can produce gas (energy) as well as fertilizer. For further information, please visit website of the Lanka Bio Gas Association, Practical Action, and Sustainable Energy Authority.

c. Paddle pumps: Paddle pumps are suited for shallow groundwater and for watering small home gardens. This has been successfully introduced in Africa and India. Considering the growing importance of conjunctive use of groundwater in irrigated areas, and governments propotion policy of home gardens, it is proposed to study the technical feasibility of adopting this type of machinery for upland crop irrigation in the Project area. This method has been applied by FAO. Research has been carried out by IWMI. Please visit FAO (ftp://ftp.fao.org/docrep/fao/005/x8293e/x8293e00.pdf) , IPTRID, and IWMI websites for details.

d. Any other sources of power (such as wind, solar) also would be studied.

Q-51: According to the Application, not well functioning logistic arrangements to ensure profit margin of other field crops is suggested. Please describe the details on this problem with real examples.

Answer: The logistical arrangements for processing and marketing of field crops needs to be improved. This includes transport, storage, value addition, and marketing.

DETAILED QUESTIONNAIRE ON FARMER ORGANIZATION FOR WATER MANAGEMENT

1. QUESTION TO THE MASL 政府に対する質問

Q-53 The Report[1] indicated the following constraints on water balance before the Walawe Left Bank loan project. Have all the constraints been solved? If not, please describe the remaining constraints and the reasons.

4.1.2 Present Constraints on Water Balance in Uda Walawe Basin

The constraints in this sector are defined as the physical phenomena and organizational issues which has caused an imbalance between water resources available and water consumption in the Uda Walawe river basin. The present constraints are mainly on the matters affecting increase of water consumption or misuse. The main constraints are as follows:

a) Expansion of illegal pump irrigation area outside of the project area mainly along the Right and Left Bank Main Canals,
b) Expansion of Sevanagala Sugarcane area,
c) Non-controlled gate operation at the intake of Uda Walawe dam for both Right and Left Bank Main Canals,
d) Non-scheduled gate operation at regulators and intakes on the Main Canals; the design high water or more water flow at the time of 2nd. and 3rd. month of cropping season,
e) Ineffective use of rainfall; the design high water or more water flow in the Main Canals just after the consecutive heavy rainfall days,
f) Uncontrolled gate operation in D-canals and F-canals and consequent waste of irrigation water in field level,
g) Unnecessary continuous water flow to the other field crop (OFC; mainly banana) fields,
h) Paddy cultivation in the high permeable soil area, and
i) Over-design water flow in D-canals and F-canals for domestic water use.

The present constraints are mainly caused by the uncontrolled water management and can be expressed as " ineffective use of available water".

Answer: Almost all have now been resolved except b)" expansion of Sevenagala Sugar area". It has now taken a new turn that sugar areas being converted to paddy due to more profitability earned from paddy with the provision of fertilizer subsidy. This trend may lead to more water consumption in the upper reaches of LB area.

Q-54 The Report[1] indicated the following constraints on farmers organization before the Walawe Left Bank loan project. Have all the constraints been solved? If not, please describe the remaining constraints and the reasons.

4.1.3 Present Constraints on Farmers and Farmers' Organization

The present constraints in this sector consist of organizational issues, matters concerning capability of human resources, technical matters, and others. The sub-ordinate objectives of the project in this sector under the supreme objectives are:

- smooth hand-over of the project facilities to the beneficiary; farmers and farmers' organization (FO), and
- participatory operation and maintenance of the project facilities.

In addition to these, the social function of the project facilities is to be considered from the viewpoint of a sort of project sustainability. The constraints in this sector are to be defined as the impediments to realization of the above sub-ordinate objectives of the project as shown below.

a) Irrigation system and facilities design without reflection of farmers' request,
b) Inconvenient irrigation facilities for farmers' everyday services,
c) Insufficient capability of FO in operation and maintenance (O/M),
d) Insufficient support to FO in O/M by MASL,
e) Farmers' unawareness of O/M,
f) Farmers' over-reliance on the Government activities for O/M, and
g) Lack of farmers' cooperative in O/M activities.

The general idea of the constraints in this sector is expressed as "Lack of FO's capability in O/M" and "Inconvenience of project facilities for social use".

Answer: Under the Walawe Left Bank Project many capacity building programmes were carried out to improve the status of FOO. Nevertheless further follow up actions are needed to maintain the capacity in order to achieve sustainability.

Q-55: What are incentives for farmers from the FOs? (水利組合設立インセンティブ)

Answer: The farmers have been empowered to manage their water in tertiary canals as per the cultivation plan they propose. They also have the legitimate powers as per agrarian services act to exercise the authority. In addition to that certain farmer organizations have themselves organized to supply the agricultural inputs at concessionary price to their members.

Q-56: How much is the water utilization fee? (水利費の額)

Answer: The water charge is an average rate of Rs. 150 per lot per season. This charge is slightly varied from FO to FO.

Q-57: Are these amounts enough for operation staff's salary, cost recovery of the investment costs of irrigation facilities and other any cost? (水利費の内訳)

Answer:the entire amount SO coLlected is spent on the salaries of gate operators employed by the FOs for water management.

Q-58: How many percent is the water fee collection rate? (水利費収集率)
Answer: Almost 100%.
Q-59: If the collection fee is less than 50%, why is the rate is low? Please answer the reason and improved case if available. (収集率が低い場合の対策)

Answer: Not applicable.
Q-60: Do you have a figure to describe the relationships among all the related organizations to FOs? If you have, please give us one copy. (水利組合関連組織の関係図)

Answer: Not available but can be developed.

Q-61: How are the water discharge data collected and reported to farmers? (水配分ﾃﾞｰﾀの収集報告法)
Answer: Water discharges of the main canals are measured daily by RPM office.
Water discharges of the branch canals are measured daily by respective Block office and reported to RPM office weekly.
Water discharges within the D canals and F canals are measured daily by respective FOs and technical staff collect the information and reported to Block Manager.

Q-62: What is the present irrigation schedule/interval? (灌漑スケジュール)
Answer: The irrigation interval in tertiary system is 7 days and the main system is in operation through out the season.

QUESTIONNAIRES TO AGRICULTURAL EXTENSION SECTION

1. INSTITUTIONAL FRAMEWORK OF THE AGRICULTURAL EXTENSION
（制度的枠組み）

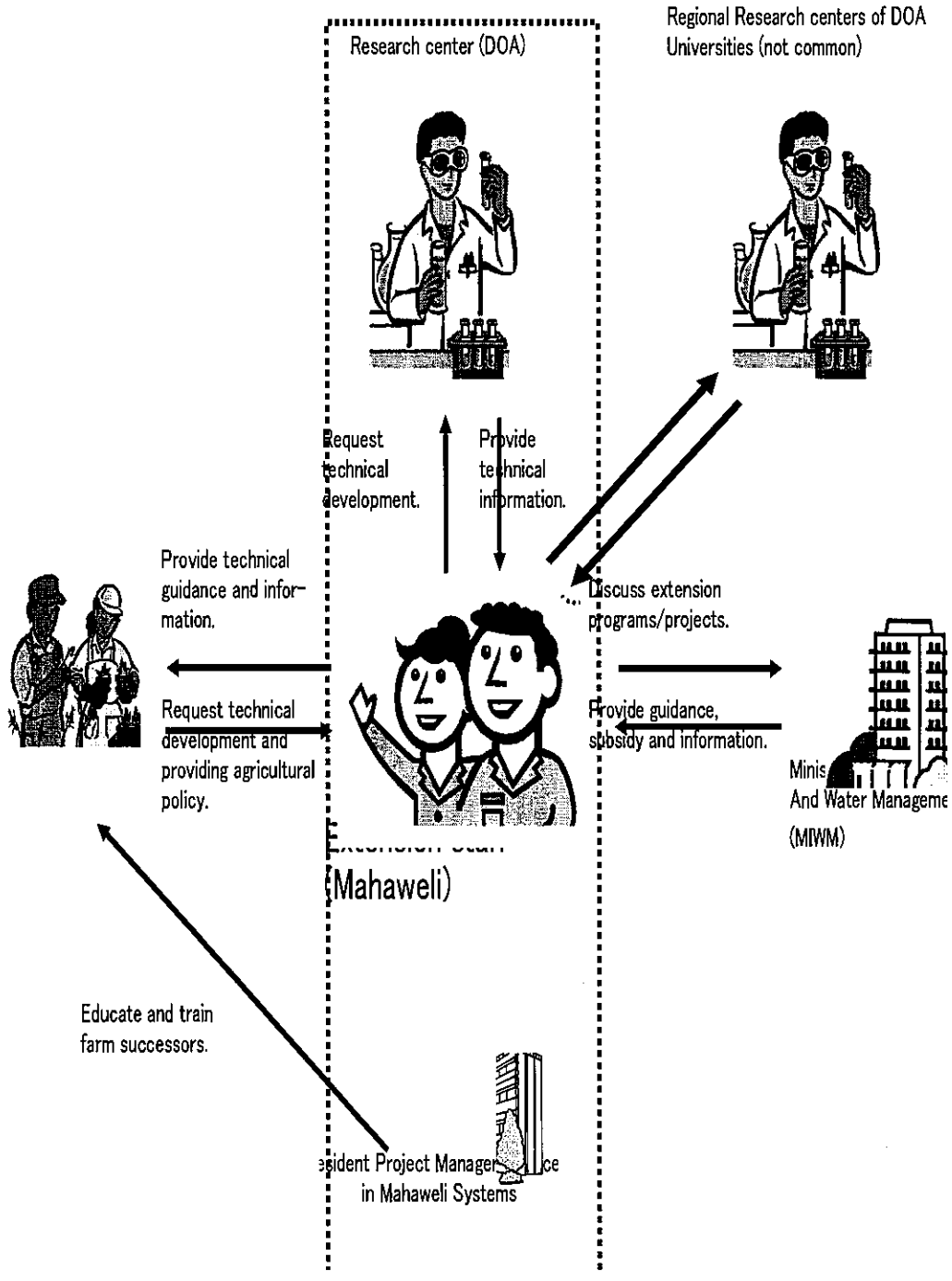
Q-63: What is MASL's institutional framework of extension program? Please describe relationship with local offices and related institutes and other organizations.

