

第 4 章 プロジェクトの評価

4.1 事業実施のための前提条件

本事業を開始するための前提条件で、特に留意すべき事項は、下記のとおりである。

(1) 上位計画について

ルワンダ国政府における農業セクターの中期計画で謳われている、丘陵地および湿地灌漑開発にかかる政策に変更が生じない。

(2) 合意書に基づく、灌漑施設の適切な運営・維持管理

ルワンダ国の省令では、灌漑水利施設の運営・維持管理は水利用組合（IWUO）が行うことになっている。従って、対象地域において、速やかな水利用組合（IWUO）の設立と、維持管理体制の能力向上が望まれる。

(3) 水利権の取得

RABは、2017年1月時点で既に環境評価報告書（EIA）をルワンダ開発庁（RDB）に提出した。RDBからEIAの承認を得れば、水利権の所得に必要な手続きに移ることが可能となる。承認後、速やかに、ルワンダ天然資源庁（RNRA）から水利権を取得する。

(4) 環境社会配慮措置

本事業の実施に伴う被影響者に対して、住民移転計画（付属資料11）に従い必要な補償または支援を適切な時期に行うことが必要である。

(5) 免税措置

付加価値税の還付措置、輸入税の免税措置など、RABは関係政府機関と連携し、これらの免税措置を迅速に行わなければならない。

4.2 プロジェクト全体計画達成のために必要な相手方投入

(1) 関係機関との連携とC/Pの配置

本事業は実施機関であるルワンダ農業庁（RAB）が中心になって進められるが、プロジェクトを実施するにあたり、RAB内部での連携、責任機関である農業動物資源省（MINAGRI）、ステークホルダーとの連携が必要となる。RABは本事業を担当するC/Pを配置するとともに、事業を進める上で必要となる諸課題について、下表に示す関係機関と連携を図りながら、

RAB全体で事業を実施することが求められる。

表 4.1 本事業における関係機関

ルワンダ国側負担事項	ステークホルダー
水利権の取得	ルワンダ農業庁 (RAB) ルワンダ天然資源庁 (RNRA) 四つのコメ生産組合: コクリチ (Cocuricyi)、コクリブ (Cocuribu)、 コクリガ (Cocuriga)、コクリチャ (Cocuricya) 水利組合 (IWUO) (設立されたならば)
影響を受ける人への補償 または支援	ルワンダ農業庁 (RAB) ルワマガナ郡庁 4つのセクター: キガビロ (Kigabiro)、ムニャガ (Munyaga)、 ムウリレ (Mulire)、ルボナ (Rubona) 四つのコメ生産組合: コクリチ (Cocuricyi)、コクリブ (Cocuribu)、 コクリガ (Cocuriga)、コクリチャ (Cocuricya) 水利組合 (IWUO) (設立されたならば)
灌漑施設の維持管理	ルワンダ農業庁 (RAB) 水利組合 (IWUO) 設立されたならば、されない場合には、四つの コメ生産組合: コクリチ (Cocuricyi)、コクリブ (Cocuribu)、 コクリガ (Cocuriga)、コクリチャ (Cocuricya)
予算の確保	農業動物資源省 (MINAGRI) ルワンダ農業庁 (RAB) 財務経済計画省 (MINECOFIN) ルワンダ財務局 (RRA)

(2) ソフトコンポーネント支援

本事業のソフトコンポーネントでは、整備される灌漑施設の基礎的な運営、および維持管理方法を習得するよう、以下の成果を得る活動を計画する。

- ・ 成果1 : 対象地域の一部における事業データ・ベースが作成される
- ・ 成果2 : 一つのIWUOが設立される
- ・ 成果3 : WUG・WDC が組織化される
- ・ 成果4 : 農協灌漑施設担当者またはIWUO構成員の能力向上が行われる
- ・ 成果5 : 二次水路が建設・改修される
- ・ 成果6 : 灌漑用水の適正配分が実施される

これらの成果を達成するため、ルワンダ国側は、以下の事項を実施する。

- ・ ソフトコンポーネントの各活動を実施する時には、RAB東部県事務所のIWUO担当者および郡の農業技師、組合担当職員が参加するように調整する。RAB職員を通じ、郡庁、

各組合（またはIWUO）に研修実施の日程、参加者の調整を行わせる。

- ・ ワークショップ、ミーティングの開催手続き、運営、調整を行う。
- ・ IWUO構成員への直接指導。

4.3 外部条件

事業実施のための外部条件は、以下のとおりである。

- ・ ルワンダ国の農業政策および灌漑政策に大きな変更・転換が起こらない。
- ・ 受益地において長期にわたる異常な渇水が生じない。

4.4 プロジェクトの評価

4.4.1 妥当性

本事業は、以下の理由により、我が国の無償資金協力による協力対象事業としての実施が妥当である。

(1) 当該国の開発計画との関連

ルワンダ国の農業セクターの中期計画であるSPTA3（Strategic Plan for Transformation of Agriculture in Rwanda3）に示される灌漑面積10万haまで増加させる目標に合致する。

(2) 我が国との援助方針との関連

ルワンダ国はアフリカ稲作振興のための共同体（CARD：Coalition for Africa Rice Development）の構成国であり、この枠組みに基づいて2011年に「国家コメ発展戦略」を定め、コメの生産面積を7,000ha（2008年）から、2万8,500haに拡大する計画を策定している。従って、日本の無償資金協力として支援する必要性は高い。

(3) 格差是正と安定的な営農の実現

チャルホゴ・サイトは、対象地区内においてため池がないため、乾期における稲作ができない地域である。ため池を造成することにより、他の地域と同様に、二期作が可能となる。

一方、これまでため池があった地域でも、ため池の貯水容量が不足しており、安定的に乾期の稲作が営めない状況にある。既存のため池の改修（ブググ・サイトは新設する）をすることにより、灌漑に必要な貯水容量を確保し、安定的な二期作が可能となる。

4.4.2 有効性

本事業の実施により見込まれる、定量的・定性的効果は以下の通りであり、有効性を有する。

(1) 定量的効果

本事業の実施により期待される定量的効果は、次のとおりである。

表 4.2 定量的指標

指標名	基準値 (2015年実績値)	目標値 (2023年) 【事業完成3年後】
灌漑面積利用率 (%)	143	200
水稻の作付面積 (ha)	284	398
水稻の単収 (トン/対象面積)	1,100	2,070
年間収入 (0.2ha水稻栽培) (Rwf)	230,000	444,000

(2) 定性的効果

本事業により期待される定性的効果は、以下のとおりである。

- ・ 灌漑施設の改修により、幹線用水路の通水能力の確保などにかかる農民の作業負担が軽減される。
- ・ 改修されたため池堤体の安全性が向上する。

第5章 資料編

資料1. 調査団員・氏名

(1) 概略設計現地調査期間（2016年6月17日～2016年11月12日）

氏名	担当分野	所属	現地調査期間 (東京発着)	
島崎 和夫	総括	JICA農村開発部	2016年6月18日～6月25日	
木村 聖	計画管理			
石原 博英	業務主任/灌漑施設設計 計画	NTCインターナショナル株式会社	2016年6月17日～ ～8月15日	
近藤 兼一郎	灌漑施設設計/水管理 計画		2016年6月17日～8 月15日	
西 元孝	営農		2016年8月16日～ 30日	
シエムス ケマル アンデタ	組織運営		2016年7月2日～ 8月30日	
石井 博	施工計画/調達		2016年7月23日～8 月30日	
中村 謙仁	環境社会配慮		2016年7月23日～8 月27日 2016年10月15日～ 11月6日	
毛受 亨政	自然条件1		2016年6月18日～8 月16日	
朝倉 晶子	自然条件2/積算		2016年6月17日～8 月15日	
相澤 隆生	水理地質/物理探査		NTCインターナショナル株式会社（補強）	2016年10月15日～ 11月12日

(2) 準備調査報告書（案）協議期間（2017年1月7日～2017年1月22日）

氏名	担当分野	所属	現地調査期間 (東京発着)
島崎 和夫	総括	JICA農村開発部	2017年1月7日～1 月22日
荒木 亜礼譜	計画管理		
石原 博英	業務主任/灌漑施設設計 計画	NTCインターナショナル株式会社	2017年1月7日～1 月16日
近藤 兼一郎	灌漑施設設計/水管理 計画		

資料2. 調査工程

(1) 概略設計現地調査期間（2016年6月17日～2016年11月12日）

年月日・曜日	調査内容
2016.Jun 17 (Fri)	第一陣（石原、近藤、朝倉）東京発、キガリ着
18 (Sat)	内業（資料整理）
19 (Sun)	島崎、木村、毛受キガリ着、初回打合せ
20 (Mon)	RABとミニッツ協議およびIc/R説明、RABとステークホルダーズミーティング協議、JICAルワンダ事務所表敬
21 (Tue)	ステークホルダーズミーティング、現地視察
22 (Wed)	RABとミニッツ協議、地形図等取得手続き
23 (Thu)	RAB庁長によるミニッツ署名、JICA報告、現地再委託準備作業
24 (Fri)	現地視察および調査準備
25 (Sat)	現地視察および調査準備
26 (Sun)	内業（資料整理）
27 (Mon)	現地再委託先と打合せ
28 (Tue)	ンゴマ郡丘陵地灌漑開発計画現地視察
29 (Wed)	現地再委託先と打合せ、LWHプロジェクト専門家から情報収集
30 (Thu)	予定ダム調査
Jul 01 (Fri)	現地道路視察
2 (Sat)	現地踏査
3 (Sun)	内業（資料整理、翌日以降の日程調整）、第二陣（ジェムス）着
4 (Mon)	現地踏査
5 (Tue)	内業（資料整理、翌日以降の日程調整）
6 (Wed)	地形測量および地質・土質調査試験の入札封書受領
7 (Thu)	地形測量および地質・土質調査試験の入札封書開封
8 (Fri)	地形測量および地質・土質調査試験の契約締結
9 (Sat)	内業（資料整理）
10 (Sun)	キガリからルワマガナに移動
11 (Mon)	現地踏査
12 (Tue)	農協等、郡、セクター、セル関係者に調査内、開始を説明（Cocuricyiにて）
13 (Wed)	地形測量、ボーリングマシンの搬入開始、RAB南部ゾーン事務所表敬、報告
14 (Thu)	現地踏査（チミマため池上流部踏査）、内業
15 (Fri)	現地踏査、現地施工会社調査、内業
16 (Sat)	測量基本となる基準点設置（チミマサイト）、内業
17 (Sun)	チミマ、ガシヤラ、チャルホゴおよびブググ基準点設置測量
18 (Mon)	ボーリング調査準備（ブググ）、各ため池堤体目視検査、アバット付近テストピット掘削（チャルホゴ）、地形測量本格的に開始、内業、
19 (Tue)	テストピット目視調査（チャルホゴ）、チャルホゴ左岸丘上道路調査および土捨て場候補地探索
20 (Wed)	チミマサイト既設道路調査、ブググサイトアクセス道路探索、チミマサイト既存灌漑水路踏査、内業
21 (Thu)	チミマサイト灌漑アドバイザーの設置水位計測比高測量、ブググサイトボーリング調査、チャルホゴ既存水路踏査
22 (Fri)	ガシヤラ既存水路踏査、内業（流量観測を含む契約書アmendメント作成、現地再委託選定報告書作成）
23 (Sat)	内業（資料整理）、各サイト土取り場テストピット目視検査
24 (Sun)	第三陣（石井、中村）現地着
25 (Mon)	ブググボーリング調査、ブググ幹線水路踏査、石井・中村JICAおよびRAB表敬
26 (Tue)	現地踏査、ブググ既存堤体下流ボーリング調査

年月日・曜日	調査内容
27(Wed)	ガシヤラ堤体現場透水試験
28(Thu)	ガシヤラ、チャルホゴへのアクセス道路の踏査、ガシヤラ堤体現場透水試験、見積依頼
29(Fri)	チミマ堤体現場透水試験、見積依頼
30(Sat)	午前中ルワマガナ、午後ガシヤラ 土取り場ピット調査、チミマアクセス道路踏査
31(Sun)	4サイトの道路調査、再委託先へ路線測量範囲を指示
Aug 01(Mon)	フィーダー道路の聞取り、月報作成、ンゴマ郡丘陵地灌漑開発計画専門家と打合せ
2(Tue)	ブググ水道パイプの水源調査、ルート調査、見積依頼
3(Wed)	ブググ、ガシヤラ追加テストピット調査、ブググアクセス道路調査、公共料金調査
4(Thu)	ブググ、ガシヤラ追加テストピット調査、公共事業労働省（MIFOTRA）聞取り、見積依頼
5(Fri)	役所関係休日、報告書作成
6(Sat)	内業（灌漑フォーラム準備）
7(Sun)	内業（灌漑フォーラム準備）
8(Mon)	内業（灌漑フォーラム準備）、EIA/RAP現地再委託契約交渉、見積依頼・徴収
9(Tue)	RABイノセント所長と打合せ、セクター打合せ
10(Wed)	JICAルワンダ事務所所長 現地視察 石原同行 ガシヤラ、チミマ、ブググ幹線水路踏査、National Bank聞取り、見積徴収
11(Thu)	石原、毛受、近藤、石井、中村：LWHダム専門家と打合せ 石原、石井、中村：大使館報告 近藤、毛受、シェムス、朝倉 現地踏査
12(Fri)	灌漑フォーラム発表、JICAルワンダ事務所帰国前報告
13(Sat)	現地踏査、土質試験確認
14(Sun)	第一陣（石原、近藤、朝倉）キガリ発、 毛受、石井：南部県の近年建設のニャンザダム視察
15(Mon)	第一陣（石原、近藤、朝倉）東京着、毛受キガリ発
16(Tue)	第一陣（毛受）東京着、第四陣（西）キガリ着、見積徴収
17(Wed)	ンゴマ郡丘陵地灌漑開発計画現地視察、道路幅員及び主要構造物調査、農協関係者協議
18(Thu)	ルワマガナ郡農業担当官協議、IWUO設立に係る準備協議、営農調査
19(Fri)	ルワマガナ郡副郡長協議、採石場候補地視察、営農調査
20(Sat)	内業（JICA及びRAB報告用資料の整理）
21(Sun)	内業（JICA及びRAB報告用資料の整理）
22(Mon)	ステークホルダー協議開催準備、調査用機材供与手続き、水没予定の取水施設現地確認
23(Tue)	ステークホルダー協議開催、RAB免税担当者、機材担当者打合せ、MINAGRIワークショップ視察
24(Wed)	RDB現場視察同行及び現地説明、見積徴収
25(Thu)	JICAルワンダ事務所帰国前報告、灌漑アドバイザー報告、RABファイナンシャルアドバイザー打合せ
26(Fri)	RAB協議、Technical Discussionの実施、調査用機材の供与、第三陣（中村）キガリ発
27(Sat)	第三陣（中村）成田着、ガシヤラ水路路線踏査
28(Sun)	内業（資料整理）
29(Mon)	RSSP事務所打合せ、第二陣（シェムス）、第三陣（石井）、第四陣（西）キガリ発
30(Tue)	第二陣（シェムス）、第三陣（石井）、第四陣（西）東京着