Answer
Mahaweli Authority of Sri Lanka (MASL) conducts Agricultural Extension Program on agriculture in Mahaweli Settlement Areas so that farmers can apply new technologies and they can solve problems in agriculture. The program is carried out under a basic direction that is determined by the MASL. Guiding order of the program is the Head Office (HO) – Resident Project Manager Office – Block office – Unit office. Head Office of MASL has a Director (Agriculture), Deputy Directors and Agriculture Officers (subject matter specialized). The RPM office has a Deputy Resident Project Manager (DRPM) _ Agriculture and Agriculture Officers (subject matter specialized). The Block Office has a Agriculture Officer. The Unit Office has a Unit Manager (UM) and Field Assistant (FA). For research problems the MASL and Regional Research Stations of Department of Agriculture have coordination and cooperation each other. Trial and demonstrations are being conducted on farmers' fields under the supervision of Field Assistant (FA). There are other organizations that are concerned with farming, such as Coconut cultivation Board, Department of Animal Production & Health, Sugarcane Research Institute (SRI).

Q-64: What are name of extension agents who directly contact with farmers almost every day and carry out technical dissemination.

Answer: Field Assistant (FA)

Q-65: Fig.1 describes the institutional framework in Japan. Please indicate differences from your country's framework or show another figure showing your country's framework.



Answer: Extension system in Mahaweli Authority of Sri Lanka

Q-66: The Report describes the agricultural extension system as follows. Is this correct?

Answer: Almost correct but few improvements have done as follows.

DRPM (Agriculture) of MASL (Walawa) is responsible for agriculture extension services in the Walawa Special area. The organization structure for agriculture extension services consist of (a) Project Office headed by DRPM (agric.) and four Subject matter Agriculture officers, (b) Agriculture officers in the Block Manager Offices, and (c) Field Assistants in the Unit Manager's Offices. A new block of Mayurapura is added to the structure of Walawa Project. There are two Agriculture Officers and 12 Field Assistants are working in Mayurapura block.

Q-67: Since the following re-structuring program has been done, we think that the extension service system has been modified. If any modifications have been done and the above description is not correct, please describe them.

Answer: New area has developed under Walawa left bank area. So additional two blocks emerged but administratively manage it as one block and its name is Mayurapura. Due to the increase of area extension staff is also little bit increased.

Q-68: Please show roles of the Central Government and MASL on implementation of the extension program.

answer

Central Government	MASL
① Provide a guideline to manage the Program. ② Provide subsidy for the extension activities carried out by the Provincial govemment, Mahaweli Authority and other statuary bodies. ③ Conduct examination of qualifying extens ion workers. ④ Provide information network over the country.	① Provide a guideline to carry out the Program. ② Carry out the program. ③ Assign Extension Workers in the extension centers and form farmer or community based organizations. ④ Provide extension services for farmers by FAs and indirectly through DCFOs and farmers.

Q-69: The Report shows the number of Extension agents (Extension officers) as follows. Please update the data.

Block	Before the Reform		After the Reform	
	AO	FA	AO	FA
Chandrikawewa	1	5	1	4

Murawesihena	1	5	1	5
Angunakolapelessa	1	4	1	4
Kiriibbanwewa	1	5	1	7
Suriyawewa	1	6	1	5
Mayurapura	-	-	2	12

Q-70: Can an Extension agent spend full time of duty for agricultural extension? If not, please describe the jobs other than agricultural extension and approximate percentage of spending for agricultural extension to the full time of duty.

answer Extension agents can spend only 60% of their total time of duty for agricultural extension activities including organization of training camps, field demonstration, field visits for farmers, soil sample collection and crop cutting surveys, because they have to spend some time in distributing inputs (seeds, materials, equipment) and maintaining the regular accounts for the input distribution

Q-71: Please describe the way of administrating the agricultural extension department in the Ministry.

answer
- Presently MASL is belongs to Ministry of Irrigation and Water Management. Minister of Irrigation and Water Management evaluate the programmes monthly.

Q-72: Please describe how the Ministry headquarters (HQ) supports the provincial or local extension offices.

answer
- Hold seasonal workshops at Head Office level for DRPMs (Agric.) and all Agriculture Officers
- Hold technical workshops for Extension agents
- Provide special technical training for extension agents.

Q-73: What is the monitoring and supervision system?

answer
- Monitoring the extension activities is done by the Head Office, Mahaweli systems by step-by-step at every season.
- DCFOs and farmers are monitored by FAs once per month; the FA is by the Block Manager once per week; the Block Agriculture officer is by the DRPM (agric) once per month.

Q-74: How does your government collect data and information from villages?

answer
During cropping season, it is done at once a month on progress of cultivation. The information is sent from unit, block, system or Project to the Head Office. Then it is sent to the Agriculture Department and the Census Department.

Q-75: According to the Report[1], the following NGOs are working in this area. In order to know more, please report their activities applying the table below. If more NGOs are working, pleases add these NGOs.

Answer: After development of Left Bank Area NGOs are not actively involved in supporting activities.

2. EXTENSION SYSTEM, METHOD AND TECHNIQUE （普及システム・方法・手法）
We define the extension system, method and technique as follows. After understanding these definitions, please answer the following questions.

Extension system is a combination of extension methods forming a strategic entity.
Extension method is a way of doing something applied extension techniques to conduct a technical guidance for a specific objective.
Extension technique is a practical method applied to a particular task.

Q-76: What is MASL's extension system?

answer
Our system is Integrated Extension system. This system is a combination of Target Group Oriented Extension, Problem Oriented Extension and Participatory Extension. Specific system is described as follows.

① An Extension agent attends a specific training at office once a month, and visits farmers /farmer groups and DCFOs in the remaining days of the month according to a schedule.
② When Extension agent visit target group, he has freedom to selects one farmer as a contact farmer and to give messages regularly to him or visit all or several members.
③ The Extension agent holds a regular meeting with Problem oriented farmer group to make farming schedule and to give training or demonstration.
④ The Extension agent visits to inspect and evaluate the results of the Extension agent's work.

Q-77: What are jobs of Extension agents?

answer
① The Extension agents introduce new technologies to farmers and work together with farmers to

improve technologies. In advance, the Extension agents verify the applicability of new technologies at a extension field; the field is a part of a farm provided by rent.

② The Extension agents provide guidance to new farmers.

③ The Extension agents conduct coordination activities to make and develop the locality in cooperation with agricultural cooperatives and city/town/village government offices. Consumer survey at cities

④ For environmental protection, the Extension agents provide technical guidance and training meetings for farmers to control application of fertilizers and chemicals.

⑤ For less application of chemicals, the Extension agents provide technical guidance and trading advices to farmers.

⑥ The Extension agents support family farm management by advising to make the management rule of individual family and to start new marketing.

Q-78: The following methods are available extension methods in Japan and other countries. Which methods do your country's Extension agents apply?

Answer: It is similar to Japan

①Farmers' Field School

②Observation tour to advanced areas

③Provision of a demonstration farm: In order to exhibit the verified results in the trial activities, Extension agent(s) provides a demonstration farm or plot and hold meetings for the technical guidance.

Q-79: The following table shows available extension techniques in the U.S and Japan. Which techniques are applied by the Extension agents in your country?

Answer: Similar methods are used in Sri Lanka also

Q-80: Please list up extension materials such as posters, leaflets and others available in your office/department. And please indicate the materials made in the Walawe Left Bank loan project.

Answer: Leaflets on Paddy cultivation & Parachute crop establishment method

Leaflet on Mango cultivation

Leaflet on Banana cultivation

Leaflet on Pineapple cultivation

Leaflet on Grapes cultivation

Leaflet on Citrus cultivation

Crop Almnace

Posters on paddy water management

Q-81: Who does make the extension materials?

answer
DRPM (Agrculture) office of the RPM's office provides all the materials and delivers to Block and Unit offices. Total 5000 copies are prepared at once for posters and leaflets. In additionally some leaflets, booklets and posters are received from Department of Agriculture.

Q-82: How does the Ministry select a technology to be extended?

Answer: First Agriculture Ministry introduces adaptive research to the Mahaweli Authority. Then VAT trials if it is success. After that it introduce through Demonstrations.

Q-83: What are problems faced by the Extension agents?

Answer
1 No practical experience in newly recruited FAs
2 Mobility
3.In-service training is expected from DOA

Q-84: Please describe outline of the way of in-service training?

answer
In- service Training Institutes (ISTI) of Department of Agriculture are organized in-service training. MASL extensions officers are trained pre seasonally in each season.

Q-85: Please show data of in-service trainings done for recent five years, applying the following form.

Year	Type of Training	No.	Name of training course	Duration (days)	No. of Participants
2007	Production techniques	74	Officer training		1850
	Production techniques	260	Farmer training		9100
	Others	23	Awareness training		1771
	Others	34	Capacity Building		1540
	Others	9	Skill Development		99
2008	Production techniques	58	Officer training		1450
	Production techniques	433	Farmer training		15000
	Others	19	Awareness training		481
	Others	17	Capacity Building		564
	Others	27	Skill Development		836

2009	Production techniques	79	Officer training		1817
	Production techniques	837	Farmer training		34200
	Others	10	Awareness training		309
	Others	34	Capacity Building		1676
	Others	8	Skill Development		78

Q-86: Does the training include topics to improve the extension attitude? If your answer is Yes, please describe the topic contents.

answer No.

Q-87: What are the methods of trainings?

answer Methods are workshops, seminars, lectures, demonstration plots and field visits.

Q-88: How does the training institute select the trainees?

Answer They don't select trainees. Only the sending organizations select the trainees according to required training needs.

Q-89: What are problems faced on training Extension agents?

3. RESEARCH AND EXTENSION (研究と普及の関係)

Q-90: Please list up the research institutes that assist agricultural extension, applying the following form.

Name of Institute	Main Crops	Location
1.Rice Research and Development Institute (RRDI)	Rice	Batalagoda
2.Horticultural Research and Development Institute (HORDI)	Fruits and Vegetables	Gannoruwa, Peradeniya
3.Field Crops Research and Development Institute (FCRDI)	Other Field Crops	Mahailluppallama
4.Oil Crops and Coarse Legumes Research	Oil Crops and Coarse	Angunakolapelessa

and Development Institute	Legumes	
5. Export Agriculture Crop Research Center	Export Agriculture Crop	Matale
6. Coconut Research Institute	Coconut	Lunuwila

Q-91: Please describe the processes of determining new research topics of the major research institutes.

Answer
Research problems identified from farmers are raised at both Mahaweli Technical Working Group Meetings (MTWG) and its Preparatory Meetings which are separately conducted in regional Research stations. This is the initiation and then the Research committees of DOA decide the final topics.

Q-92: What are processes of recommending new technology for extension?

Answer: Through adaptive research, VAT trials and Farmer demonstrations

Q-93: What are relationship between research institutes and Extension agents?

answer
Extension agents provide research problems to the researchers and the research institutes provide new technologies for extension. Then DOA organize in-service training courses for Extension agents and make consultation of technical difficulty faced by the Extension agents.

4. MARKETING

Q-94 The Report describe the market in the project area as follows. If correction, modification and/or addition are necessary, please describe them.

6. FARM MANAGEMENT

Q-95 The Report[1] indicated the following constraints on farm management before the Walawe Left Bank loan project. Have all the constraints been solved? If not, please describe the remaining constraints and the reasons.
Answer: Now lots of constraints have been solved but Quality improvement and value adding not improved yet.

Questionnaire on Regional Specific Products for Local Brand 特産地形成度を調査する質問状

Regional characteristics

Question-1: What are the regional characteristics (merits and demerits) of your District/U.C/village from the viewpoints of natural, economical and (if you can say) social?

Institutional framework

Question-2: Please describe the followings on each FSC/GROUP.

① Total group members
② Number of Landlords, Owner-user and Landless in the group
③ Organization of the group (ex. One leader, two sub-leaders, one marketing staff, five production staff)
④ History of the group

Government service

Question-3: What government services are provided for registered members of each FSC/GROUP? Please select from the followings and answer to us.

- Technical guidance such as technical training, providing manuals, etc.
- Managerial guidance for accounting, benefit sharing, communication among groups and good relationship with organizations concerned
- Financial supports by government subsidy

Products

Question-4: What are farmers' selling products/commodities of each FSC/GROUP?

Question-5: What are good points of these products?

Question-6: Where is the market?

Question-7 How many tons/numbers does farmers sell regularly to the market on each FSC/GROUP?

Question-8: What is the trend of the selling? For instance, the selling amounts are being increased or decreased?

Question-9: Who are customers, wholesale market, middleman, local antenna shop, directly consumer, etc. ?

Question-10: What are the target consumers of each product?

Question-11: What is the trend of consumers? For instance, change to younger age or older age?

Technology

Question-12: What is the technology that producers made great efforts to develop/improve or acquire?

Question-13: How did FSC/GROUP disseminate the technology over the members?

Quality control

Question-14: Does the reiterated members conduct quality control?

If your answer is "Yes," what is the purpose of your quality control, food safety or consumers' satisfaction?

Question-15: What is the way of controlling the product quality?

Question-16: If your answer of Question-15 is "Yes," what are the criteria?

Question-17: How were the criteria decided?

Packaging

Question-18: Does farmers/middleman consider packaging for increase selling?

Question-19: If your answer is "Yes," What is the purpose of packaging? Please select from below.

①Fill the products
②Preserve and protect
③Communication and information
④Convenience, keeping and display
⑤Consumer motivation

Market promotion

Quesiton-20: Where are the consumers of the registered members of each FSC/GROUP?

Question-21: How much is the selling price of the main products of farmers under each FSC/GROUP to the buyer and to consumer?

Question-22: How is the selling price decided?

Question-23: How is the products carried to the market? (By Middleman?)

Question-24: How is the products delivered to consumers? (Through shops?)

Question-25: Does farmers try to diversify the market? If your answer is "Yes," how are you trying?

Question-26: Do the farmers conduct promotion activities? If your answer is "Yes," please describe the promotion activities.

Stabilization of selling

Question-27: Do farmers communicate with buyers and consumers?

Question-28: If your answer is Yes, how do you communicate with them and how frequently does farmers communicate?

Question-29: Do farmers try to have collect claims from buyers and consumers? If your answer is "Yes," please tell how to collect them, and how to react to them.

Question-30: What training course did the farmers of each FSC/GROUP attend?

Questionnaire on Regional Specific Products for Local Brand 特産地形成度を調査する質問状

Name of Association: 9 D-canals of Left Bank Banana Association

Regional characteristics

Question-1: What are the regional characteristics (merits and demerits) of your District/U.C/village from the viewpoints of natural, economical and (if you can say) social?

Institutional framework

Question-2: Please describe the followings on each FSC/GROUP.

① Total group members

Number of members: Early there was a number of 527 members, and at present 190. Members have to participate to pay fees and products and continuously attend 5 meetings. If a member is failed to attend, the membership is temporary suspended. After suspension, if he wants, he has to wait for one year to have again have the membership; during waiting, no benefit is given to him.

There are other organizations selling bananas. Some farmers do not sell products here and engage in other organization, and traders directly contact. These are main reasons of reducing the member from 527 to 190. Now, farmers recognized this association's excellence and want to join the association because this association works even if the price is low; some other outlets are not working properly and they want to join this association again.

There are landless people having no membership.

The second generation farmers also can get membership with the consent of the original farmer. When originally a farmer has membership, if the second generation has a part of the land and continue banana farming, the second generation can also get membership. Both have to pay membership fees.

② Number of Landlords, Owner-user and Landless in the group

③ Organization of the group (ex. One leader, two sub-leaders, one marketing staff, five production staff):

④ Answer There assistant coordinator, two assistant organizers,

⑤ History of the group:

During 1990s, this area is promoted by MASL and during the period of 1993 to 1994, a lot of banana was produced; due to no market for banana they had to bring bananas at 4.5 km far from here. Farmers have to bring for 4.5 km and did not get good price. At a day, one trader came from Colombo and started collecting; and then he came every week. So farmers had a good opportunity of selling banana. Other traders started to come here. Then some leader farmers get together to have the

collection center here. MASL helped them by coordination. They local authorities had no support.

Government service

Question-3: What government services are provided for registered members of each FSC/GROUP?

Products

Question-4: What are farmers' selling products/commodities of each FSC/GROUP?

Answer:

Major crops: mainly banana, after cultivation, some farmers change to papaya, vegetables that are treated. The area was originally paddy land.

Question-5: What are good points of these products?

The banana is sweeter than the other places.

Question-6: Where is the market?

Answer: Mainly Colombo. They have to find out new marketing. Hambantota is very close and the farmers at Hambantota are also producing bananas and they do not want to sell to Hambantota. They want to sell for where no banana is planted such as Colombo, east area and southern area.

Question-7 How many tons/numbers does farmers sell regularly to the market on each FSC/GROUP?

Answer: What they can tell is that 2500 bunches are sold per week and 50tons per market per week. During the festival time they sell 5000 bunches, which is 20 kg/bunch x 5,000 bunch =100,000 kg.

Banana and other collection are held only on Mondays, i.e. once a week. Farmers bring the products on Sunday and marketing is started on Monday at 6:30 a.m.

Question-8: What is the trend of the selling? For instance, the selling amounts are being increased or decreased?

Answer: Jan., Dec. Apr, May are more bunches here. After 1997, the volume

With the time they decreased the volume of selling due to several reasons. One reason is that the fertilizer subsidy was started at 2006. The second reason is that other collection centers were open. Early a lot of traders come, but after a while they had connections and moved to other places around this area. The third reason is that sometimes natural diseases appeared and selling volume decreased. At about two months ago damage banana due to natural hazard. The volume increased to 2004 and then it decreased. At 2004, other market places are open.

Question-9: Who are customers, wholesale market, middleman, local antenna shop, directly consumer, etc. ?

Question-10: What are the target consumers of each product?

Question-11: What is the trend of consumers? For instance, change to younger age or older age?

Technology

Question-12: What is the technology that producers made great efforts to develop/improve or acquire?

Answer: They are maintaining a good management through training. The training subjects are bush management, plantation, and weed control. Some farmers apply covering bunches. Some farmers remove last hands to keep the same size.

Question-13: How did FSC/GROUP disseminate the technology over the members?

Answer: At the early stage, MASL gave them the technology. At present, they have had some experience and they share the experience among farmers through meetings.

The meeting is held at 20th of every month. Today is the day of monthly meeting. MASL specialists attend the meeting voluntary and transfer the technologies.

Quality control

Question-14: Does the reiterated members conduct quality control?

Answer: When the farmers bring the stuff, they separate the big bunches at one place and poor ones at another place. Then, farmers decide the price.

Do they apply some scales? They classify the bananas at first with varieties, at second bunch size at third how finger is compacted. Appearance of there some diseases and damage are also considered.

Question-15: What is the way of controlling the product quality?

Question-16: If your answer of Question-15 is "Yes," what are the criteria?

Question-17: How were the criteria decided?

Packaging

Question-18: Does farmers/middleman consider packaging for increase selling?

Answer: They know that post harvest handing brings good price. When they have good banana, no problem is for selling. Some farmers bring ripen banana but the prices are low.

What package do they do.

Answer: They have no idea of packaging. All the stuff are carried with bunches. If the government or

others come here to promote, they can adjust.

Question-19: If your answer is "Yes," What is the purpose of packaging? Please select from below.

①Fill the products
②Preserve and protect
③Communication and information
④Convenience, keeping and display
⑤Consumer motivation

Market promotion

Quesiton-20: Where are the consumers of the registered members of each FSC/GROUP?

Question-21: How much is the selling price of the main products of farmers under each FSC/GROUP to the buyer and to consumer?