年月日・曜日	調査内容
2016.Oct.15 (Sat)	移動日（中村・相澤：東京発）
16 (Sun)	移動日（中村・相澤：キガリ着）
17(Mon)	RAB、JICA表敬、協議、調査資機材調達
18(Tue)	現地再委託業者協議、調査資機材調達
19(Wed)	現地踏査
20(Thu)	現地踏査、ルワンダ国における公害管理に係る基準書一式購入
21(Fri)	水理地質にかかる現地調査（ブググ）、RAB協議、現地再委託業者打合せ、他ドナー類似案件ヒアリング
22(Sat)	水理地質にかかる現地調査（ブググ）、被影響範囲の調査

- 23(Sun) 資料整理、被影響範囲の調査
- 24(Mon) 水理地質にかかる現地調査（チャルホゴ）、被影響範囲の調査
- 25(Tue) 水理地質にかかる現地調査（チャルホゴ）、被影響範囲の調査、農協組合ヒアリング
- 26(Wed) 水理地質にかかる現地調査（ガシヤラ）、被影響範囲の調査
- 27(Thu) 水理地質にかかる現地調査（ガシヤラ）、被影響範囲の調査、ルワマガナ郡庁打合せ
- 28(Fri) 電気探査調査（ブググ）、被影響範囲の調査
- 29(Sat) 電気探査調査（ブググ）、被影響範囲の調査
- 30(Sun) 資料整理、ステークホルダー協議
- 31(Mon) 電気探査調査（ブググ）、被影響範囲の調査
- Nov. 01(Tue) 電気探査調査（チャルホゴ）、報告資料作成
- 2(Wed) JICA及びRAB経過報告
- 3(Thu) 電気探査調査（チャルホゴ）、被影響範囲の調査
- 4(Fri) 電気探査調査（ガシヤラ）、被影響範囲の調査
- 5(Sat) 電気探査調査（ガシヤラ）、移動日（中村：キガリ発）
- 6(Sun) 資料整理、移動日（中村：東京着）
- 7(Mon) 現地踏査
- 8(Tue) 現地踏査、住民協議
- 9(Wed) 資料整理、住民協議
- 10(Thu) 資料整理、住民協議
- 11(Fri) 移動日（相澤：キガリ発）、住民協議
- 12(Sat) 移動日（相澤：東京着）

(2) 準備調査報告書（案）協議期間（2017年1月7日～2017年1月22日）

年月日・曜日	調査内容
2017.Jan.07 (Sat)	移動日（東京発）
08 (Sun)	移動日（キガリ着）
09 (Mon)	表敬、DFR説明、先方政府協議
10 (Tue)	DFR説明、先方政府協議
11 (Wed)	DFR説明、先方政府協議
12 (Thu)	DFR説明、先方政府協議
13 (Fri)	DFR説明、先方政府協議
14 (Sat)	DFR説明、先方政府協議
15 (Sun)	移動日（石原、近藤：キガリ発）
16 (Mon)	移動日（石原、近藤：東京着）
17 (Tue)	DFR説明、先方政府協議
18 (Wed)	DFR説明、先方政府協議
19 (Thu)	DFR説明、先方政府協議
20 (Fri)	DFR説明、先方政府協議、M/Dサイン
21 (Sat)	移動日（島崎、荒木：キガリ発）
22 (Sun)	移動日（島崎、荒木：東京着）

備考：主な略語を以下に示す。以下に記載の無い略語については報告書冒頭の略語集を参照。

MINAGRI: Ministry of Agriculture and Animal Resources（農業動物資源省）

RAB: Rwanda Agriculture Board（ルワンダ農業庁）

LWH: Land Husbandry, Water-Harvesting and Hillside-Irrigation Project（土壌保全・丘陵畑地灌漑プロジェクト）

RSSP: Rural Sector Support Project（農村セクター支援プロジェクト）

資料3. 関係者（面会者）リスト

(1) 在ルワンダ日本大使館

宮下 孝之 全権大使
佐久間 真一 経済協力調整員

(2) 国際協力機構ルワンダ事務所

高田 浩幸 所長
室谷 龍太郎 次長
坂本 篤紀 所員
正木 幹生 企画調査員
FURAHA Pascal 現地職員
田中 卓二 専門家（灌漑アドバイザー）
大林 由明 専門家（灌漑アドバイザー）田中 卓二氏の後任

(3) 農業・動物資源省(MINAGRI)

Innocent MUSABYIMANA Permeant Secretary

(4) 天然資源省（Ministry of Natural Resources）

Damascene KAYIRANGA Mr. Water Resource Management Specialist
Renatha MUJAWAYEZU Mr. Water Regulation Officer

(5) ルワンダ農業庁（Rwanda Agriculture Board）

Innocent NZEYIMANA Mr. Head of Land Husbandry, Irrigation and Mechnization Department
Theogene UWITONZE Mr. Senior Irrigation Engineer
Valerien NTIRANDEKURA Mr. Senior Irrigation Engineer
Mariyamungu Emmanuel Mr. Irrigation Engineer
Musabyimana Emmanuel Mr. Head of Water User Association Support Unit
Jules NZABONIMANA Mr. Association Irrigation Adviser

(6) ルワンダ農業庁（Rwanda Agriculture Board）東部ゾーン事務所

Norbert SENDEGE Mr. Zone Manager
Claude Ruginbana Mr. Irrigation Engineer
Angelque Ms. Water Users Association officer

(7) ルワマガナ郡庁

MUDAHERANWA Regis Mr. Vice-Mayer
UKIZURU Innocent Mr. District Agronomist
Filipe Mr. Land Office of District
HAKIZIMANA Jeremie Mr. Local Development Agency Engineer
Nicolas Mr. Feeder Road Engineer

(8) ルワマガナ郡 Rubona セクター

Jean Paul NDEREYIMANA Mr. Agronomist

(9) ルワマガナ郡 Mwulire セクター

Benoit SEMUKANYA Mr. Agronomist

(10) ルワマガナ郡 Munyaga セクター

Theogene NIZEYIMANA Mr. Agronomist

(11) ルワマガナ郡 Kigabiro セクター

Sandrine RUTIKANGA Mr. Agronomist

- (12) ルワマガナ郡 Cocuriga 組合
Copens RWABOPFIZI Mr. President
- (13) ルワマガナ郡 Coricya 組合
Jean d'Amour RUSANGANWA Mr. President
- (14) ルワマガナ郡 Cocuricyi 組合
Olivier GASHEMA Mr. Agronomist
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Hadush Seged Mr. Dam Expert
Anital Mwiza Mr.
Cyiza J.Peter Mr. Agroforestry Specialist
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RAMAZAN Mr.
GASPAD Mr.
Habamenshi Didace, Mr. Environmental Specialist, SPIU, RSSP / LWH / Feederroad / RCSP
- (19) ルワンダ開発庁 (Rwanda Development Board: RDB)
Harerimana Simeon Ntuye Environmental Impact Assessment Officer, One Stop Centre Division, RDB

**Minutes of Discussions
on the Preparatory Survey on the Project for
Rehabilitation of Irrigation Facilities in Rwamagana District
in the Republic of Rwanda**

Based on the several preliminary discussions between the Government of the Republic of Rwanda (hereinafter referred to as “GoR”) and Japan International Cooperation Agency (hereinafter referred to as “JICA”), the Government of Japan decided to conduct a Preparatory Survey on the Project for Rehabilitation of Irrigation Facilities in Rwamagana District in the Republic of Rwanda (hereinafter referred to as “the Project”), and entrusted the Preparatory Survey to JICA.

JICA sent the Preparatory Survey Team for the Outline Design (hereinafter referred to as “the Team”) to Rwanda, headed by Mr. Kazuo SHIMAZAKI, Executive Technical Advisor to the Director General, Rural Development Department, JICA, and is scheduled to stay in the country from 19th to 24th June, 2016.

The Team held a series of discussions with the officials concerned of the GoR and conducted a field survey in the Project area. In the course of the discussions, both sides have confirmed the main items described in the attached sheets. The Team will proceed to further works and prepare the Preparatory Survey Report.

Kigali, 23rd June, 2016

島崎和夫

Mr. Kazuo SHIMAZAKI
Leader
Preparatory Survey Team
Japan International Cooperation Agency
Japan

Daphrose

Dr. GAHAKWA Daphrose
Acting Director General
Rwanda Agriculture Board
Republic of Rwanda



ATTACHEMENT

1. Objective of the Project

The objective of the Project is to expand irrigated area by/through the rehabilitation of irrigation facilities, thereby contributing to increase agricultural production.

2. Title of the Preparatory Survey

Both sides confirmed the title of the Preparatory Survey as "the Preparatory Survey on the Project for Rehabilitation of Irrigation Facilities in Rwamagana District in the Republic of Rwanda".

3. Project Site

Both sides confirmed that the sites of the Project are in Rwamagana District, Eastern Province, which is shown in Annex 1.

4. Line Agency and Executing Agency

Both sides confirmed the line agency and executing agency as follows:

- 4-1. The line agency is Ministry of Agriculture and Animal Resources (MINAGRI), which would be the agency to supervise the executing agency.
- 4-2. The executing agency is Rwanda Agriculture Board (RAB). The executing agency shall coordinate with all the relevant agencies to ensure smooth implementation of the Project and ensure that the Undertakings are taken by relevant agencies properly and on time. The organization charts are shown in Annex 2.

5. Items requested by the GoR

- 5-1. As a result of discussions, both sides confirmed that the items requested by the GoR are shown in Annex 3.
- 5-2. JICA will assess the appropriateness of the above requested items through the survey and will report findings to the Government of Japan. The final components of the Project would be decided by the Government of Japan.

6. Japanese Grant Scheme

6-1. The Rwandan side understands the Japanese Grant Scheme and its procedures as described in Annex 4, Annex 5 and Annex 6, and necessary measures to be taken by the GoR. A template of the Project Monitoring Report to be submitted by the executing agency is as attached in Annex 7.

6-2. The Rwandan side understands to take the necessary measures, as described in Annex 8, for smooth implementation of the Project, as a condition for the Japanese Grant to be implemented. The detailed contents of the Annex 8 will be worked out during the survey and shall be agreed no later than by the Explanation of the Draft Preparatory Survey Report.

The contents of Annex 8 will be used to determine the following:

- (1) The scope of the Project.
- (2) The timing of the Project implementation.
- (3) Timing and possibility of budget allocation.

Contents of Annex 8 will be updated as the Preparatory Survey progresses, and will finally be the Attachment to the Grant Agreement.

7. Schedule of the Survey

- 7-1. The Team will proceed with further survey in Rwanda until August, 2016.
- 7-2. JICA will prepare a draft Preparatory Survey Report in English and dispatch a mission to Rwanda in order to explain its contents around January, 2017.
- 7-3. If the contents of the draft Preparatory Survey Report is accepted in principle and the Undertakings are fully agreed by the Rwandan side, JICA will complete the final report in English and send it to the GoR around March, 2017.
- 7-4. The above schedule is tentative and subject to change.

8. Environmental and Social Considerations

- 8-1. The Rwandan side confirmed to give due environmental and social considerations during implementation of the Project, and after completion of the Project, in accordance with the JICA Guidelines for Environmental and Social Considerations (April, 2010).
- 8-2. The Project is categorized as B because the Project is not located in a sensitive area, nor has sensitive characteristics, nor falls into sensitive sectors under the JICA Guidelines for Environmental and Social Considerations (April 2010), and its potential adverse impacts on the environment are not likely to be significant. The Rwandan side confirmed to conduct the necessary procedures concerning the environmental assessment (including stakeholder meetings, Environmental Impact Assessment(EIA) /Initial Environmental Examination (IEE) and information disclosure,etc.) and make EIA/IEE report of the Project. The EIA/IEE approval shall be received from the responsible authorities and submitted to JICA before the implementation of the Project.

8-3. For projects that will result in involuntary resettlement, the Rwandan side confirmed to prepare a Resettlement Action Plan (RAP)/Abbreviated Resettlement Action Plan (ARAP) and make it available to the public. In addition, the Rwandan side confirmed to provide the affected people with sufficient compensation and/or support in accordance with RAP/ARAP, in a timely manner.

9. Other Relevant Issues

9-1. Official Request for the Project

Since JICA sent the Preparatory Survey Team prior to the official request for the Project, the Team suggested the Rwandan side to request for the assistance from the Government of Japan officially through a diplomatic channel.

9-2. Contribution to Climate Change Adaptation

Both sides agreed that the Project is expected to contribute to adaptation to the impacts of climate change, as the Project aims to expand irrigated area with given water resources and to be tolerant of unpredictable weather pattern.

9-3. Questionnaire

RAB shall answer to the Questionnaire submitted by the Team in English with relevant documents by 15th July, 2016.

Annex 1 Location Map

Annex 2 Organization Chart

Annex 3 Items requested by the GoR

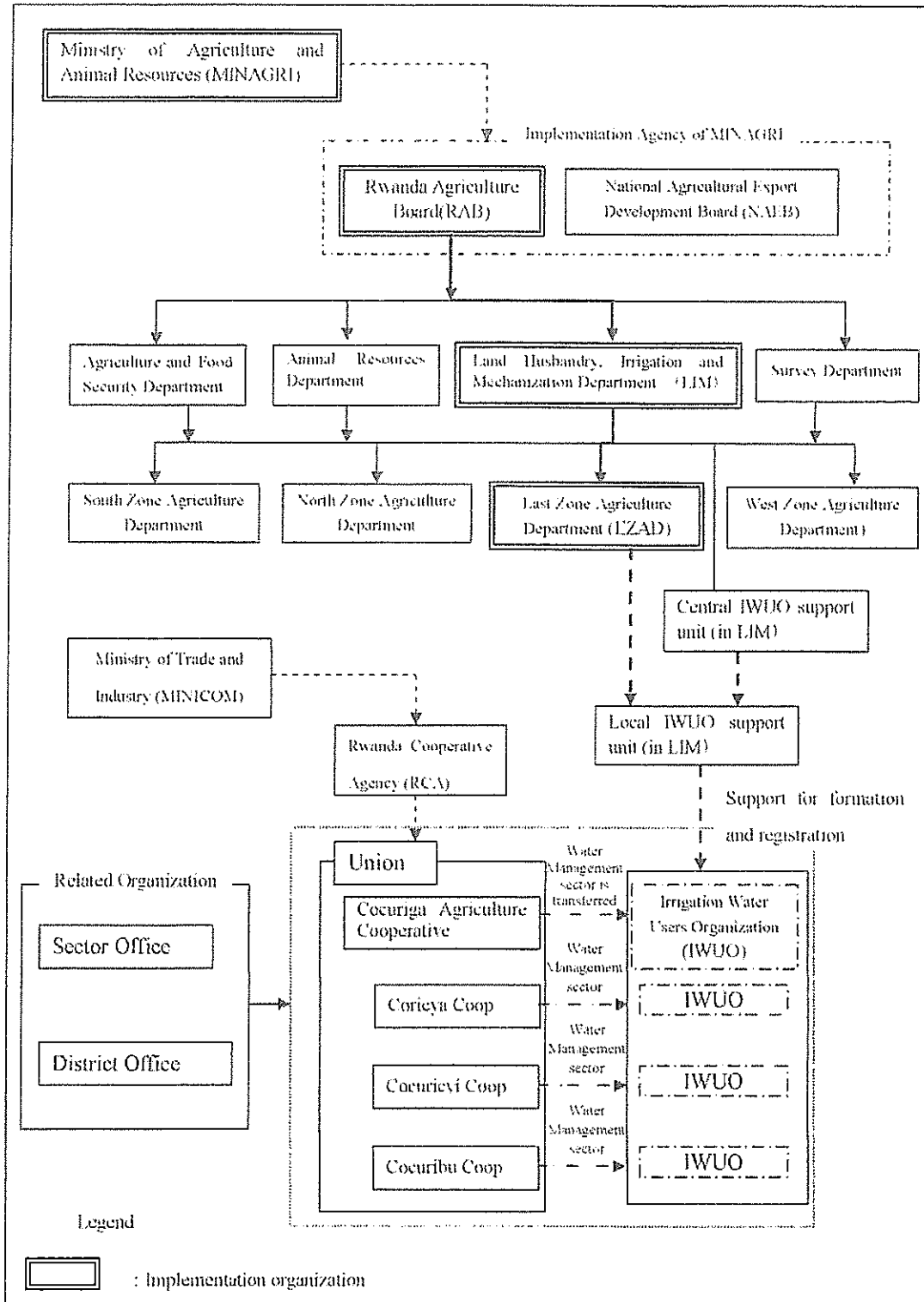
Annex 4 Japanese Grant

Annex 5 Flow Chart of Japanese Grant Procedures

Annex 6 Financial Flow of Japanese Grant

Annex 7 Project Monitoring Report (template)

Annex 8 Major Undertakings to be taken by Recipient Government



Organization Chart

Items Requested by the GoR

No.	Items Requested	Priority	Remarks
1	Rehabilitation/Construction of Dam/Reservoir	○	
2	Lining of Main Canal	○	
3	Access Road	△	GoR expressed its willingness to cover this item under Rwanda Feeder Roads Development Project funded by WB or Sector Policy Support Programme for Rural Feeder Roads funded by EU.
4	Construction Machinery (laser-leveler) for Plot Construction (Land Consolidation)	△	GoR expressed its willingness to consider this item requested to be covered by Japanese Grant.
5	Warehouse	△	There are existing warehouses at project sites.
6	Protection of the Catchment against Soil Erosion	×	LWH Project funded by WB or Agro-Forestry Project could be the possible financial resource.
7	Agricultural Machinery	×	GoR encourages private sector to provide agricultural machinery service to the farmers.
8	Drying Ground	×	There are existing drying grounds at project sites.
9	Training for Irrigation Water Users Association and Cooperatives	×	JICA will cover it under the upcoming technical cooperation project.

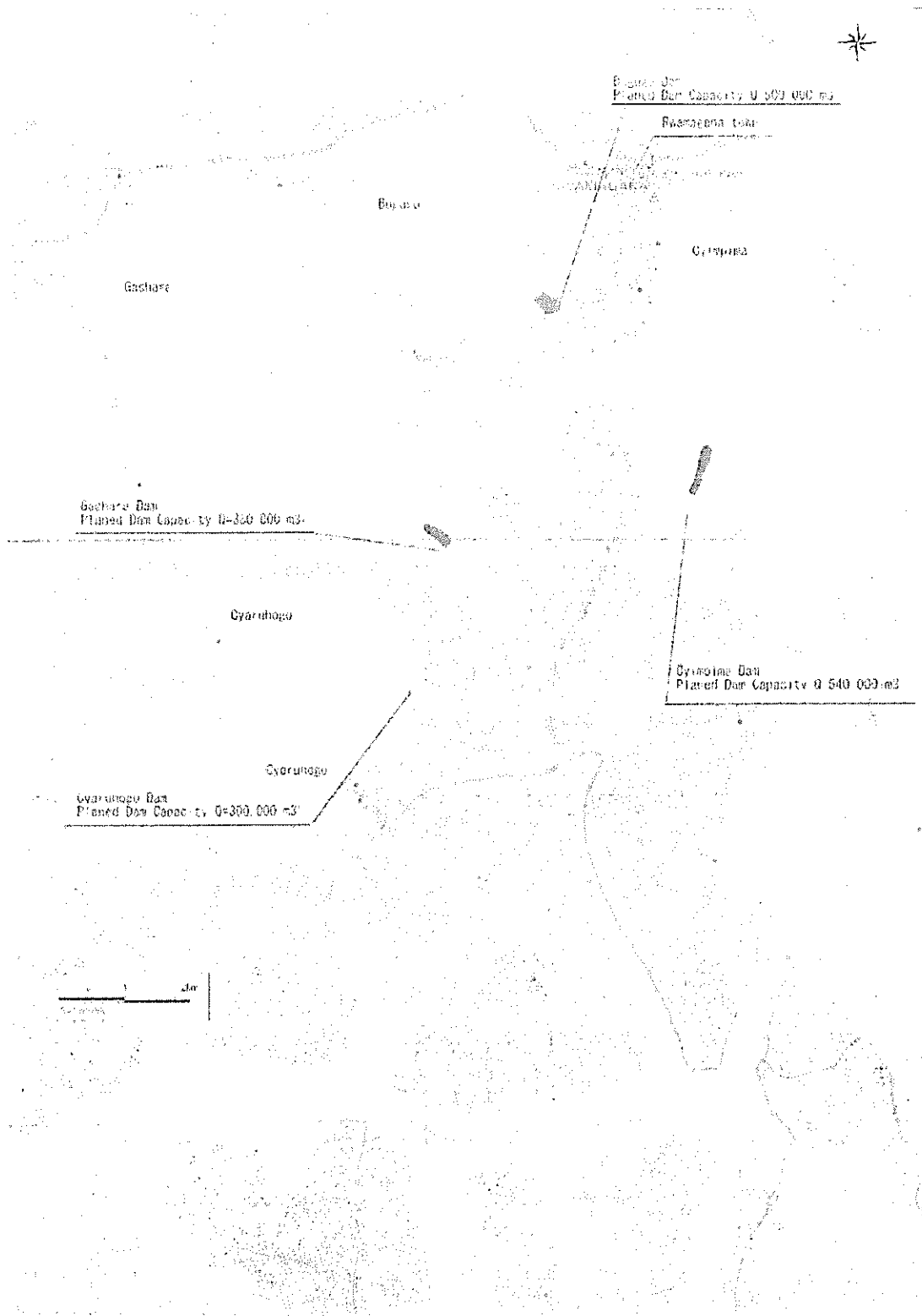
○ : Items with high priority to be covered by Japanese Grant

△ : Items with high necessity to be assessed as a part of Japanese Grant through the survey

× : Items with high necessity to be covered by other financial resources

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Location Map (2/2)

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JAPANESE GRANT

The Japanese Grant (hereinafter referred to as the "Grant") is non-reimbursable fund provided to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. The Grant is not supplied through the donation of materials as such.

Based on a JICA law which was entered into effect on October 1, 2008 and the decision of the GOJ, JICA has become the executing agency of the Japanese Grant for Projects for construction of facilities, purchase of equipment, etc.

1. Grant Procedures

The Grant is supplied through following procedures :

- Preparatory Survey
 - The Survey conducted by JICA
- Appraisal & Approval
 - Appraisal by the GOJ and JICA, and Approval by the Japanese Cabinet
- Authority for Determining Implementation
 - The Notes exchanged between the GOJ and a recipient country
- Grant Agreement (hereinafter referred to as "the G/A")
 - Agreement concluded between JICA and a recipient country
- Implementation
 - Implementation of the Project on the basis of the G/A

2. Preparatory Survey

(1) Contents of the Survey

The aim of the preparatory Survey is to provide a basic document necessary for the appraisal of the Project made by the GOJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of relevant agencies of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.

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- Preparation of an outline design of the Project.
- Estimation of costs of the Project.

The contents of the original request by the recipient country are not necessarily approved in their initial form as the contents of the Grant project. The Outline Design of the Project is confirmed based on the guidelines of the Japanese Grant scheme.

JICA requests the Government of the recipient country to take whatever measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization of the recipient country which actually implements the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country based on the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Survey, JICA employs (a) consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

(3) Result of the Survey

JICA reviews the Report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the appropriateness of the Project.

3. Japanese Grant Scheme

(1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes (hereinafter referred to as "the E/N") will be signed between the GOJ and the Government of the recipient country to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles, in accordance with the E/N, to implement the Project, such as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

(2) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the recipient country to continue to work on the Project's implementation after the E/N and G/A.

(3) Eligible source country

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Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. The Grant may be used for the purchase of the products or services of a third country, if necessary, taking into account the quality, competitiveness and economic rationality of products and services necessary for achieving the objective of the Project. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals", in principle.

(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals, in principle. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to fulfill accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Project, the recipient country is required to undertake such necessary measures as Annex. The Japanese Government requests the Government of the recipient country to exempt all customs duties, internal taxes and other fiscal levies such as VAT, commercial tax, income tax, corporate tax, resident tax, fuel tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract, since the Grant fund comes from the Japanese taxpayers.

(6) "Proper Use"

The Government of the recipient country is required to maintain and use properly and effectively the facilities constructed and the equipment purchased under the Grant, to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Grant.

(7) "Export and Re-export"

The products purchased under the Grant should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account under the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"), in principle. JICA will execute the Grant by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9) Authorization to Pay (A/P)

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The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions paid to the Bank.

(10) Environmental and Social Considerations

The Government of the recipient country must carefully consider environmental and social impacts by the Project and must comply with the environmental regulations of the recipient country and JICA Guidelines for Environmental and Social Consideration (April, 2010) .

(11) Monitoring

The Government of the recipient country must take their initiative to carefully monitor the progress of the Project in order to ensure its smooth implementation as part of their responsibility in the G/A, and must regularly report to JICA about its status by using the Project Monitoring Report (PMR).