Question-22: How is the selling price decided?

Answer: The farmers tell the price and negotiate with traders. During the negotiation, no assistance is given from the association. Normally farmers know the price range from mobile phone, papers, TV program and others, and then decided the price according to the demand.

Question-23: How is the products carried to the market? (By Middleman?)

Question-24: How is the products delivered to consumers? (Through shops?)

Question-25: Does farmers try to diversify the market? If your answer is "Yes," how are you trying?

Question-26: Do the farmers conduct promotion activities? If your answer is "Yes," please describe the promotion activities.

Stabilization of selling

Question-27: Do farmers communicate with buyers and consumers?

Question-28: If your answer is Yes, how do you communicate with them and how frequently does farmers communicate?

Question-29: Do farmers try to have collect claims from buyers and consumers? If your answer is "Yes," please tell how to collect them, and how to react to them.

Question-30: What training course did the farmers of each FSC/GROUP attend?

Answer: About 50% of members received trainings from MASL. It was at the early stage, about 250 members were received. Training was started at 1997, which was before establishing the Association. Recently, no training has been done. For last one year, nobody had training. In last 5 years, one person received training about micro irrigation and banana cultivation.

What parts of training did they practice? They learned and applied the banana bush management, water management and fertilizer application.

Form the loan aid project; they received one machine for organic fertilizer production. It was a Crasher but they are not using because it needs mortar from tractor but they cannot apply the mortar continuously.

Other questions

On the cultivation area, farmers cultivate at 0.2 acre, 0.4 acre and others. Lot size is 1.0 ha. **Because of fertilizer's subsidy of paddy, some farmers change from banana to paddy.** Some farmers continue and changing banana to paddy is not completely, some parts are still kept.

What kinds of training do they want?

Answer: Key members want to have how to sustain good organization, how to conduct marketing, new crops, and new technology of agriculture.

For farmers, the required training subjects are how to have a good quality of banana, fertilizer management, water management, increase of productivity, record keeping, banana processing, etc.

During rain days, these places are water inundated.

Some people have a problem of land due to installation of the highway.

Do they have a computer?

Answer: No. They like to have it but they do not have enough money.

Local government Pola applies a fee of 5 Rs/bunch, but here only 2 Rs/bunch.

Association Member fee is 120Rs/year. Fees are used for management premises, employment of two persons, i.e. person for security and cleaning.

They have a bank account.

The chairperson is originally a farmer.

訪問事務所での質問

Questions and Requests to the Unit, Block, and Resident Project Manager's office

1. Request-1: We will visit staff training facilities and equipment that are described for Q-25.as cited below.

   Answer for Q-25: The Training facilities are available but available training equipment are not adequate.

2. Request-2: The following extension materials are listed up for the answer of our question of Q-80. We will look at them.

Answer for Q-80: Leaflets on Paddy cultivation & Parachute crop establishment method

Leaflet on Mango cultivation
Leaflet on Banana cultivation
Leaflet on Pineapple cultivation
Leaflet on Grapes cultivation
Leaflet on Citrus cultivation
Crop Almnace
Posters on paddy water management

2. Request-3: We would like to have the following organization charts.
   ① D-canal FO
   ② Unit level FO
   ③ Block level coordinating committees
   ④ Project management committee

3. Question-F1: According to the Project proposal from the GoSL, the following five problems are shown. We would like to know real examples of each problems appearing in your office responsible area.
   (1) the establishment of an institutional mechanism for efficient water management
   (2) provision of proper maintenance system for the new irrigation structures,
   (3) capacity enhancement of farmer organizations and officers for proper management of newly introduced OFCs and sophisticated structures,
   (4) consideration of environmental impacts given by the new facilities in water management and other farm activities and
   (5) improvements of processing and marketing for sustainable income generation with OFCs.

4. Question F2: What are the first three serious problems faced by the farmers?

5. (For FAs) How many times per week or per month on average do you visit a village?

6. Question F2: (For FAs): What are the problems faced by the farmers?

Question to RPM's office on June 21, 2010

1. Is the following understanding correct?

In FO, External audit and internal audit are provided. The external audit is assigned by the Block office and it is done once per year with fee payment of **2000** Rs/year from the FO.

Correct

2. There are four SMOs in the RPM office. One SMO is in charge of Paddy, the second of OFC and the third is forestry and environment. What is the fourth SMO's speciality?
Answer: Demonstration farm development

3. What is the abbreviation of "DCFOs"? DCFOs are shown in the following sentence.
"MASL provides extension services for farmers by FAs and indirectly through DCFOs and farmers."
D-canal farm organization

4. What are the following officers' jobs?
Block manager: Coordinate administration at block.
Land officer: Look after land matters scha as assigning land, issuing permits and solving land problems, dispute of two parties.
HRID officer: Build and strengthen the FO, ornaize training program of FOs, conduct sport activities and voluntary activities, religious activities, conduc business promotion (family business such as curd production, etc.)

Example answer: Unit manager: Main job is settlement, coordinating all the resources of unit. Welfare of farmers, FO development, participatory management Welfare of farmers is helping them to enjoy good life sanitation, drinking water and others.

5. What is the progress of turn-over? All the FOs have taken over the operation and maintenance of D-canal and F-canals?
Answer: 1st agreement is MASL and FO agree the conditions of the FO are common agreement. ,the D&F canal. The 2nd agreement, the short coming are fulfilled, the FO agree to take over the D&F canals. The table indicate the 2nd agreement of 60, which means that 60 have been turned over and the rest has not yet up to end of May. They plan to complete within this year.

Before turn over, they get trainings. In real, normaly, traing is given to committee members. But every year, committee members change and the new members had no training. In the left bank, Mayu Unit 1 to 6 are trained butn7 to 12 were not trained due to finishing the loan aid project. Technical matters are done by IE, HRID, EA, TO, Unit manager. The table is the progress may end.

6. Is the following description of the marketing system correct?

(1) Marketing place in the Project area

Local market called "Pola" is the typical marketing place in the Project area. There are sixteen (16) as in and around the Project area; eight in Chandrikawewa block, two in Marawashihena, two in Angunakolapelessa and nearby. In the Left bank, three are in Suriyawewa block and one is in Kiriibanwewa. The following table show features of the existing Polas in and around the Project area.

Table 3.3 Existing Polas in and around the Project area

	Name of Pola	Block	Type		Operating Organ	Operation Day	
						Retail	W/sale
1	Uda Walawe (Town area)	Embilipitiya	Retail		Pradeshiya Saba	Wed & Sat	
2	Galwanguwa	Embilipitiya	Retail	W/Sale	Pradeshiya Saba	Sat	Sat
3	Embilipitiya (New town)	Embilipitiya	Retail	W/Sale	Pradeshiya Saba	Wed & Sun	Tue
4	Canal-8(Morokatiya)	Embilipitiya		W/Sale	Canal-8 FO		Mon&Sun
5	Danduma	Embilipitiya		W/Sale	Pradeshhiya Saba	Tue	Tue
6	Kethsirigama	Embilipitiya		W/sale	Pradeshiya Saba		Mon
7	Tunkama	Chandrikawewa	Retail	W/Sale	Pradeshiya Saba	Fri	Thu
8	Padalangala	Chandrikawewa	Retail	W/Sale	Pradeshiya Saba	Tue	Tue
9	Barawkumbuka	Murawesihena	Retail	W/Sale	Pradeshiya Saba	Sun	Tue&Sat
10	Mamadala	Murawesihena	Retail		Pradeshiya Saba	Sat&Wed	
11	Angunakolapallessa (Towr	Angunakolapallessa	Retail	W/Sale	Pradeshiya Saba	Wed&Sun	Wed&Sun
12	Ranna	Angunakolapallessa(out sid	Retail	W/Sale	Pradeshiya Saba	Tue&Fri	Tue&Fri
13	Kiri ibbanwewa	Kiri ibbanwewa	Retail	W/Sale	Pradeshiya Saba	Sun	Sun
14	Mahagama	Suriyawewa	Retail	W/Sale	Pradeshiya Saba	Tue	Mon
15	Hatporuwa	Suriyawewa	Retail	W/Sale	Hatporuwa FO	Tue	Mon
16	Suriyawewa (Town)	Suriyawewa	Retail	W/Sale	Pradeshiya Saba	Sat	Fri

(Source: the SAPI Team for JBIC)

3. Embilipitiya has economic center build by the government

14. Haburugala Kiri ibbanwewa block Retail W/sale, Pradeshya Saba, Fri for both retail and wholesale

14 Mahagama under Kiri ibbanwewa

15 Hatopruwa

16 Suriwaywewa

The Pola is generally an open space without some market facilities such as a few roofed stall, water supply system (some place only). In addition to these, roads, communication facilities, lighting, and parking spaces are poor in the existing Polas.

The existing Polas are classified into two types, wholesale and retail. Normally wholesale is held very early in the morning from five to nine o'clock. Retails sales take place later. In some places , retail is not operated at the same day of wholesale. Pola is normally held by Pradeshiya Saba (the local government). Polas operated by Preseshiya Saba collects an entry fee from sellers and lorries. Farmers who bring and sell their products pay 5% of gross sales and lorry owners pay Rs60 to 70 Rs per lorry. While Polas managed by FO are generally free markets. In the Pola at Hathporuwa, one of the FO ménages it with farmers paying Rs. 10 to Rs. 15 per sale as donation for maintenance of Pola.

(2) Marketing system

Pola manager, trader, collector, and rice miller are the major stakeholders for agriculture commodities marketing. Buyers join the Pola marketing from various places as Colombo, southern scities as Matara, Galle, upcountry as Nuwara Eliya, and the Estern cities as Monenagala and Ampara. The largest number of trader comes from the central market of Colombo. Then the huge quality of Banana and Papaya is brought to the capital city by the traders. Local collectors, shoppers, and farmers also bring the commodities to the markets in Colombo and in its suburb.

Banana, vegetable, fruits, condiment crop and tuber crops are treated in the Ploas. Pulses and other course grains as Maize, Kurakkan (finger millet), Sesame are sold to local traders in the town area. Then the local traders sell the agricultural products to middlemen who bring the products to larger markets. Paddy is mainly sold to local rice millers and local traders then they bring the milled rice to the larger markets. Paddy marketing board during the harvesting time opens their stores for purchasing paddy rice.

Price of OFC in Pola is basically decided through direct negotiation between farmer and buyer individually. Trader and collector offer the price to the farmers on the basis of the daily market prices obtained from the staff in their own markets.

Inside the villages, there are some collection centers operated by the farmers and traders. A farmer connects with a trader and the trader comes to village; this point is the inside collection center. In addition, some second generation interpreters do some collections.

MOLA=
ministry of livestock development.

June 22 , at the conference room in MASL

1. Priority of the Project (Detail will be shown in the answer of supplemental questionnaire)

(1) Promotion of OFC

(2) Training

(3) Institutional capacity development

(4) Environmental issue

2. Priority of the Project (Detail will be shown in the answer of supplemental questionnaire)

- The addressed issues are true, no problem/ no objection from MASL.
- Institutional capacity includes maintenance which can be done by FO and civil engineering should be done by MASL. The priority is the maintenance, soft-type.
- MASL knows that the mindset of farmer is low.
- JICA is considering the possibility/fiesiblity, or what we can do, as we could see cultural difference and historical difference, i.e. Farmer in Japan have much less farmland than in Walawe, Japan has been implementing its field for a long time but Sri Lanka has not yet.
- MASL doesn't allow fragmentation of farmland but farmers do so.
- Ownership is one thing to be consider. Farmers pay 50 % and MASL support 50 % and farmers don't want to feel.

3. Others

(1) Water management: FO linkage, F-Canal (about 10 to 20 farmers) leader come to D-canal, D-canal (about 60 to 100 farmers) leader come to the unit level organization (about 500 to 1,000 farmers), which consist of Farmer leaders by D-canal, Unit manager, one FA and one EA. Unit comes to the block level, which consist of Farmer leaders, Agricultural officer, land officer and others. The Project level organization consists of RPM and others. **Only D-canal is an organization** collecting fees under the irrigation act. About 100% are collected. Fee amounts differ to geographic conditions. **Penalty is also given** at about 5%. They have a power. There are small portion farmers not under FOs. Some people do not agree water delivery. At that time, the RPM office helps them. Majority of leaders are volunteers. D-canal and F-canal leaders are under them. Some got more water and some destroy canal. Very few people do not obey. If they are not helping, the problem becomes big. All are paddy farmers. Government gives subsidy. FOs distribute water. In future, business farming community like cooperatives will be organized. Very few FOs make business.

(2) FOs under F&D canals, FOs have funds to repair. **The unit level canals are not done due to lack of money**. Some destroy canal to take water. Main canal and blanch canal are managed by MASL. Left bank has no problem. Sugarcane area has no FO. They destroy canals. It takes 20 to 30 years for rehabilitation. For lack of water due to increasing paddy, some make damage to take water. Solution is increasing OFCs. Sugarcane is under Assistant Government Agent (AGA) and is not properly maintained. Land is under MASL and is planning to be handed over to MASL and MASL have to repair. 3400ha i.e. 2400ha for irrigable, remain rain-fed. There is a trend to change to paddy. Not many are changing to paddy. OFCs' crops are not yet value added. Because of marketing, OFCs are not fix price. MASL plans to extend OFC to 40 % of the Uda Walawe whole area (Right Bank and Left Bank) and 60 % of Left Bank area.

(3) Farmers want high standard training program for global market level. **Only one or trainings per**

farmer were done under the loan aid, but it is not enough. The business training is not enough. After 2008, no training has been given. Changing their mind is very difficult. Officers thought that training should be linked marketing. Marketing training had held under the loan project, but only one of five practices.

4. The first three serious problems faced by the farmers?

- Market for OFC
- Technical know-how for processing value addition. Cottage industry is hoped.
- Livestock facility, There is a famous Curd (70 % of curd is produced in this area.)

About 30% of the products are damaged due to packaging. Mr. Yoshino recommended to do rice processing, grading and marketing. FOs have no grading system. Marketing is preliminary stage.

16 June,2010, 12:20 – 13:30, Development Center, Suriyawewa block

Questions to the officers in Sooritywewa Block

Attendants: 1-Block manager, 3-Unit manager, 1-Technical officer, 1-AO, 3-Field Assistants (FAs)

1. Questions on the following issues

① The establishment of an institutional mechanism for efficient water management

② provision of proper maintenance system for the new irrigation structures,

③ capacity enhancement of farmer organizations and officers for proper management of newly introduced OFCs and sophisticated structures,

④ consideration of environmental impacts given by the new facilities in water management and other farm activities and

⑤ improvements of processing and marketing for sustainable income generation with OFCs.

(1) Institutional problem of FOs

Some members cultivate by lease of land and they do not take care of the FO meeting. The lease is on annual base. Such farmers are 30 to 40% of the total. Some of lease farmers attend the FO meeting, but some are not due to their busy condition. At the maximum 70% of the members attend the general meeting, majority is attending at 60%. Due to field activity, they do not attend.

(2) Maintenance problems

① At least two times per season, farmers clear the canals. About 70% of the members attend.

② Compaction of pre-cast concrete is not well, so pre-cast concrete should be repaired. About a half of canals are pre-cast canals. Most FOs do not attend to repair it. They do not have enough money and think that it should be done by MASL.

(3) Capacity enhancement

Some people did not attend the training and some repeated to attend it. Some participated number of training but not applied in their field. Our field officers conduct extension trainings and farmers attend. One officer said that 60 % did not attend the program due to the miscommunication. The FAs conduct training under the trees, and others are in the field. One spends for training 1 to 2 hour with 10 to 15 farmers. The maximum, three times' trainings are done. FFS is conducted every week at about 3 hrs for every season. Training materials for FFS are leaflet, raw samples from field, posters and multimedia (ex. projectors). Officers conduct field exchange program.

(4) Environmental problem

Re-forestation program is done for tank. Soil erosions appear on canals and salinity problem also appears. Farmers try to repair the F and D-canal. Salinity is due to drainage. The reason is human being that is taking water from drainage. **Too much pesticide and fertilizer are given due to not following the instruction**. The cheap way is applying herbicide. Officers educated farmers but they

do not.

(5) Marketing and processing

Rice price and other prices are the problems. They wish better price as the production cost increase. They have not applied quality control. They think they do not have such type of problem.

They think that they need to spend money for promotion. They think that they can do promotion and plan to have promotion market/selling center near future.

The main target market is Colombo.

2. How frequently attend the in-service training?
   ① Three FAs and AO didn't attend any training for last one year. In the last three years, one AO attended but other two did not.
   ② EA did attend training at three years ago.

3. Jobs
   ① Unit managers: Main job is land problem. Land problem is giving the area issuing permission. Illegal settlers have cultivated and managers are facing land problems, 25 % have to go. Land fragmentation is also a problem. They gave 2.5 ha to a settler and if the settler dies and have three to four children, the land is separated. And other jobs are institutional development and human resources management, technical transfer of agriculture technology.
   ② Transportation of FAs is motorbikes.

3. The first three serious problems faced by the farmers

EA: Distribution of water due to illegal water taking. Another problem is increasing of paddy in the OFC area. Late cultivation is also the problem due to labor limitation.

4. Questions and answers
   ① Which crops do you want to promote? A: It is Banana but no subsidy besides rice have fertilizer subsidy. Price fluctuation is also problem.
   ② What are excellency of these areas? A: Banana, paddy, papaya and others are the points. These two blocks are better on perennial crops for soil and climate. Hambantota is dried district.
   ③ Any strategy to Hambantota? A: New town is coming and the government has a commercial center. Embilipidiya will be the town of commercial area. All the products will be sold there.
   ④ How is the condition of quality control? A: Quality control has not been applied yet due to the behind situation. We have to control it. We request to DG to send their products with Mahaweli logo. A sale center is provided.
   ⑤ Where is the main market? A; The main target is Colombo.

⑥ There is no agricultural cooperative. FOs are working for water management, issuing fertilizer, helping to sell the paddy to the government, cultural program and other small scale contract for civil works. Fertilizer is provided FOs in bulk basis, issuing the center under Ministry of Agriculture to deliver fertilizer.

⑦ Only a few is selling rice to the government agency because FO leaders are not standard. FO leaders are elected every year. New leaders have less experience to well manage it. Government buy better price but it is easy to sell rice to the private. If to government, they have to carry products to the paddy marketing place, which is located 5 to 10 km far away. The government appointed D-canal organizations and sets quality of rice and only buys the quality products.

⑧ Most of FOs have crediting with low interest rates due to no documentations. This is an informal way. There are some others, like banks and NGOs, but high interest rates are given.

⑨ Issuing center under Ministry of Agriculture only provides fertilizers to FOs. For its transportation, render system is applied and transportation cost is for farmers. FOs recieve fertilizer in bulk basis.

June 16, 10:00-11:45 at hole of Development Centre in Suriyawewa

Interview with FO representatives in Suriyawewa Block
Total 31 representatives from 24 FOs

(1) Basic data 基礎データ

① Farm lot size: 1ha lot- 4, 0.8ha lot-19, 0.6-11, Less other-4

Farm lot size	No of FO	%
1ha	4	10.5
0.8ha	19	50.0
0.6 ha	11	28.9
Less than 0.6	4	10.5
Total	38	100.0

② No of FO members

No. of members	No. of FO	%
More than 150	4	17
101 to 150	10	42
50 to 100	7	29
Less than 50	3	13
Total	24	100

(2) Activities

① Contents: All of 24 work for not only water management but also many other jobs
② Frequency of committee member meeting: Once per month.
③ Frequency of general meeting: Once per three months
④ Attendance: Although general meetings are held, only few but some FO members do not come. The reason of absence is poor organization. The reason of the poor is that some farmers' problems are not solved. Some FOs thought it is because they did not attend training. Only 7 out of 24 feel that the FO is poor.
⑤ Water fee collection rate:

Water fee collection rate	No of Fos	%
80% to 100%	12	50
50% to 80%	11	46
Less than 50%	1	4
Total	24	100

⑥ Contents of meeting: Majority of the contents are water management problem and then land problem, infrastructure, fertilizer, cultivation calendar, pest and disease problems, welfare, production and marketing Some meeting include FA, Unit manager and some do not include them.