(12) Safety Measures

The Government of the recipient country must ensure that the safety is highly observed during the implementation of the Project.

(13) Construction Quality Control Meeting

Construction Quality Control Meeting (hereinafter referred to as the "Meeting") will be held for quality assurance and smooth implementation of the Works at each stage of the Works. The member of the Meeting will be composed by the Client, the Consultant, the Contractor and JICA. The functions of the Meeting are as followings:

- a) Sharing information on the objective, concept and conditions of design, before start of construction.
- b) Discussing the issues affecting Works such as construction progress, modification of the design, test, inspection, safety control and the Client's obligation progress, during of construction.

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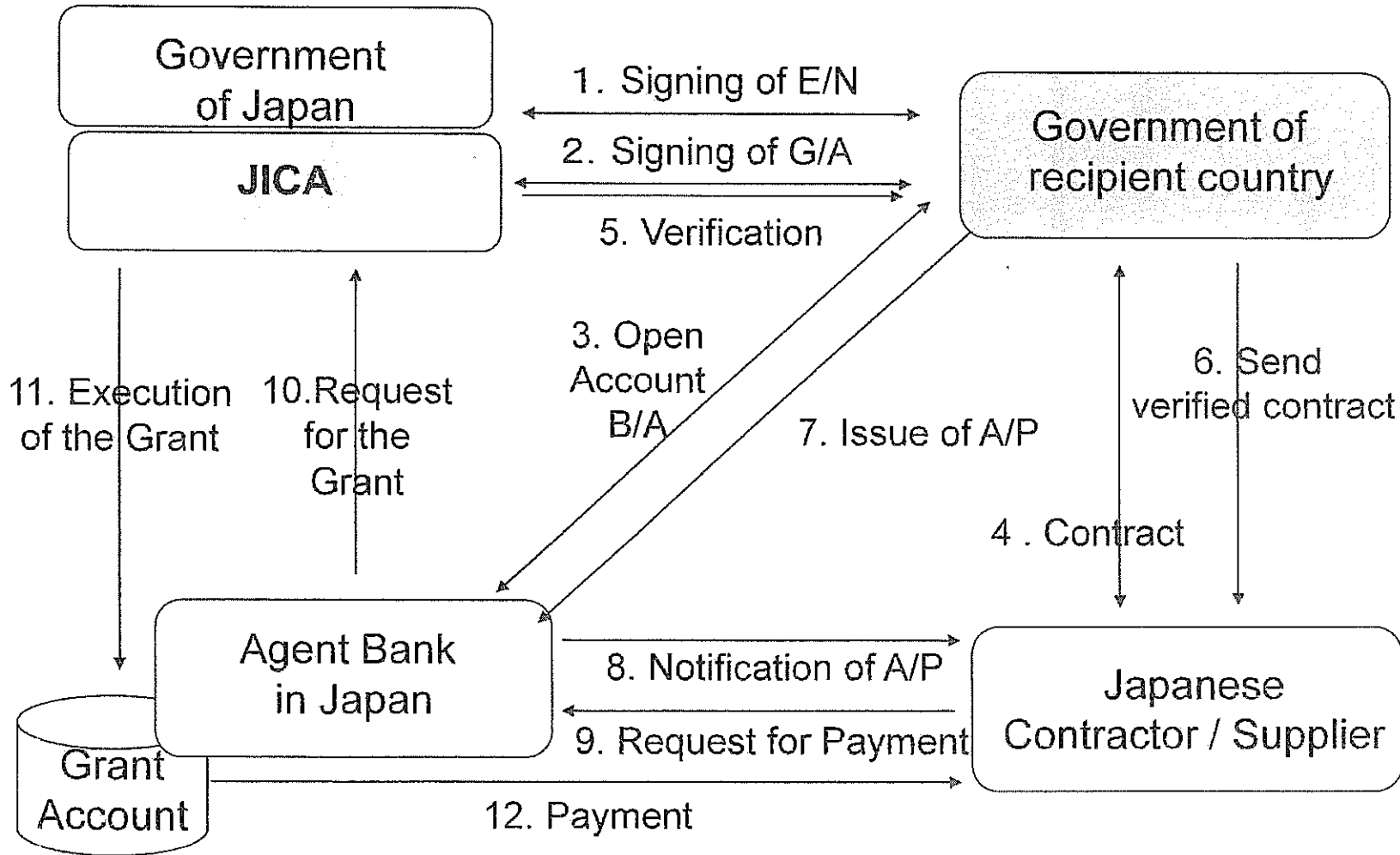
FLOW CHART OF JAPANESE GRANT PROCEDURES

Stage	Flow & Works	Recipient Government	Japanese Government	JICA	Consultant	Contract	Other
Application							
Project Formulation & Preparation							
Appraisal & Approval							
Implementation	<p>(E/N: Exchange of Notes) (G/A: Grant Agreement) (A/P : Authorization to Pay)</p>						
Evaluation & Follow up							

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Financial Flow of Grant Aid (A/P Type)



1: Project Description

1-1 Project Objective

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1-2 Necessity and Priority of the Project

- Consistency with development policy, sector plan, national/regional development plans and demand of target group and the recipient country.

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1-3 Effectiveness and the indicators

- Effectiveness by the project

Quantitative Effect (Operation and Effect indicators)		
Indicators	Original (Yr)	Target (Yr)
Qualitative Effect		

2: Project Implementation

2-1 Project Scope

Table 2-1-1a: Comparison of Original and Actual Location

Location	Original: (M/D) Attachment(s):Map	Actual: (PMR) Attachment(s):Map

Table 2-1-1b: Comparison of Original and Actual Scope

Items	Original	Actual
(M/D)	(M/D)	(PMR) Please state not only the most updated schedule but also other past revisions chronologically.

22

(1/2)

'Soft component' shall be included in 'Items'.		All change of design shall be recorded regardless of its degree.
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(Sample)Table 2-1-1b: Comparison of Original and Actual Scope

Items	Original	Actual
1. Upgrading of the Kukum Highway	length 20km, single lane (3.47m*2), path(1.25m*2) Concrete Pavement 200mm (motor lane only)	length 20km, single lane (3.47m*2), path(1.00m*2) Concrete Pavement 200mm (motor lane only)
2. Replacement of Old Mataniko Bridge	Bridge length 40m, Width 9.5m, path(1.00m*2), compound steel box-girder bridge, Inverted T type-abutment spread foundation	Ditto

(Sample)Table 2-1-1b: Comparison of Original and Actual Scope

Items	Original	Actual
1. Outpatient Department	RC, Double Storey Ground floor: Consultation room 6 Reception Satellite Lab. Pharmacy, etc 1 st floor: Consultation room 5 Dental Clinic 2	RC, Double Storey Ground floor: Consultation room 5 ditto
2. Operation Theatre, Casualty Unit, Maternity Ward	RC, Double Storey Ground Floor: Operation room 2 Casualty Unit 1 st Floor: Maternity Ward 50 beds	ditto Maternity Ward 60 beds

(Sample)Table 2-1-1b: Comparison of Original and Actual Scope

Items	Original	Actual
1. Primary and Secondary Surveillance Radars at Chittagong Int'l Airport	i) OSR/SSR 1 set ii) RDP 1 set iii) VHF Transmitters 2 sets	Ditto
2. Access Control System for Dhaka Int'l Airport	1 set	Ditto
3. Doppler VOR/DME at Saidpur Airport	1 set	Ditto
4. Aerodrome Simulator for Civil Aviation Training Center	1 set	Ditto

5. Baggage Inspection System for Dhaka Int'l Airport	i) Hold Baggage Xray Inspectin system 7sets ii) Hold Baggage Explosive Trace Detecting System 7sets iii) Cabin Baggage Xray Inspection System 2sets	Ditto
6. Airport Fire Fighting Vehicles for Dhaka Int'l Airport	2 sets	3 sets

2-1-2 Reason(s) for the modification if there have been any.

(PMR)

2-2 Implementation Schedule
 2-2-1 Implementation Schedule

Table 2-2-1: Comparison of Original and Actual Schedule

Items	Original		Actual
	DOD	G/A	
[M/D]	(M/D)		(PMR) As of (Date of Revision)
'Soft component' shall be stated in the column of 'Items'.			Please state not only the most updated schedule but also other past revisions chronologically.
Project Completion Date*			

*Project Completion was defined as _____ at the time of G/A.

(Sample)Table 2-2-1: Comparison of Original and Actual Schedule

Items	Original		Actual
	DOD	G/A	
Cabinet Approval	11/2015	-	-
E/N	12/2015	1/2016	24/1/2016
G/A	12/2015	1/2016	24/1/2016
Detailed Design	12/2015-4/2016	1/2016-5/2016	Amended 13/3/2017 1/2016-5/2016
Tender Notice	5/2016	5/2016	1/6/2016
Tender	6/2016	6/2016	15/7/2016
(Lot1) Construction Period	7/2016-11/2018	7/2016-11/2018	8/8/2016-30/11/2018
(Lot2) Installarion of Equipement	7/2016-6/2018	7/2016-6/2018	6/8/2016-30/60/2017

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Project Completion Date	11/2018	11/2018	30/11/2018
Defect Liability Period	11/2019	11/2019	30/11/2019

*Project Completion was defined as Check-out of Construction work at the time of G/A.

2-2-2 Reasons for any changes of the schedule, and their effects on the project.

2-3 Undertakings by each Government

2-3-1 Major Undertakings
 See Attachment 2.

2-3-2 Activities
 See Attachment 3.

2-3-3 Report on RD
 See Attachment 4.

2-4 Project Cost

2-4-1 Project Cost

Table 2-4-1a Comparison of Original and Actual Cost by the Government of Japan
 (Confidential until the Tender)

Items	Cost (Million Yen)			
	Original	Actual	Original	Actual
Construction Facilities (or Equipment)	'Soft component' shall be included in 'Items'.			Please state not only the most updated schedule but also other past revisions chronologically.
Consulting Services	- Detailed design - Procurement Management - Construction Supervision			
Total				

Note: 1) Date of estimation:
 2) Exchange rate: 1 US Dollar = Yen

Table 2-4-1b Comparison of Original and Actual Cost by the Government of XX

Items	Cost (Million USD)			
	Original	Actual	Original	Actual
				Please state not only the most

				updated schedule but also other past revisions chronologically.
Total				

Note: 1) Date of estimation:
2) Exchange rate: 1 US Dollar = (local currency)

(Sample)Table 2-4-1a Comparison of Original and Actual Cost by the Government of Japan
(Confidential until the Tender)

Items			Cost (Million Yen)	
	Original	Actual	Original ¹⁾²⁾	Actual
Construction Facilities	1. Outpatient Department 2. Operation Theatre, Casualty Unit, Maternity Ward	Ditto Ditto	1,169.5	1,035.0
Equipment	1) Primary and Secondary Surveillance Radars at Chittagong Int'l Airport 2) Access Control System for Dhaka Int'l Airport 3) Doppler VOR/DME at Saidpur Airport 4) Aerodrome Simulator for Civil Aviation Training Center 5) Baggage Inspection System for Dhaka Int'l Airport 6) Airport Fire Fighting Vehicles for Dhaka Int'l Airport	Ditto	2,374.6	2,110.0
Consulting Services	- Detailed design - Procurement Management - Construction Supervision - Soft Component	Ditto	0.87	0.87
Total			3544.97	3145.87

Note: 1) Date of estimation: October, 2014
2) Exchange rate: 1 US Dollar = 99.93 Yen

(Sample)Table 2-4-1b Comparison of Original and Actual Cost by the Government of Bangladesh

Items			Cost (1,000 Taka)	
	Original	Actual	Original ¹⁾²⁾	Actual
Dhaka International Airport	Modification of software of existing Rader Data Processing System	Ditto	8,000	9,240
	Provision of a partition, lighting, air conditioning and electric power supply at transfer hold baggage check point	Ditto	5,000	2,453

	Replacement of five doors in the international passenger terminal building	Ditto	4,000	5,340
Chittagong Int'l Airport	Preparation of the radar site including felling of trees, clearing and grabbing	Ditto	5,000	3,400
Total			22,000	20,433

Note: 1) Date of estimation: October, 2014
 2) Exchange rate: 1 US Dollar = 0.887 Bangladesh Taka (local currency)

2-4-2 Reason(s) for the wide gap between the original and actual, if there have been any, the remedies you have taken, and their results.

(PMR)

2-5 Organizations for Implementation

2-5-1 Executing Agency:

- Organization's role, financial position, capacity, cost recovery etc,
- Organization Chart including the unit in charge of the implementation and number of employees.

Original: (M/D)

Actual, if changed: (PMR)

2-6 Environmental and Social Impacts

- The results of environmental monitoring as attached in Attachment 5 in accordance with Schedule 4 of the Grant Agreement.
- The results of social monitoring as attached in Attachment 5 in accordance with Schedule 4 of the Grant Agreement.
- Information on the disclosed results of environmental and social monitoring to local stakeholders, whenever applicable.

3: Operation and Maintenance (O&M)

3-1 O&M and Management

- Organization chart of O&M
- Operational and maintenance system (structure and the number, qualification and skill of staff or other conditions necessary to maintain the outputs and benefits of the project soundly, such as manuals, facilities and equipment for maintenance, and spare part stocks etc)

Original: (M/D)
Actual: (PMR)

3-2 O&M Cost and Budget

- The actual annual O&M cost for the duration of the project up to today, as well as the annual O&M budget.

Original: (M/D)

4: Precautions (Risk Management)

- Risks and issues, if any, which may affect the project implementation, outcome, sustainability and planned countermeasures to be adapted are below.

Original Issues and Countermeasure(s): (M/D)	
Potential Project Risks	Assessment
1.	Probability: H/M/L
(Description of Risk)	Impact: H/M/L
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action during the Implementation:
	Contingency Plan (if applicable):
2.	Probability: H/M/L
(Description of Risk)	Impact: H/M/L
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action during the Implementation:
	Contingency Plan (if applicable):

De

3.	Probability: H/M/L
(Description of Risk)	Impact: H/M/L
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action during the Implementation:
	Contingency Plan (if applicable):
Actual issues and Countermeasure(s)	
(PMR)	

5: Evaluation at Project Completion and Monitoring Plan

5-1 Overall evaluation
 Please describe your overall evaluation on the project.

5-2 Lessons Learnt and Recommendations
 Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

5-3 Monitoring Plan for the Indicators for Post-Evaluation
 Please describe monitoring methods, section(s)/department(s) in charge of monitoring, frequency, the term to monitor the indicators stipulated in 1-3.

SK



Attachment

1. Project Location Map
2. Undertakings to be taken by each Government
3. Monthly Report
4. Report on RD
5. Environmental Monitoring Form / Social Monitoring Form
6. Monitoring sheet on price of specified materials (Quarterly)
7. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)
(Final Report Only)

Monitoring sheet on price of specified materials

1. Initial Conditions (Confirmed)

	Items of Specified Materials	Initial Volume A	Initial Unit Price (¥) B	Initial total Price C=A×B	1% of Contract Price D	Condition of payment	
						Price (Decreased) E=C-D	Price (Increased) F=C+D
1	Item 1	●●t	●	●	●	●	●
2	Item 2	●●t	●	●	●		
3	Item 3						
4	Item 4						
5	Item 5						

2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring : ●●

(2) Result of the Monitoring Survey on Unit Price for each specified materials

	Items of Specified Materials	1st	2nd	3rd	4th	5th	6th
		●month, 2015	●month, 2015	●month, 2015			
1	Item 1						
2	Item 2						
3	Item 3						
4	Item 4						
5	Item 5						

(3) Summary of Discussion with Contractor (if necessary)

-
-
-

Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)
 (Actual Expenditure by Construction and Equipment each)

	Domestic Procurement (Recipient Country) A	Foreign Procurement (Japan) B	Foreign Procurement (Third Countries) C	Total D
Construction Cost	(A/D%)	(B/D%)	(C/D%)	
Direct Construction Cost	(A/D%)	(B/D%)	(C/D%)	
others	(A/D%)	(B/D%)	(C/D%)	
Equipment Cost	(A/D%)	(B/D%)	(C/D%)	
Design and Supervision Cost	(A/D%)	(B/D%)	(C/D%)	
Total	(A/D%)	(B/D%)	(C/D%)	

Major Undertakings to be taken by Recipient Government

1. Before the Tender

NO	Items	Deadline	In charge	Cost	Ref.
1	To open Bank Account (Banking Arrangement (B/A))	within 1 month after G/A	MINECOFIN		
2	To approve IEE/EIA	within 1 month after G/A	RDB		
3	To implement EIA	before start of the construction	RAB		
4	To secure the following lands 1) land for facilities to be constructed 2) access way for implementation of the project 3) temporary construction yard and stock yard near the Project area 4) borrow pit and disposal site near the Project area	before notice of the tender document	RAB		
5	To clear, level and reclaim the following sites 1) clear the above site by cutting or transplanting trees 2) access road for implementation of the project	before notice of the tender document	RAB		
6	To compensate or find substitute land to the people affected (including the farmland which are not able to be cultivated during the construction)	before notice of the tender document	RAB		
7	To obtain water right	before notice of the tender document	RAB		
8	To support for establishment of IWUO	before start of the construction	RAB		
9	To submit the result of DD	end of DD	RAB		

2. During the Project Implementation

NO	Items	Deadline	In charge	Cost	Ref.
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A				
	1) Advising commission of A/P	within 1 month after the signing of the contract	RAB		
	2) Payment commission for A/P	every payment	MINECOFIN		
2	To ensure prompt unloading and customs clearance in recipient country				
	1) Tax exemption and customs clearance of the products	during the Project	RAB		
	2) Internal transportation to the project site	during the Project			

3	To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work	during the Project	RAB		
4	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the Products and/or the Services be borne by its designated authority without using the Grant; Such customs duties, internal taxes and other fiscal levies mentioned above include VAT, commercial tax, income tax and corporate tax of Japanese nationals, resident tax, fuel tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract	during the Project	RAB		
5	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment	during the Project	RAB		
6	To submit Project Monitoring Report.	every month	RAB		MD
7	To construct access roads				
	1) Outside the site	3 months before completion of the construction	RAB		
8	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities, if needed				
9	To implement EMP and EMoP	during the construction	RAB		
	To submit results of environmental monitoring to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report	during the construction	RAB		
	To implement RAP (livelihood restoration program, if needed)	for a period based on livelihood restoration program	RAB		
	To implement social monitoring, and to submit the monitoring results to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report - Period of the monitoring may be extended if affected persons' livelihoods are not sufficiently restored. Extension of the monitoring will be decided based on agreement between RAB and JICA.	- until the end of livelihood restoration program (In case that livelihood restoration program is provided) - for two years after land acquisition and resettlement complete (In case that livelihood restoration program is not provided)	RAB		

22

(13)

3. After the Project

NO	Items	Deadline	In charge	Cost	Ref.
1	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid 1) Allocation of maintenance cost 2) Operation and maintenance structure 3) Routine check/Periodic inspection	After completion of the construction	RAB		
2	To implement EMP and EMoP	for a period based on EMP and EMoP	RAB		
	To submit results of environmental monitoring to JICA, by using the monitoring form, semiannually - The period of environmental monitoring may be extended if any significant negative impacts on the environment are found. The extension of environmental monitoring will be decided based on the agreement between RAB and JICA.	for three years after the Project	RAB		

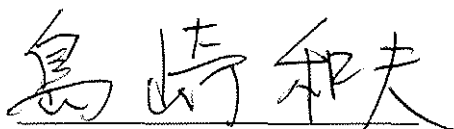
(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)

Minutes of Discussions
on the Preparatory Survey for the Project for Rehabilitation of Irrigation Facilities
in Rwamagana District in the Republic of Rwanda
(Explanation on Draft Preparatory Survey Report)

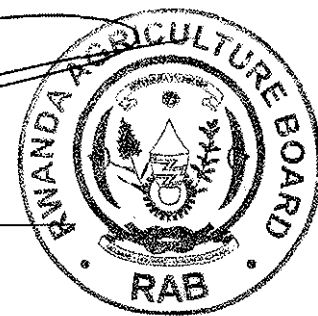
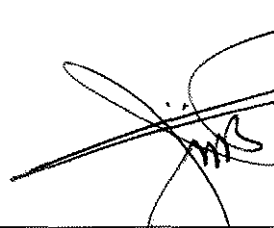
With reference to the Minutes of Discussions signed between the Rwanda Agriculture Board and the Japan International Cooperation Agency (hereinafter referred to as "JICA") on 23rd June, 2016 and in response to the request by the Government of Rwanda (hereinafter referred to as "Rwanda") dated 11th September, 2015, JICA dispatched the Preparatory Survey Team (hereinafter referred to as "the Team") for the explanation of Draft Preparatory Survey Report (hereinafter referred to as "the Draft Report") for the Project for Rehabilitation of Irrigation Facilities in Rwamagana District in the Republic of Rwanda (hereinafter referred to as "the Project"), headed by Mr. Kazuo Shimazaki, Exective Technical Advisor to the Director General, Rural Development Department, JICA, and is scheduled to stay in the country from 8th to 21th January, 2017.

As a result of the discussions, both sides agreed on the main items described in the attached sheets.

Kigali, 20th January, 2017



Mr. Kazuo Shimazaki
Leader,
Preparatory Survey Team,
Japan International Cooperation Agency
Japan



Dr. Mark Cyubahiro Bagabe
Director General,
Rwanda Agriculture Board,
Ministry of Agriculture and Animal Resources,
The Republic of Rwanda

ATTACHEMENT

1. Objective of the Project

The objective of the Project is to expand irrigated areas through the rehabilitation of irrigation facilities, thereby contributing to increase agricultural production.

2. Title of the Preparatory Survey

Both sides confirmed the title of the Preparatory Survey as “the Preparatory Survey for the Project for Rehabilitation of Irrigation Facilities in Rwamagana District in the Republic of Rwanda.

3. Project site

Both sides confirmed that the sites of the Project are in Rwamagana District , which is shown in Annex 1.

4. Responsible authority for the Project

Both sides confirmed the authorities responsible for the Project are as follows:

4-1. The Rwanda Agricultural Board will be the executing agency for the Project (hereinafter referred to as “the Executing Agency”). The Executing Agency shall coordinate with all the relevant authorities to ensure smooth implementation of the Project and ensure that the undertakings for the Project shall be taken care by relevant authorities properly and on time. The organization charts are shown in Annex 2.

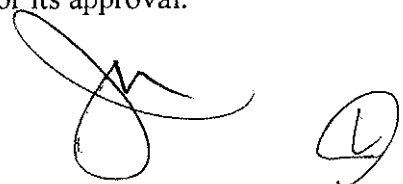
4-2. The line ministry of the Executing Agency is the Ministry of Agriculture and Animal Resources. The Ministry of Agriculture and Animal Resources shall be responsible for supervising the Executing Agency on behalf of the Government of Rwanda.

5. Contents of the Draft Report

After the explanation of the contents of the Draft Report by the Team, the Rwanda side agreed to its contents.

6. Cost estimate

Both sides confirmed that the cost estimate described in Annex3 is provisional and will be examined further by the Government of Japan for its approval.

Handwritten signature and initials in black ink, located at the bottom right of the page.

Both sides confirmed that the cost estimate including the contingency described in Annex3 is provisional and will be examined further by the Government of Japan for its approval. The contingency would cover the additional cost against natural disaster, unexpected natural conditions, etc.

7. Confidentiality of the cost estimate and technical specifications

Both sides confirmed that the cost estimate in Annex3 and technical specifications in the Draft Report should never be duplicated or disclosed to any third parties until all the contracts under the Project are concluded.

8. Procedures and Basic Principles of Japanese Grant

The Rwanda side agreed that the procedures and basic principles of Japanese Grant as described in Annex4 shall be applied to the Project. In addition, the Rwanda side agreed to take necessary measures according to the procedures.

9. Timeline for the project implementation

The Team explained to the Rwanda side that the expected timeline for the project implementation is as attached in Annex5.

10. Expected outcomes and indicators


Both sides agreed that key indicators for expected outcomes are as follows. The Rwanda side will be responsible for the achievement of agreed key indicators targeted in year 2020 and shall monitor the progress based on those indicators.

(1) Yield of rice per a unit area in rainy season will increase from 4.1 ton/ha (present condition) to 5.4 ton/ha and which in dry season will increase 3.4 ton/ha (present condition) to 5.0 ton/ha owing to resolution of the problem of water shortage.

(2) Utilization rate of paddy field will increase from 143% (present condition) to 200% .

11. Technical assistance (“Soft Component” of the Project)

Considering the sustainable operation and maintenance of the products and services granted through the Project, following technical assistance is planned under the Project. The Rwanda side confirmed to deploy necessary number of counterparts who are appropriate and competent in terms of its purpose of the technical assistance as described in the Draft Report.



12. Undertakings of the Project

Both sides confirmed the undertakings of the Project as described in Annex6, with regard to exemption of customs duties, internal taxes and other fiscal levies as stipulated in Annex 6, both sides confirmed that such customs duties, internal taxes and other fiscal levies include VAT, commercial tax, income tax and corporate tax, which shall be clarified in the bid documents by the Executing Agency during the implementation stage of the Project.

The Rwanda side assured to take the necessary measures and coordination including allocation of the necessary budget which are preconditions of implementation of the Project. It is further agreed that the costs are indicative, i.e. at Outline Design level. More accurate costs will be calculated at the Detailed Design stage.

Both sides also confirmed that the Annex 6 will be used as an attachment of the Grant Agreement.

13. Monitoring during the implementation

The Project will be monitored by the Executing Agency and reported to JICA by using the form of Project Monitoring Report (PMR) attached as Annex7. The timing of submission of the PMR is described in Annex 7.

14. Project completion

Both sides confirmed that the project completes when all the facilities constructed and equipment procured by the grant are in operation. The completion of the Project will be reported to JICA promptly, but in any event not later than six months after completion of the Project.

15. Ex-Post Evaluation

JICA will conduct ex-post evaluation after three (3) years from the project completion, in principle, with respect to five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact, Sustainability). The result of the evaluation will be publicized. The Rwanda side is required to provide necessary support for the data collection.

16. Schedule of the Study

JICA will finalize the Preparatory Survey Report based on the confirmed items. The report will be sent to the Rwanda side around 15th March, 2017.



17. Environmental and Social Considerations

17-1 General Issues

17-1-1 Environmental Guidelines and Environmental Category

The Team explained that ‘JICA Guidelines for Environmental and Social Considerations (April 2010)’ (hereinafter referred to as “the Guidelines”) is applicable for the Project. The Project is categorized as B because the Project is not located in a sensitive area, nor has sensitive characteristics, nor falls into sensitive sectors under the JICA guidelines for environmental and social considerations (April 2010), and its potential adverse impacts on the environment are not likely to be significant.