(3) Farming 営農関連調査項目

Major crops: Rice and banana. All FOs mix both rice and banana, vegetable, papaya, etc.
Farmers buy vegetable seeds from private trader and select rice seed from their paddy. 18 farmers out of 31 renew the seeds.
There is no particular seed paddy.
Major livestock and number per household: In their organization, they are not breeding due to the land limitation, but some of the members do breeding.

(4) Amount of water fee and collection rate
Almost all farmers pay.

(5) **Extension** 普及の実態
① Farmers weekly meet FAs. Whenever need, they can go and meet them. They can meet. FAs walk fields once per week or twice pre week.
② For coconut, extension service is poor.

(6) Details of problems discussed in the FO meeting
Water management
① Farmers who are upper area break the block and take more water. The solution is that they collect money, purchase blocks and try to repair it. They do not like punish the person. Majority of downstream area farmers have a lot of problems. Some canals are a half way to be improved.
② Upper side canal go down due to lack of compaction and it make problems at downstream side.
③ All FOs are practicing rotated irrigation, but it is not enough due to incomplete canal and some farmers' attitude. Some farmers, for instance, take water for 6 hours, then the upper side farmers try to open to take some water and the lower farmers face troubles.

Land
Some farmers dispute the boundary. Some farmers enjoy more than the given. Some use drainage area and road area for cultivation. FOs cannot solve these problems and MASL assist them.

Infrastructure
① **The pre-cast concrete flumes** of some areas go down due to poor compaction. Then the soil is lost and water cannot be taken. This problem happens on D canals and F canals. All the FOs were reported to have this problem. Since they do not enough money, they cannot repair it.
② New constructed tank capacity is not enough due to silt depositing of the Tank. Every week they remove silts. They deepen the tank. Some canals are a half way constructed.
③ Structures are broken by buffalos and cattles.
④ Some drainage canals are blocked by some farmers.
⑤ Some drainage canals are not functioning well because canals are not allowed to clear by farmers during construction, and some are suffered.

Fertilizer
① Delay of delivering fertilizers is the problem.
② Using organic fertilizers is only 10% of farmers because they have to apply big bulk. Even applying, the farmers apply at very limited scale.
③ A lot of fertilizer for paddy cultivation is applied.
④ Home garden is applied.

Cultivation calendar
The problems are deciding when to start cultivation, what is the rice variety and when to start irrigation.

(7) **Problems faced** on marketing 直面している問題
Rice price is going down in real. Although the Government price is 28 Rs/kg , the real purchasing

price is , at 23 Rs/kg, No buyer takes paddy at 28 Rs/kg. Farmers propose to process banana and papaya to be juice. There is no clear idea. Recently, papaya price is down to 5-6 Rs/kg and farmers do not make money. The processed juice and other are profitable. Price fluctuation can be avoided.

(8) **Findings** 調査で気づいた点

① Only 13 participants out of 31 has attended the loan aid training. The reason is that. they had urgent work, FO officer changed every year and some farmers didn't know the training. The training program was started at 2005 and those at 2006 have only a few programs. Thus the main trainings were done at 2007 and 2008, which are main that are not enough.

② Due to the land limitation, they do not want to try new crops. They want to increase the yield. They like to learn new things such as parachute nursery method. If new thing is introduced, they want to practice.

③ Problem of banana marketing, middle mans collect their banana and price is not satisfied.

④ Some farmers say that banana has no protection, but some kind of maintenance of soil fertility for OFC is required. So they will change from OFC to paddy. Fertilizer price is also the reason.

⑤ Majority of the attended FOs identify shifting from OFC to paddy due to fertilizer, pest and diseases, soil fertility.

17 June 2010, 11:40-12:30, Mayururapula Block Office

Questions to the officers in Mayupapura Block

Attendants: 1-Block manager, 12-Unit manager, 2-Technical officer, 1-Assistant Officer, 7-Field Assistants, 3-EA, 1-Irrigation engineer, 1-fishery development officer, Total 28

1. Please describe the problems of each subject

(1) Institutional problem of FOs

FOs are not well organized. Membership collection is low. Cleaning canal attendance is not the standard. Always officers stand behind of FOs. Leadership development is necessary. Taking over of D-canal, some FOs are not well taken over. They are always depending.

(2) Maintenance problems

Some land is leased and the farmers do not participate the maintenance program. In the paddy D canal and OFC-D canal, Paddy D canal of maintenance is well but OFC-D canal is not good on maintenance because farmers FOs do not give cleaning assignment due to low participation for cleaning to farmers. OFC D-canal organization farmers cannot get fertilizers. Paddy D-canal is biding to subsidy.

They recommend to have separate office of FOs on paddy and OFCs. FOs have no office. The have meeting at unit manager's office.

Why level different?

Farm turn-out is not placed at correct place at some places.

(3) Capacity enhancement

Unit 1 to 6 FOs completed water management completed and doing well. Unit 7 to 12 FOs have not received water management and maintenance training courses.

Capacity building of paddy and OFCs is necessary. Although FAs are teaching, new development and new things are needed to learn by officers and farmers.

(4) Environmental problem

Salinity problems are the main problem. Water weeds in tank and silting of tanks and canals are problems. The real reasons of poor drainage are that some area disappear by washing off by rain, some place re-use water and salinity problems exist. In some places, drainage canals are blocked by silting. The main drainage canal is maintained by the MASL.

(5) Marketing and processing

There is no proper marketing, and middle man is benefiting.

One village one crop concept is not done because farmers do not practicing and do not get enough products. For instance, Papaya seeds are distributed for demonstration, mango plants and orange plants, banana bags, dragon seeds but these are not enough. The program has to be continued.

Post harvest hading is poor and the farmers have low prices. Post harvest handing area is very important. For instance of banana, There are a lot of damaged during transport. Excess production has to be processed in this area.

2. How frequently attend the in-service training?

Took last one year: No

Two years: No.

Three years: 5

Four years: 2

Five years: 6

Attendance of JBIC loan program: 3

3. Jobs

① Unit managers: Main job is settlement, coordinating all the resources of unit. Welfare of farmers, FO development, participatory management Welfare of farmers is helping them to enjoy good life sanitation, drinking water and others.

② Technical officer: water management, providing advices for maintenance of irrigation system, providing advices for technical problems such as house construction, canal maintenance, during the construction land devt. Activities.

③ Irrigation engineer: Mainly water management, supervision to EAs and TOs.

④ Agriculture officer: preparation of annual and monthly action plan of agircuulrure and extension, coordination and monitoring of FAs, coordination with other institutions like dept, coordination of supplying inputs, Training of farmers and FAs.

⑤ EA: Mainly water management, handing over the D-canal to FOs, Rotation planning, preparation of estimating construction works

⑥ FAs: Transfer of new technology, progress monitoring, planning of agriculture implementation program at the unit level, cordinatioln with other officers, approving application forms of fertilizers, Supervision of farms and attending their problems on pest and disease. They give advices post harvesting and coordinating marketing personnesl such as middle man. New technologies are such as parashut delivering, introduction of tisu culture for banana

⑦ Fishery development officer: In-inland fishery and prawn culture, planning these activities, organization of farmers, coordination of supplying finger rings (nursery fish) in the tank, organizing inland fireman. there are 18 fishery societies

3. The first three serious problems faced by the farmers from FAs' view point

Marketing is the main. Some farmers have not yet settled living their original house. Elephant and buffalo damages.

4. Questions and answers for FA

① Which crops do you want to promote? Banana, papaya, vegetables

② What are Excellency of these areas? Banana and fruits for the dry area and better to cultivate less water crops, this is a tail end and hard to bring water

③ Any strategy to Hanbantota? They have.

④ How is the condition of quality control? No quality control

⑤ Where is the main market? Mainly to Colombo and through Suria city

⑥ What are jobs of a FO? Mainly water management, they have not developed marketing capabilities. They are within 3 to 4 years.

⑦ What crediting is applied by farmer? Both rural devt. Bank by government is majority, informal section is also operating

FAs are in charge of 508, 530, 540, 742, 543, 1265, 532. The 1265 is area of big including old settlements before loan aid. They are using motorbikes.

5. Others

IPM is started for paddy and vegetables. It was conducted at suria and he transfer it to here.
They advise to use organic fertilizers.
For marketing, they want to do quality production by packing products. Linking with more markets, there is price different between here and Colombo. The middle man gets high commission and they want to reduce it. They have to promote market oriented products. Total about 5 to 6 middle men and some contacts to 50 to 100 farmers.

17 JUNE 2010, 9:45- 11:00, MAYURURAPULA BLOCK OFFICE
QUESTIONS TO FO LEADERS

Total 56
Number of FOs: 26 (Male 19, Female 7)
Number of attendants: 39 (Male 30, Female 9)

1. Basic data 基礎データ

(1) Field lot scale

Farm lot size	No of FO	%
1ha	13	
0.8ha	12	
0.6 ha	1	
Less than 0.6	0	
Total	26	

(2) No of FO members

No. of members	No. of FO	%
More than 150	1	
101 to 150	2	
51 to 100	8	
Less than 51	15	
Total	26	

(2) Activities

① Contents: All of 26 work for not only water management but also many other jobs? Y

② Frequency of committee member meeting: Monthly

③ Frequency of general meeting: Monthly

④ Attendance of general meeting: 75 to 80%. Some case of harvest poor attendance. Case of poor FO, five FO has only 1/3. Reasons of absences are salinity problem, leasing of land, economic difficulties, location far, elephant damage, buffalo damage.