17-1-2 Environmental Checklist

The environmental and social considerations including major impacts and mitigation measures for the Project are summarized in the Environmental Checklist attached as Annex 9. Both sides confirmed that in case of major modification of the content of the Environmental Checklist, the Rwanda side shall submit the modified version to JICA in a timely manner.

17-2 Environmental Issues

17-2-1 Environmental Impact Assessment (EIA)

Both sides confirmed the EIA report will be approved by Rwanda Development Board in February 2017.

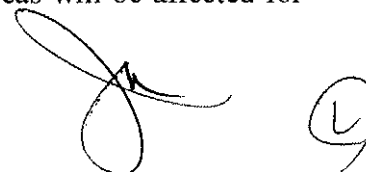
17-2-2 Environmental Management Plan and Environmental Monitoring Plan

Both sides confirmed Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP) of the Project is as Annex 8, respectively. Both sides agreed that environmental mitigation measures and monitoring shall be conducted based on the EMP and EMoP, which may be updated during the detailed design stage.

17-3 Social Issues

17-3-1 Land Acquisition

Both sides confirmed the Project acquires total of 75.3 ha of private (43.3 ha) and state-owned (32 ha) lands, permanently and temporarily, and that no resettlement of housing will be caused by the Project. Both sides also confirmed that impacts of land acquisition and total of 315 Project Affected Households will be affected due to loss of land and crops. In addition, both sides confirmed that 1,345 households in 227.93 ha of agricultural land downstream of the Project areas will be affected for



temporary loss of income opportunities during rehabilitation/construction of the reservoirs.

Such land acquisition and related procedures shall be implemented based on the Resettlement Action Plan (RAP) which is prepared in line with the Guidelines and will be authorized by the Rwanda side in February 2017.

17-4 Environmental and Social Monitoring

17-4-1 Environmental Monitoring

Both sides agreed that the Rwanda side will submit results of environmental monitoring to JICA with PMR by using the monitoring form attached as Annex10. The timing of submission of the monitoring form is described in Annex 6, especially on a quarterly basis during construction.

In case JICA finds that there is a need for improvement in a situation with respect to environmental considerations after the agreed monitoring period, JICA may request to extend the period of monitoring and reporting until JICA confirms the issues have been properly addressed in accordance with the agreement between the Rwanda side and JICA.

17-4-2 Social Monitoring

Both sides confirmed that the Rwanda side will implement social monitoring on progress of land acquisition of implementation of the RAP until land acquisition and resettlement activities including livelihood restoration program are completed. The Rwanda side and the Team agreed that RAB will submit results of social monitoring to JICA with PMR on a quarterly basis by using the monitoring form attached as Annex10.

In case there is a remaining issue that needs to be addressed (e.g. insufficient restoration of livelihood of displaced Project Affected Persons (PAPs)), JICA may request to extend the period of monitoring and reporting until JICA confirms the issues have been properly addressed and solved in accordance with the agreement between the Rwanda side and JICA.

17-4-3 Information Disclosure of Monitoring Results

Both sides confirmed that the Rwanda side will disclose results of environmental and social monitoring to local stakeholders through their website and/or in their field offices.

The Rwanda side agreed JICA will disclose results of environmental and social monitoring submitted by the Rwanda side as the monitoring forms attached as Annex 10 on its website to the extent that they are made public in Rwanda. When third parties request further information, JICA disclose it, subject to approval by the Rwanda side.

18. Other Relevant Issues

18-1. Disclosure of Information

Both sides confirmed that the Preparatory Survey Report from which project cost



is excluded will be disclosed to the public after completion of the Preparatory Survey. The comprehensive report including the project cost will be disclosed to the public after all the contracts under the Project are concluded.

Annex 1. Project Site

Annex 2. Organization Chart

Annex 3. Previsonal cost estimation

Annex 4. Japanese Grant

Annex 5. Project Implementation Schedule

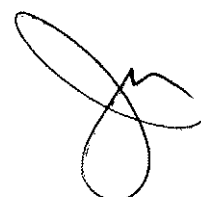
Annex 6. Major Undertakings to be taken by the Government of Rwanda

Annex 7. Project Monitoring Report (template)

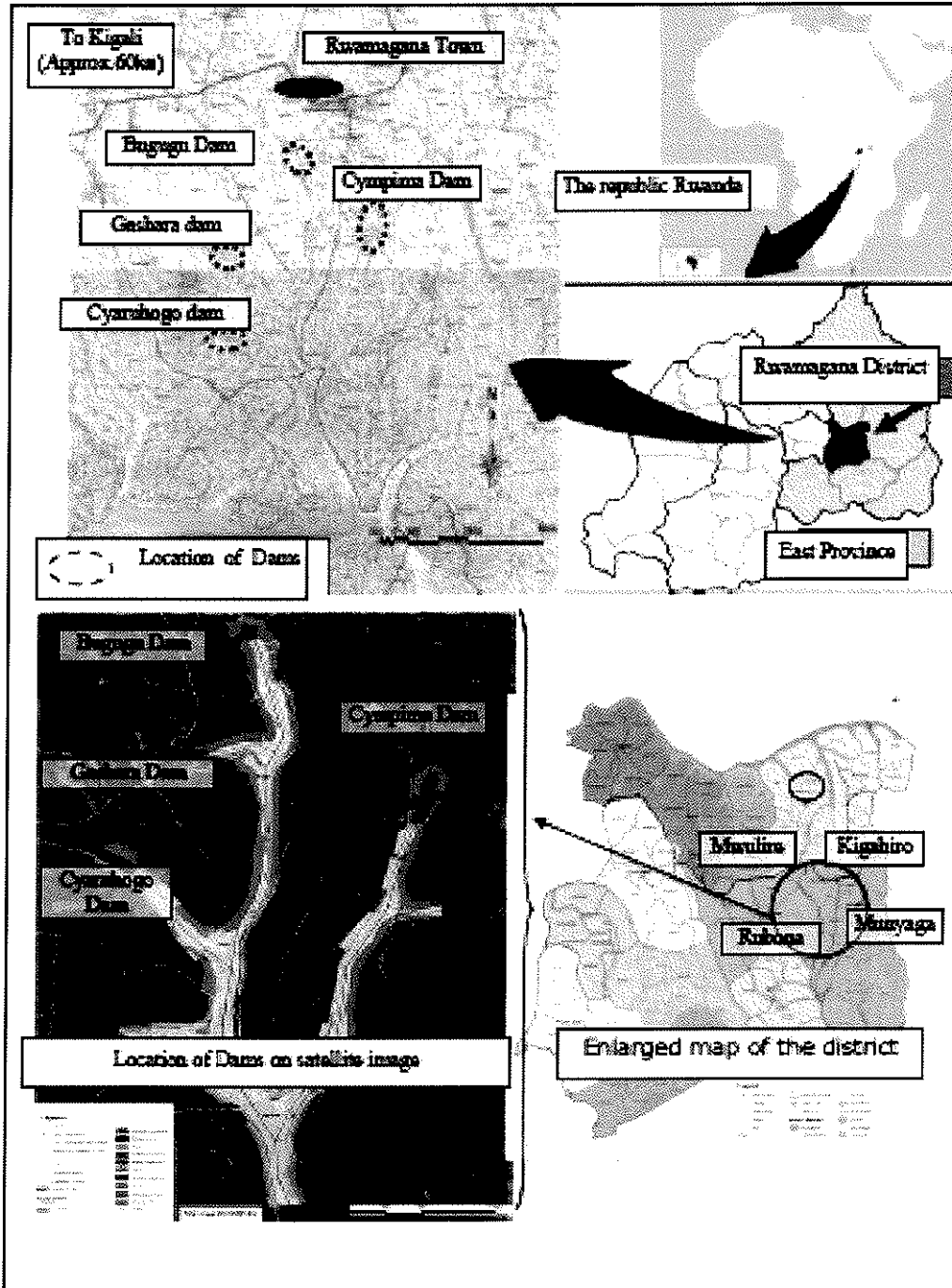
Annex 8. Environmental Management Plan and Environmental Monitoring Plan

Annex 9. Environmental Checklist

Annex10. Monitoring form

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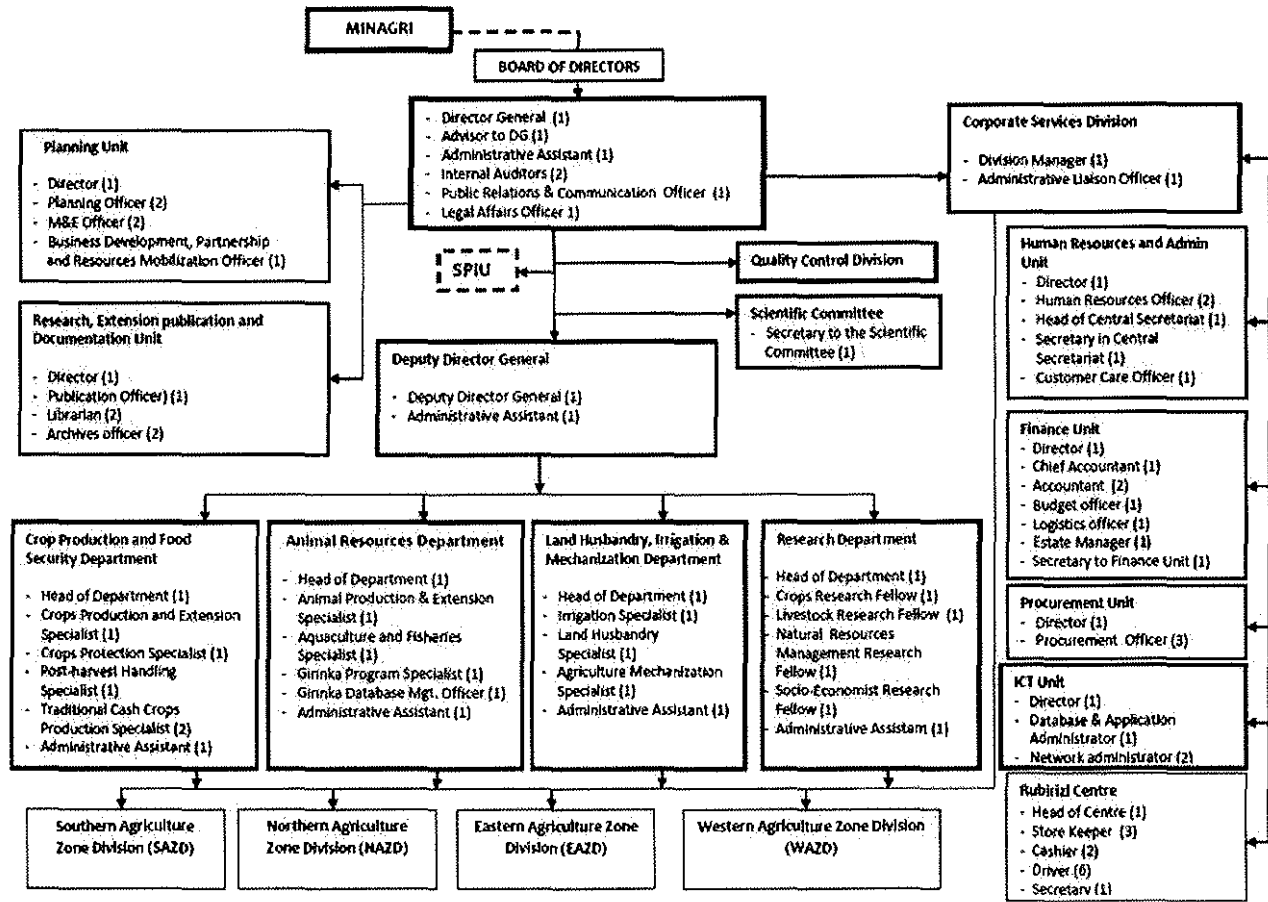
Annex 1 Project site



Location Map

Annex 2 Organization Chart

Rwanda Agriculture Board

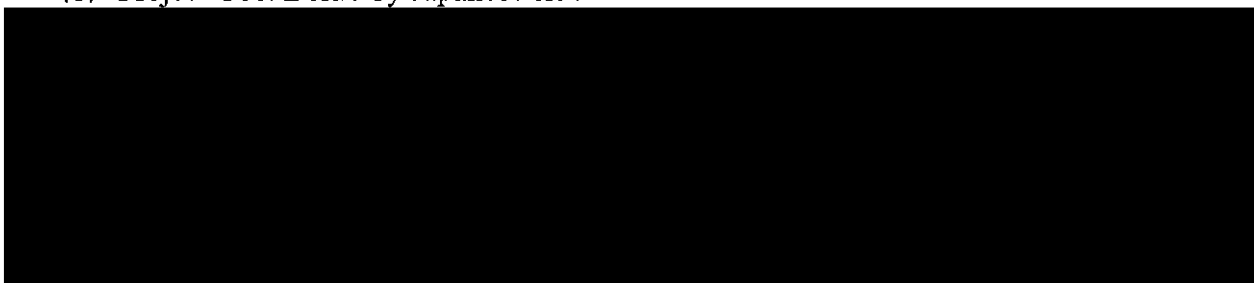


Project Cost Estimation

<Confidential>

(1) Project Cost Borne by Japanese side

This part is closed due to the confidentiality.