⑤ Water fee collection rate:

Water fee collection rate	No of Fos	%
80% to 100%	16	
50% to 80%	7	
Less than 50%	3	
Total	26	

Reasons are above

⑥Contents of meeting: **Water problems, elephant** and buffalo damage, **land dispute, short coming of infrastructure, short coming of road facilities, cropping pattern, mantenence of canal system,** construction of hall, **fertilizer, other voluntary activities such as cleaning of canal,**

welfare activities of farmers, getting good price of their produced, seeds and plant materials, difficulty of taking water, settlement problems, drinking water problems, electricity, insice road network, in sufficient capacity of the tank

(3) Farming 営農関連調査項目
Major crops: Paddy, papaya, banana, vegetables, mango, orange, coconut, pineapple, yam
Major livestock and number per household: Milk cattle and buffalo. Only 3 to 4 animals and very few farmers

(4) **Extension 普及の実態**
How frequently, the FA visit the village?
Every week or two per week, small number has short coming

(6) Details of problems discussed in the FO meeting
Water problem (Water management)
OFC area shifting to paddy, original system limits water, and the rising the shortage
Tank capacity is not enough
Paddy area cultivation calendar no water but banana needs continuous water. Water resource has been stolen. After water issues is crops, water is come every two weeks. During off-season, they can not take water. During off-season, need to repair and banana needs water. Some farm land permeability is very high and not sufficient.

Land
Land dispute, encroachment of reservation and dispute between two parties, some land reserved for settlement but not settled and a lot of animals and others come and damage other farmers' fields. Drainage canal is not properly designed and salinity problem has occured.

Infrastructure: short coming of infrastructure, short coming of road facilities, maintenance of canal system,
Some canal due to level differences they cannot take water, damage of pre-cast concrete structure due to wrong compaction, some places are washed away after pre-cast canal, Sometimes, due to water spilling through bank and it is eroded. Water weeds of tank, Branch canal road and D-canal road should be concrete or asphalt pavement, F-canal road is poor and should be gravel pavement. Some tanks have rip-rap is not properly installed. Tank bank road sheep slope
Cleaning of canal, de-silting, canal over flowing. Cattle damage, road and canals are affected.

Fertilizer
Fertilizer is not received in time. Illegal farmers are not entitled to get fertilizers. OFC farmers are not entitled to have the subsidy
Compost application is applied by some farmers.

Business development
Getting good price of their product: Every time middle man has benefit and not proper market arrangement. Farmers need guarantee price of the crops. They do not have post harvest handling

system. They are interest to have marketing place within the village. Market place constructed by the Project is not functioning due to no starting of local government. They need storage to keep commodity. They need processing facilities for fruits.

Cultivation calendar

(7) **Problems faced** on marketing 直面している問題

(8) Others 調査で気づいた点
① How many persons did attend any training?
20 persons out of 39

② What crops do they want to increase?
Two types of land paddy and OFC, Paddy area grow paddy, OFC area like to grow banana despite problem of disease (the reasons to select banana are less water and easy cultivation, less manpower)

③ Some farmers shift from OFC to paddy?
12 FOs have this problem.

④ What are the most necessary subjects taught by the extension officers?
They need new technology and systems on crop production. They like to have pesticide free products. They like to know without much pesticide. Majority of money goes to protect crop like pesticide. IPN program has started in suriyawewa but not in this block.

STANDARD SURVEY FORM

Project name: Uda Walawe Left Bank Irrigation Upgrading & Extension Project
Date of survey:
Major persons whom we interviewed:

(1) Outline 概要
- **Location:**
- B **beneficial area:**
- **Number of Water users' group member:**
- **Finished or not for Irrigation Management Transfer (IMT):**

(2) Basic data 基礎データ
① **Real irrigated area:**
② **Field reconnaissance observation:**
③ **Water resource:**

(3) Irrigation related 灌漑関連調査項目
① **Details of the irrigation system:**
② **Number of hydrological stations installed:**

(4) Water management 水管理関連調査項目
① **Provision of water users' group or association:**
② **Water management:** (ex. Once per week rotational irrigation)
③ **Activities of the WUAs/WUGs:**
④ **Frequency of meeting:**
⑤ **Amount of water fee and collection rate of water fees:**
⑥ **Who collect these fees?**

(5) Farming 営農関連調査項目
① **Major crops:**
② **Average yield of each crop:**
③ **Share of the product used for selling on each crop:**
④ **Source of seeds** (from market or re-production):
⑤ **If reproduction, how to select qualified seeds:**
⑥ **Usage of chemical fertilizer**
⑦ **Usage of organic fertilizer:**
⑧ **Biggest problems on farming** (weed, soil erosion, etc):

(6) Livestock 畜産関連調査項目
Major livestock and number per household:

(7) **Extension 普及の実態**

.

(8) Marketing and Processing 流通加工

① Where is the location of market of each product:
② How do members sell the products to market? (middle man, cooperatives, etc.)
③ Does the FO have any marketing improvement plan?
④ If the answer is "Yes," please describe the plan.
⑤ Is there any food processing activity in the group members?
⑥ If the above answer is "Yes," please describe the activity.

(9) **Problems faced** 直面している問題

(9) **Findings** 調査で気づいた点

16, June, 2010, at Moan Perraso village, Suriyawewa Unit, Suriyawewa Block
Main person who are interviewed: Mr. U.G. Chandraseli

Questionnaire on Regional Specific Products for Local Brand
水牛チーズ農家への質問状回答

Regional characteristics

Question-1: What are the regional characteristics (merits and demerits) of your District/U.C/village from the viewpoints of natural, economical and (if you can say) social?

A: Originally this area is income from CURD famous for CURD. After land is limited , aminals are limied. Some farmers quit curd production. (He had 0.6 ha before but now only 0.1 ha.)

Institutional framework

Question-2: Please describe the followings on each FSC/GROUP.

① Total group members : 12 (Livestock association; majority milk production)
② Number of Landlords, Owner-user and Landless in the group: He has 0.1 ha and 60 buffalo including 25 milking buffalo.
③ Organization of the group (ex. One leader, two sub-leaders, one marketing staff, five production staff)
④ History of the group 15 years ago

Government service

Question-3: What government services are provided for registered members of each FSC/GROUP? Please select from the followings and answer to us.

- Technical guidance such as technical training, providing manuals, etc.
- Managerial guidance for accounting, benefit sharing, communication among groups and good relationship with organizations concerned
- Financial supports by government subsidy

A: From the veterinary office, he has medicine for animals free vaccination and fee medicine.
One Cattle shed was given by the government and one cattle. Government pays 50% of the price.

Products

Question-4: What are farmers' selling products/commodities of each FSC/GROUP?
CURD and red rice are major income commodities.

Question-5: What are good points of these products?

A: his quality product of milk, other mix with water. He sells 50 pots/day. The price is 750 mL/pot and have reasonable income. Other people collect milk and curd, their 80 Rs/pot he 75 Rs/pot. This is his strategy.

No cost calculation.

Question-6: Where is the market?
Suriya market (25 pots/day) or in his home (the rest).

Question-7 How many tons/numbers does farmers sell regularly to the market on each FSC/GROUP?
He sells 50 pots/day.

Question-8: What is the trend of the selling? For instance, the selling amounts are being increased or decreased?
A: Sep. to Dec., the yield is increased for new animals and price is about 75 Rs/pot at maximum. In other time, 40 to 50 Rs/pot on average. He has four children.

Question-9: Who are customers, wholesale market, middleman, local antenna shop, directly consumer, etc. ?
Local comsumer.

Question-10: What are the target consumers of each product?
-
Question-11: What is the trend of consumers? For instance, change to younger age or older age?

Technology
Question-12: What is the technology that producers made great efforts to develop/improve or acquire?
He learnt from the experience and his father's brother as his families have made curd for 100 years. From the association, he get if some problems, he attend the problem and received the cattle shed. The association has a meeting per two months. The contents of meeting are discussing how to feed animals, how to protect diseases and other.

Question-13: How did FSC/GROUP disseminate the technology over the members?
-
Quality control
Question-14: Does the reiterated members conduct quality control?
No.
If your answer is "Yes," what is the purpose of your quality control, food safety or consumers' satisfaction?
-
Question-15: What is the way of controlling the product quality?
There is no way.
Question-16: If your answer of Question-15 is "Yes," what are the criteria?

-

Question-17: How were the criteria decided?

-

Packaging

Question-18: Does farmers/middleman consider packaging for increase selling?

In real, no.

Question-19: If your answer is "Yes," What is the purpose of packaging? Please select from below.

①Fill the products

②Preserve and protect

③Communication and information

④Convenience, keeping and display

⑤Consumer motivation

A: Cray pot is normaly used. Local consumers like to buy curd in cray pot. Besides, Colombo consumers prefer curd in plastic container.

Cray pot is procured in local market at 9 Rs/pot.

Market promotion

Quesiton-20: Where are the consumers of the registered members of each FSC/GROUP?

A: Around this area.

He brings it to selling center and sells it himself.

Question-21: How much is the selling price of the main products of farmers under each FSC/GROUP to the buyer and to consumer?

He sells 75 Rs/pot. Others sell 80 Rs/pot.

Question-22: How is the selling price decided?

-

Question-23: How is the products carried to the market? (By Middleman?)

Consumers come here. And his son bring it to the market by bike.

Question-24: How is the products delivered to consumers? (Through shops?)

-

Question-25: Does farmers try to diversify the market? If your answer is "Yes," how are you trying?

-

Question-26: Do the farmers conduct promotion activities? If your answer is "Yes," please describe the promotion activities.

-

Stabilization of selling

Question-27: Do farmers communicate with buyers and consumers?

A: Two way communication, the product is OK or not. No claims up to now. The consumers satisfy the price also. If other people increase, he increases the price.

Question-28: If your answer is Yes, how do you communicate with them and how frequently does farmers communicate?

-

Question-29: Do farmers try to have collect claims from buyers and consumers? If your answer is "Yes," please tell how to collect them, and how to react to them.

-

Question-30: What training course did the farmers of each FSC/GROUP attend?

No training in this year.

Government provides training per 3 to 4 batch including 10 to 15 farmers with limited time. SInce the budget is limited, government has not continued to have training. The government is sensitive to the business.