(2) Cost Borne by Rwandan side

Item and cost borne by Rwandan side

	Item	Amount (RWF)	Remarks
Cost for securing the land necessary to implement the project and compensation for the lands	RAP Implementation Cost including compensation for land acquisition, loss of assets, income, staffing, training, watershed management,, and final asset valuation.	543,638,627	MINAGRI/RAB
	RAP Preparation and Monitoring Cost including establishment of SRCC/DRCC, Follow up, Grievance redress, PAPs livelihood assessment	10,142,000	MINAGRI/RAB
Cost for environmental and social considerations	Acquisition of the EIA certificate	0	MINAGRI/RAB
	Execution of the conditions described in the EIA certificate	0	MINAGRI/RAB
	Implement periodical environmental management monitoring and report its results	24,893,536	MINAGRI/RAB
Cost related to the right of water usage	Application and acquisition of the right of water usage related to this project	35,000	MINAGRI/RAB
Cost for assigning counterparts for the project	Allocation of necessary RAB irrigation engineers to support the implementation of the Project	89,847,450	MINAGRI/RAB
Cost for support to IWUO and DISC	To mobilize and assist in training IWUO and DISC	6,862,200	MINAGRI/RAB
Cost for assisting in merging cooperatives t	To establish one IWUO with the 4 cooperatives	5,065,000	MINAGRI/RAB
Cost for burdening all taxes related to the project	Exemption of VAT, custom duty and other taxes related to the project	1,205,762,000	MINAGRI/RAB
Cost related to Authorization to Pay and Banking Arrangement	Opening of A/P A/P amendment Payment commission to the Bank	13,936,000	MINAGRI/MINEC OFIN

Total		1,900,181,813
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(3) Conditions for Estimation

- 1) Base month of estimation : August 2016
- 2) Exchange rate : 1US\$=107.12JPY
1RWF=0.1377JPY
- 3) Period of Construction : 34.5 months from the E/N, including detailed design survey, tendering procedures and construction. Refer to Implementation Schedule for details.
- 4) Others : This Project cost estimation is to be completed in accordance with the guidelines for Grant Aid Assistance of the Japanese government. Rate for the grant for contingencies will be determined by Ministry of Foreign Affairs later.

Annex 3-2 (including Government land)

Disbursement schedule of Cost Burned by Rwanda side

Items		Total	July 2017 to June 2018	July 2018 to June 2019	July 2019 to June 2020	Remarks
Cost for securing the land necessary to implement the project and compensation for the lands	RAP Implementation Cost including compensation for land acquisition, loss of assets, income, staffing, training, and final asset valuation.	543,638,627	537,038,627	3,300,000	3,300,000	MINAGRI/RAB
	RAP Preparation and Monitoring Cost including establishment of SRCC/DRCC, Follow up, Grievance redress, PAPs livelihood assessment	10,142,000	2,376,000	1,826,000	5,940,000	MINAGRI/RAB
Cost for environmental and social considerations	Acquisition of the EIA certificate	0	0	0	0	MINAGRI/RAB
	Execution of the conditions described in the EIA certificate	TBD	TBD	TBD	TBD	MINAGRI/RAB
	Implement periodical environmental management monitoring and report its results	24,893,536	4,978,707	12,197,833	7,716,996	MINAGRI/RAB
Cost related to the right of water usage	Application and acquisition of the right of water usage related to this project	35,000	7,000	17,150	10,850	MINAGRI/RAB
Cost for assigning counterparts for the project	Allocation of necessary RAB irrigation engineers to support the implementation of the Project	89,847,450	17,969,490	44,025,251	27,852,709	MINAGRI/RAB
Cost for support to IWUO and DISC	To mobilize, establish and assist in training IWUO and DISC	6,862,200	1,372,440	3,362,478	2,127,282	MINAGRI/RAB
Cost for assisting in merging cooperatives t	Merging the 4 cooperatives into one	5,065,000	5,065,000			MINAGRI/RAB
Cost for burdening all taxes related to the project	Exemption of VAT, custom duty and other taxes related to the project	1,205,762,000	241,152,400	590,823,380	373,786,220	MINAGRI/RAB
Cost related to Authorization to Pay and Banking Arrangement	Opening of A/P 44,000/time A/P amendment 29,000/time	219,000	73,000	73,000	73,000	MINAGRI/MIN ECOFIN
	Payment commission to the Bank	13,717,000	2,743,400	6,721,330	4,252,270	MINAGRI/MIN ECOFIN
Total		1,900,181,813	812,776,064	662,346,422	425,059,327	

JAPANESE GRANT

The Japanese Grant is non-reimbursable fund provided to a recipient country (hereinafter referred to as “the Recipient”) to purchase the products and/or services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. Followings are the basic features of the project grants operated by JICA (hereinafter referred to as “Project Grants”).

1. Procedures of Project Grants

Project Grants are conducted through following procedures (See “PROCEDURES OF JAPANESE GRANT” for details):

(1) Preparation

- The Preparatory Survey (hereinafter referred to as “the Survey”) conducted by JICA

(2) Appraisal

- Appraisal by the government of Japan (hereinafter referred to as “GOJ”) and JICA, and Approval by the Japanese Cabinet

(3) Implementation

Exchange of Notes

- The Notes exchanged between the GOJ and the government of the Recipient

Grant Agreement (hereinafter referred to as “the G/A”)

- Agreement concluded between JICA and the Recipient

Banking Arrangement (hereinafter referred to as “the B/A”)

- Opening of bank account by the Recipient in a bank in Japan (hereinafter referred to as “the Bank”) to receive the grant

Construction works/procurement

- Implementation of the project (hereinafter referred to as “the Project”) on the basis of the G/A

(4) Ex-post Monitoring and Evaluation

- Monitoring and evaluation at post-implementation stage

2. Preparatory Survey

(1) Contents of the Survey

The aim of the Survey is to provide basic documents necessary for the appraisal of the the Project made by the GOJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of

relevant agencies of the Recipient necessary for the implementation of the Project.

- Evaluation of the feasibility of the Project to be implemented under the Japanese Grant from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.
- Preparation of an outline design of the Project.
- Estimation of costs of the Project.
- Confirmation of Environmental and Social Considerations

The contents of the original request by the Recipient are not necessarily approved in their initial form. The Outline Design of the Project is confirmed based on the guidelines of the Japanese Grant.

JICA requests the Recipient to take measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the executing agency of the Project. Therefore, the contents of the Project are confirmed by all relevant organizations of the Recipient based on the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Survey, JICA contracts with (a) consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

(3) Result of the Survey

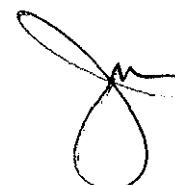
JICA reviews the report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the feasibility of the Project.

3. Basic Principles of Project Grants

(1) Implementation Stage

1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes (hereinafter referred to as "the E/N") will be signed between the GOJ and the Government of the Recipient to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Recipient to define the necessary articles, in accordance with the E/N, to implement the Project, such as conditions of disbursement, responsibilities of the Recipient, and procurement conditions. The terms and conditions generally applicable to the Japanese Grant are stipulated in the "General Terms and Conditions for Japanese Grant (January 2016)."



2) Banking Arrangements (B/A) (See “Financial Flow of Japanese Grant (A/P Type)” for details)

a) The Recipient shall open an account or shall cause its designated authority to open an account under the name of the Recipient in the Bank, in principle. JICA will disburse the Japanese Grant in Japanese yen for the Recipient to cover the obligations incurred by the Recipient under the verified contracts.

b) The Japanese Grant will be disbursed when payment requests are submitted by the Bank to JICA under an Authorization to Pay (A/P) issued by the Recipient.

3) Procurement Procedure

The products and/or services necessary for the implementation of the Project shall be procured in accordance with JICA's procurement guidelines as stipulated in the G/A.

4) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the Recipient to continue to work on the Project's implementation after the E/N and G/A.

5) Eligible source country

In using the Japanese Grant disbursed by JICA for the purchase of products and/or services, the eligible source countries of such products and/or services shall be Japan and/or the Recipient. The Japanese Grant may be used for the purchase of the products and/or services of a third country as eligible, if necessary, taking into account the quality, competitiveness and economic rationality of products and/or services necessary for achieving the objective of the Project. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm, which enter into contracts with the Recipient, are limited to "Japanese nationals", in principle.

6) Contracts and Concurrence by JICA

The Recipient will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be concurred by JICA in order to be verified as eligible for using the Japanese Grant.

7) Monitoring

The Recipient is required to take their initiative to carefully monitor the progress of the Project in order to ensure its smooth implementation as part of their responsibility in the G/A, and to regularly report to JICA about its status by using the Project Monitoring Report (PMR).

8) Safety Measures

The Recipient must ensure that the safety is highly observed during the implementation of the Project.

9) Construction Quality Control Meeting

Construction Quality Control Meeting (hereinafter referred to as the “Meeting”) will be held for quality assurance and smooth implementation of the Works at each stage of the Works. The member of the Meeting will be composed by the

Recipient (or executing agency), the Consultant, the Contractor and JICA. The functions of the Meeting are as followings:

- a) Sharing information on the objective, concept and conditions of design from the Contractor, before start of construction.
- b) Discussing the issues affecting the Works such as modification of the design, test, inspection, safety control and the Client's obligation, during of construction.

(2) Ex-post Monitoring and Evaluation Stage

- 1) After the project completion, JICA will continue to keep in close contact with the Recipient in order to monitor that the outputs of the Project is used and maintained properly to attain its expected outcomes.
- 2) In principle, JICA will conduct ex-post evaluation of the Project after three years from the completion. It is required for the Recipient to furnish any necessary information as JICA may reasonably request.

(3) Others

1) Environmental and Social Considerations

The Recipient shall carefully consider environmental and social impacts by the Project and must comply with the environmental regulations of the Recipient and JICA Guidelines for Environmental and Social Considerations (April, 2010).

2) Major undertakings to be taken by the Government of the Recipient

For the smooth and proper implementation of the Project, the Recipient is required to undertake necessary measures including land acquisition, and bear an advising commission of the A/P and payment commissions paid to the Bank as agreed with the GOJ and/or JICA. The Government of the Recipient shall ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the Recipient with respect to the purchase of the Products and/or the Services be exempted or be borne by its designated authority without using the Grant and its accrued interest, since the grant fund comes from the Japanese taxpayers.

3) Proper Use

The Recipient is required to maintain and use properly and effectively the products and/or services under the Project (including the facilities constructed and the equipment purchased), to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Japanese Grant.



4) Export and Re-export

The products purchased under the Japanese Grant should not be exported or re-exported from the Recipient.

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Major Undertakings to be taken by the Government of Rwanda

1. Specific obligations of the Government of Rwanda which will not be funded with the Grant

(1) Before the Tender

NO	Items	Deadline	In charge	Estimated Cost(RWF)	Ref.
1	To open bank account (B/A)	within 1 month after the signing of the G/A	MINEC OFIN	132,000	
2	To issue A/P to a bank in Japan (the Agent Bank) for the payment to the consultant	within 1 month after the signing of the contract	MINEC OFIN	including the above budget 1	
3	To obtain approve of EIA Report and secure the necessary budget for implementation.	within 1 month after the signing of the G/A	RDB	N/A	
4	To secure the necessary budget and implement land acquisition and compensation with full replacement cost in accordance with RAP	before start of the construction	RAB	132,248,835	
5	To implement social monitoring, and to submit the monitoring results to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report	till land acquisition and resettlement complete	RAB	2,376,000	
6	To secure and clear the following lands 1) land for facilities to be constructed 2) temporary construction yard and stock yard near the 3) borrow pit and disposal site near the project site 4) area of site road	before notice of the bidding document	RAB	Cost of 2) , 3) and 4) are included the budget for item No.4 above	
7	To submit Project Monitoring Report (with the result of Detail Design)	before preparation of bidding documents	RAB	N/A	
8	To obtain water right			35,000	

(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)

(2) During the Project Implementation

NO	Items	Deadline	In charge	Estimated Cost	Ref.
1	To issue A/P to a bank in Japan (the Agent Bank) for the payment to the Supplier(s)	within 1 month after the signing of the contract(s)	MPWT	132,000	
2	To bear the following commissions to a bank in Japan for the banking services based upon the B/A			N/A	
	1) Advising commission of A/P	within 1 month after the signing of the contract(s)	MPWT	87,000	
	2) Payment commission for A/P	every payment	MOF	13,585,000	
3	To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the country of the Recipient and stay therein for the performance of their work	during the Project	MINECO FIN · RAB	N/A	
4	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the products and/or the services will be exempted by its designated authority in accordance with LAW No 37/2012 OF 09/11/2012 ESTABLISHING THE VALUE ADDED TAX without using the Grant.	during the Project	MINECO FIN · RAB	1,205,762,000	
5	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project	during the Project	RAB	Included in the budget for item No.11 below	
6	1) To submit Project Monitoring Report	every month	RAB	Included in the budget for Item No13	
	2) To submit Project Monitoring Report (final)	within one month after signing of Certificate of Completion for the works under the contract(s)	RAB	Included in the budget for item No 11 below	
7	To submit a report concerning completion of the Project	within six months after completion of the Project	RAB	Included in the budget for item No11 below	
8	To implement EMP/EmoP and RAP	during the construction	RAB	15,746,768	
9	To submit results of environmental monitoring to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report	during the construction	RAB	N/A	
10	To implement social monitoring, and to submit the monitoring results to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report - Period of the monitoring may be extended if affected persons' livelihoods are not sufficiently	until the end of livelihood restoration program (In case that livelihood restoration	RAB	1,826,000	

	restored. Extension of the monitoring will be decided based on agreement between RAB and JICA.	program is provided) - for two years after land acquisition and resettlement complete (In case that livelihood restoration program is not provided)			
11	To assign counterparts for the project and the number and TOR will be determined in the Detailed Design stage.	During the Project	RAB	89,847,540	
12	To mobilize and assist in training IWUO and DISC with 4 cooperatives	during the Project	RAB	6,862,200	
13	To assist establishment of one IWUO with the 4 cooperatives	during the Project	RAB	5,065,000	
14	To implement watershed management program		RAB	404,789,792	

(3) After the Project

NO	Items	Deadline	In charge	Estimated Cost	Ref.
1	To implement EMP and EMoP	for a period based on EMP and EMoP	RAB	12,446,768	
2	To submit results of environmental monitoring to JICA, by using the monitoring form, semiannually - The period of environmental monitoring may be extended if any significant negative impacts on the environment are found. The extension of environmental monitoring will be decided based on the agreement between RAB and JICA.	for three years after the Project	RAB	N/A	
3	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid 1) Allocation of maintenance cost 2) Operation and maintenance structure 3) Routine check/Periodic inspection	After completion of the construction	IWUO or Cooperatives	11,322,800 per year	
4	To implement social monitoring including RAP closure report	After completion of the construction	RAB	9,240,000	

2. Other obligations of the Government of Rwanda funded with the Grant

NO	Items	Deadline	In charge	Estimated Cost	Ref.
1	N/A				

Total : RWF 1,900,181,813

*The Amount is provisional. This is subject to the approval of the Government of Japan.