His problem is how to feed his cattles. He need grass land area. He wants to 20 25 acres of grass land area.

From the association, he get if some problems, he attend the problem and received the cattle shed. The association has a meeting per two months. The contents of meeting are discussing how to feed animals, how to protect diseases and other.

STANDARD SURVEY FORM

Project name: Uda Walawe Left Bank Irrigation Upgrading & Extension Project
Date of survey: June 18, 2010
Number of farmers: 21

(1) Basic

① **Location:**
② **Irrigation area: 46 ha (45ha for paddy, OFC-1ha)**
③ **Number of Water users' group member: 45 members**
④ Lot size: 1ha/lot
⑤ Participation rate: more than 90%

~~(2) Basic data 基礎データ~~
~~① Real irrigated area:~~
~~② Field reconnaissance observation:~~
~~③ Water resource:~~

(3) ~~Irrigation related 灌漑関連調査項目~~
~~① Details of the irrigation system:~~
~~② Number of hydrological stations installed:~~

.

(4) Water management 水管理関連調査項目

① **Provision year of water users' group or association**: 2005, April
② **Water management**: (ex. Once per week rotational irrigation): Rotation is at 3days (36 hours) per week to open the irrigation and 4days per week to close
③ **Activities of the WUAs/WUGs**: Mintenance of canals and WM, ensure rotation,
④ **Frequency of meeting**: General meeting every three month, committee meeting every month
⑤ **Amount of water fee and collection rate of water fees**:

Item	Amount(Rs)/season
Member fee	60
WM fee	250
Maintenance fee	250
Total	560

⑥ **Who collect these fees**? Treasurer collects the fee; he is assigned in the meeting once per year. He work at voluntary base without fee.

(5) Farming 営農関連調査項目

① **Major crops**: Rice and banana (mainly paddy rice)
② **Average yield of each crop**: Rice 5.5 tons/ha

Banana: 1200 plants/acre and get at 1000 bunches/year that is 30 to 35kg/bunch for sour banana and 100 fingers per bunch for apple banana

③ **Share of the product used for selling on each crop**: Rice are selling 1000kg for community consumption and the rest for selling per season

④ **Source of seeds** (from market or re-production): Mainly seeds are self reproduction by Farmers and they change between farmers; purchasing is also done.

⑤ **If reproduction, how to select qualified seeds**: Yield, free of weeds, Age of variety (3month to 5 months is usual)

⑥ **Usage of chemical fertilizer** Urea 312kg/ha TSP 112kg, MOP 87kg for rice

For banana, Initially no fertilizer is applied, after two months 250g/plant is applied, at four months after planting 500g/plant is applied, then after 8 month 500g/plant is applied.

Recommended fertilizer application

Crop	Urea	TSP	MOP
Banana (g/plant)	120	80	250
Papaya(g/plant)	130	40	60
Rice (kg/acre)	124 (310kg/ha)	45	35

⑦ **Usage of organic fertilizer**: During harvest by machine, they leave paddy stables in fields to be solved. No other organic fertilizer is given.

⑧ **Biggest problems on farming** (weed, soil erosion, etc):

This time yellowing of rice happens and herbicide is not responding well. Elephant damage happens.
Herbicide: about 6000Rs for rice per season
Pesticide: Sometimes apply sometimes no
Total 3700Rs for fertilizer per season of paddy is given. One outstanding farmer changes from paddy to OFC and although he spends 18000Rs for fertilizer without subsidy
Selling price is normally 27 to 28Rs/kg but at real the price is 23Rs/kg

(6) Livestock 畜産関連調査項目

Major livestock and number per household:

10 members out of 45 are practicing. Two farmers breed buffalos, two farmers breed milk cattle. The heads are total 16 buffaloes and 16 milk-cattle. They sell to company the milk.

Voluntary activities: De-silting canal, de-silting tank bed at 1/season, Cleaning hall at 2/season

(7) Marketing and Processing 流通加工

① Where is the location of market of each product:

② How do members sell the products to market? (middle man, cooperatives, etc.) Mainly private traders come

③ Does the FO have any marketing improvement plan? Yes

④ If the answer is "Yes," please describe the plan. The main problem is **marketing paddy** because the traders give low price and thus they request to provide a collection center to store the rice. They have a problem of transport; they have to bring to Suritawera town at 8km far from the village because traders do not come due to the road conditions.

⑤ Is there any food processing activity in the group members? No

⑥ If the above answer is "Yes," please describe the activity.

(8) **Extension 普及の実態**

- How frequently meet with FA? (once per week, once per two weeks, month) : There is no FA and the unit manager is giving the extension service, who is the former FA. Only when he is requested, he comes. About 2 weeks ago came and before every 2 weeks. When farmers come to the field office, he gives services.
- The unit manager **used out the leaflets.**

What service do you receive from the FA? :Paddy demonstration, vegetable cultivation, banana cultivation

What service do you want to be added?
Unit manager: New technology of paddy, post harvest technology. They want to practice input supply program
Farmers: **He complains about herbicide, which is not working well.** (Unit manager: Farmers are not practicing correct treatment of the herbicide.)

(9) Topics of discussions and the details 直面している問題
Water management
During the plowing period, lower part has not enough water.

Land
Five farmers encroached and this problem is not solved.

Infrastructure
Drainage canal is silted. Some part eroded. Cleaning voluntary capability is too small to the jobs.
Tank is also silted.
Pre-cast concrete canal sink problems appear at one place. (No pre-cast concrete in Phase-2 area)
Farm inlet level is different and hard to take water during rotation period.
There are three main problems, i.e. canal road is eroded, Tank silted, water spillway used as road and it is not used during rainy season.

Environmental problems
Salinity problem due to **not functional drainage canal** for silt, and it is too big work.
Waterweeds is encroaching the Tank

(10) **Findings 調査で気づいた点**
① How many persons did attend any trainings?
Farmers: **Only 3 out of 21** attended the loan aid training.
Officers:
Attend training within one yar: 0
Two yeas: 2
Three yeas: 1

② What crops do they want to increase other than rice, banana and papaya?
No.
③ Some farmers shift from OFC to paddy? No
But one farmer has changed from **Paddy to OFC** although he grows paddy at early time. The reason of changing is having more economic benefit than paddy. He is doing intercropping with vegetables. This area is originally paddy.

4．主要面談者リスト

Ministry of Irrigation and Water Resources Management (MIWRM)

Secretary / Actiong Director General MASL	Mr. Ivan de Silva

Mahaweli Authority of Sri Lanka (MASL)

Additional Secretary	Mr. K.A. Upali S. Imbulana
Exercutive Director	Mr. N.C.M.Navaratne
Director, Planning and Monitoing Deparment	Mr. Chila Wellappili
Director, HRID	Mr. K. Ariyathunga
Director, Agriculture	Mr. M. S. Dayawatu
Resident Project Manager	Mr. Wanigathunga Perera
Senoir Engineer	Mr. M. M. Gunatilake
Deputy Resident Project Manager	Mr. Thilak Ranasinghe
Agricultural Specialist	M.D.Piyathilad

Secretariat

Director	Mr. M.R. Fernando

Resident Project Manager's Office (RPM office), MASL

Director, Agriculture	H. M. Wimalasekara
Director, HRID	Ranasinghe Thikelirithi
Director, Land	B.A.A.Balasooriya
Director, Technical Service	Thilak Ranasinghe
Assistant Director	Ananda Wijesinghe
Assistant Director	K.G.D.Abeywardena
Assistant Director	Ananda Wijesinghe
Development assistant	K.M.H.N.S.Kulasekara
Development assistant	Y.M.L.S.Bandra
Cief Engineer, WalaweLB Project	Mr. T.Ranasinghe
Statistician	C.S.Dahanayala
Chief Engineer, Walawe Left Bank Project	Mr. T.Ranasinghe
Engineering Assistant	A.M.Piyasiri
Engineering Assistant	Sarath Egodage
Engineering Assistant	M.J.Issadean
Fisheries Officer	T.P.A.de Jaysa
HRID Officer	R.M.Somaratna
HRID Officer	K.H.Piyasaig
Livestock Development Officer	A.P.D.Wickramasinghe
Agricultural Officer	M.Heenatiyala

Mayurapura Block, RPM office, MASL

Block Manager	P.G.Pemadasa
Irrigation Engineer	G.H.Kumakasima
Irrigation Engineer	T.M.Kumgrashir
Unit Manager	M.A.Nimal
Unit Manager	R.Gamage
Unit Manager	B.W.M.Ariyarathra
Unit Manager	K.R.Wichramarathne
Unit Manager	P.M.Sucath

Unit Manager	H.G.D.Kumara
Unit Manager	A.P.Asanka
Unit Manager	Ajith Delpanuda
Unit Manager	P.G.Kashayapa Manjula
Unit Manager	V.N.N. Chanera
Unit Manager	S.B.J.P.Leumeka
Technical Officer	A.W.Jayasenu
Technical Officer	D.D.E.W.Aracheige
Field Assistant	R.G.S.Niyoshana
Field Assistant	D.L.L.Pushpakumara
Field Assistant	Susil Amarasena
Field Assistant	D.M.U.G.S.Kunade
Field Assistant	C.K.Liyanaarchchi
Field Assistant	A.G.S.S. Banadare
Field Assistant	P.G.M.K.Gallage
Field Assistant	E.V.G.S. Chanthurange

Suriyawewa Block, RPM office, MASL

Block Manager	Mr. A. M. A. A. De Silva
Unit Manager	D.M.
Technical Officer	H.P.Jayantha
Technical Officer	G.D.P.Samarasinghe
Acting Irrigation Engineer	P.Weerasena
Agricultural Officer	R.B.Punchikea
Field Assistant	H.A.
Field Assistant	A.K.D.Roshantha

在スリランカ大使館

経済協力班　二等書記官	林　活歩

South CAP

チーフアドバイザー/地域村落開発	北詰　秋乃

JICAスリランカ事務所

所長	志村　哲
次長	大塚　卓哉
企画調査員	園山　英毅


ジャイカ
JICA