End

Project Monitoring Report
on
Project Name
Grant Agreement No. XXXXXXXX
20XX, Month

Organizational Information

Signer of the G/A (Recipient)	_____ Person in Charge (Designation) _____ Contacts Address: _____ Phone/FAX: _____ Email: _____
Executing Agency	_____ Person in Charge (Designation) _____ Contacts Address: _____ Phone/FAX: _____ Email: _____
Line Ministry	_____ Person in Charge (Designation) _____ Contacts Address: _____ Phone/FAX: _____ Email: _____

General Information:

Project Title	
E/N	Signed date: Duration:
G/A	Signed date: Duration:
Source of Finance	Government of Japan: Not exceeding JPY _____ mil. Government of (_____): _____

1: Project Description

1-1 Project Objective

1-2 Project Rationale

- Higher-level objectives to which the project contributes (national/regional/sectoral policies and strategies)
- Situation of the target groups to which the project addresses

1-3 Indicators for measurement of "Effectiveness"

Quantitative indicators to measure the attainment of project objectives		
Indicators	Original (Yr)	Target (Yr)
Qualitative indicators to measure the attainment of project objectives		

2: Details of the Project

2-1 Location

Components	Original <i>(proposed in the outline design)</i>	Actual
1.		

2-2 Scope of the work

Components	Original* <i>(proposed in the outline design)</i>	Actual*
1.		

Reasons for modification of scope (if any).

(PMR)

2-3 Implementation Schedule

Items	Original		Actual
	<i>(proposed in the outline design)</i>	<i>(at the time of signing the Grant Agreement)</i>	

Reasons for any changes of the schedule, and their effects on the project (if any)

2-4 Obligations by the Recipient

2-4-1 Progress of Specific Obligations

See Attachment 2.

2-4-2 Activities

See Attachment 3.

2-4-3 Report on RD

See Attachment 11.

2-5 Project Cost

2-5-1 Cost borne by the Grant(Confidential until the Bidding)

Components			Cost (Million Yen)	
	Original <i>(proposed in the outline design)</i>	Actual <i>(in case of any modification)</i>	Original ¹⁾²⁾ <i>(proposed in the outline design)</i>	Actual
1.				
Total				

Note: 1) Date of estimation:
 2) Exchange rate: 1 US Dollar = Yen

2-5-2 Cost borne by the Recipient

Components			Cost (1,000 Taka)	
	Original <i>(proposed in the outline design)</i>	Actual <i>(in case of any modification)</i>	Original ¹⁾²⁾ <i>(proposed in the outline design)</i>	Actual
1.				

Note: 1) Date of estimation:
2) Exchange rate: 1 US Dollar =

Reasons for the remarkable gaps between the original and actual cost, and the countermeasures (if any)

(PMR)

2-6 Executing Agency

- Organization's role, financial position, capacity, cost recovery etc,
- Organization Chart including the unit in charge of the implementation and number of employees.

Original (at the time of outline design) name: role: financial situation: institutional and organizational arrangement (organogram): human resources (number and ability of staff):
Actual (PMR)

2-7 Environmental and Social Impacts

- The results of environmental monitoring based on Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- The results of social monitoring based on in Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- Disclosed information related to results of environmental and social monitoring to local stakeholders (whenever applicable).

3: Operation and Maintenance (O&M)

3-1 Physical Arrangement

- Plan for O&M (number and skills of the staff in the responsible division or section, availability of manuals and guidelines, availability of spareparts, etc.)

Original (at the time of outline design)
Actual (PMR)

3-2 Budgetary Arrangement

- Required O&M cost and actual budget allocation for O&M

Original (at the time of outline design)

Actual (PMR)

4: Potential Risks and Mitigation Measures

- Potential risks which may affect the project implementation, attainment of objectives, sustainability
- Mitigation measures corresponding to the potential risks

Assessment of Potential Risks (at the time of outline design)

Potential Risks	Assessment
1. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
2. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
3. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:

	Contingency Plan (if applicable):
Actual Situation and Countermeasures (PMR)	

5: Evaluation and Monitoring Plan (after the work completion)

5-1 Overall evaluation

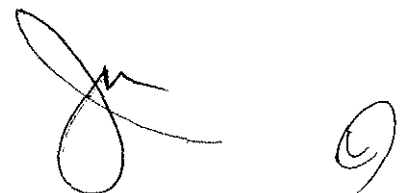
Please describe your overall evaluation on the project.

5-2 Lessons Learnt and Recommendations

Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

5-3 Monitoring Plan of the Indicators for Post-Evaluation

Please describe monitoring methods, section(s)/department(s) in charge of monitoring, frequency, the term to monitor the indicators stipulated in 1-3.



Attachment

1. Project Location Map
 2. Specific obligations of the Recipient which will not be funded with the Grant
 3. Monthly Report submitted by the Consultant
- Appendix - Photocopy of Contractor's Progress Report (if any)
- Consultant Member List
 - Contractor's Main Staff List
4. Check list for the Contract (including Record of Amendment of the Contract/Agreement and Schedule of Payment)
 5. Environmental Monitoring Form / Social Monitoring Form
 6. Monitoring sheet on price of specified materials (Quarterly)
 7. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries) (PMR (final) only)
 8. Pictures (by JPEG style by CD-R) (PMR (final) only)
 9. Equipment List (PMR (final) only)
 10. Drawing (PMR (final) only)
 11. Report on RD (After project)



Monitoring sheet on price of specified materials

1. Initial Conditions (Confirmed)

	Items of Specified Materials	Initial Volume A	Initial Unit Price (¥) B	Initial total Price C=A×B	1% of Contract Price D	Condition of payment	
						Price (Decreased) E=C-D	Price (Increased) F=C+D
1	Item 1	●●t	●	●	●	●	●
2	Item 2	●●t	●	●	●		
3	Item 3						
4	Item 4						
5	Item 5						

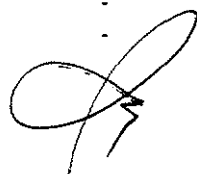
2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring : ●●

(2) Result of the Monitoring Survey on Unit Price for each specified materials

	Items of Specified Materials	1st	2nd	3rd	4th	5th	6th
		●month, 2015	●month, 2015	●month, 2015			
1	Item 1						
2	Item 2						
3	Item 3						
4	Item 4						
5	Item 5						

(3) Summary of Discussion with Contractor (if necessary)




Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)
 (Actual Expenditure by Construction and Equipment each)

	Domestic Procurement (Recipient Country) A	Foreign Procurement (Japan) B	Foreign Procurement (Third Countries) C	Total D
Construction Cost	(A/D%)	(B/D%)	(C/D%)	
Direct Construction Cost	(A/D%)	(B/D%)	(C/D%)	
others	(A/D%)	(B/D%)	(C/D%)	
Equipment Cost	(A/D%)	(B/D%)	(C/D%)	
Design and Supervision Cost	(A/D%)	(B/D%)	(C/D%)	
Total	(A/D%)	(B/D%)	(C/D%)	

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Annex 8.
Environmental Management Plan and
Environmental Monitoring Plan

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8.1. Environmental Management Plan

8.1.1. Environmental Management Plan for Construction Phase

TABLE 49: Environmental Management Plan

Activity	Adverse Impacts	Proposed Mitigation/Enhancement measures	Implementation schedule	Responsible Institution	Occurrence
PLANNING AND CONSTRUCTION PHASES					
Site clearance and excavation	Loss of Land	Land for land compensation for government land through land redistribution	After rehabilitation	RAB	Once
		Land for land compensation or compensation of land in cash	Prior to construction	RAB	Once
	Loss of crops and trees	Monitory compensation on market value and disturbance allowances	Prior to construction	RAB	Once
Dam construction and rehabilitation	Income loss due to missed season	Employment opportunity	During construction	RAB	On-going
		Financial compensation based on number of season missed and expected production	During construction	RAB	On-going
		Proper planning and information on construction schedules.	Before construction	RAB-Rwamagana District	As Required
	Income loss for Cooperatives and union	Financial assistance in payment of employee	During construction	RAB	Monthly
	Water conflicts arising from the creation of irrigation scheme	- Creation and operationalize water Users association and include other users in the association;	Operation	- RAB	Once

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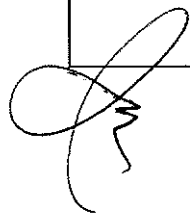
6

Activity	Adverse Impacts	Proposed Mitigation/Enhancement measures	Implementation schedule	Responsible Institution	Occurrence
		- Construction at least two water points par site outside the dam for cattle keepers	Before the end of construction	- RAB	Once
		- To enforce zero-grazing policy	Through the project life	- Community policing	As required
	Workers safety including Injuries	Preparation and implementation of Contractor Occupational Health and Safety plan	Before and during construction	Contractor	Once
		Provision of Personnel Protective Equipment (PPEs) to workers (wellington boots, helmets, nose masks, eye goggles...)	During construction	Contractor	As required
		Life insurance for workers	During construction	Contractor	Once
		Provision of First Aid kit, one per site and provide training its use	During construction	Contractor	once
	Communicable diseases	Health insurance known as «Mutuelle de Santé»	During construction	Workers and Contractors	Once
		Spraying water regularly to suppress excessive dust during construction	During construction	Contractor	As required
		Sensitisation of workers and communities on communicable diseases and HIV	During construction	Contractor	Twice
	Occupational risks	Training of workers on occupational and health measures and adherence to them	During construction	Contractor	As required

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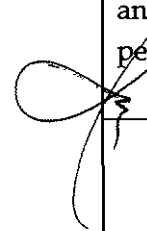
Activity	Adverse Impacts	Proposed Mitigation/Enhancement measures	Implementation schedule	Responsible Institution	Occurrence
Site clearance	Migration of Birds due to works presence and destruction their Nests	Clear only the areas required for construction and relocating nests to trees which will not be affected.	Before excavation and clearance	Contractor	As required
		Sensitisation of workers on fauna protection	Before excavation and clearance	Contractor	As required
	Destruction of amphibian eggs and destruction of snake's burrow	Avoid any killing of animal during the construction work. Before construction works start, workers need to be sensitized and briefed to avoid any killing of animal.	Before excavation and clearance	Contractor	As required
	Loss some natural tree species	Avoid cutting trees which are beyond the area designated for dam construction or expansion.	During clearance and excavation	Contractor	As required
		Maintain ecological flow in reservoir and canals	During construction	Contractor / Cooperatives	Always
Excavation and Construction	Soil erosion	- Planting vegetation on the cleared sites immediately after construction; - Light compaction will be necessary to stabilise the soil. .	During site closure	Contractor	Once
		Only clear areas earmarked for construction.	During construction	Contractor	As required

Activity	Adverse Impacts	Proposed Mitigation/Enhancement measures	Implementation schedule	Responsible Institution	Occurrence
		<ul style="list-style-type: none"> - Stockpiling, backfilling and resurfacing after excavation to avoid facilitation of erosion agents. - Light compaction will be necessary to stabilise the soil 	During excavation and site clearance	Contractor	As required
	Contamination of water bodies	<ul style="list-style-type: none"> - Restrict re-fuelling, oil change, maintenance works, repair works will need to allocated a restricted area, far from the water bodies; - Stock for fuels shall need to have a cemented floor and a sand stock for use in the absorption of spilled oil. 	During construction	Contractor	As required
	Modification of flows for downstream flow and loss of fauna and flora	<ul style="list-style-type: none"> - Design of diversion structures should incorporate release on environmental flow from the central drain at all times to maintain a specific water level downstream and maintain the existing ecosystem. - Design should ensure a proper drainage network allowing for return flow from the plantation plots into the stream during the dry season. 	Design Phase	Study team	As Required




Activity	Adverse Impacts	Proposed Mitigation/Enhancement measures	Implementation schedule	Responsible Institution	Occurrence
Welding, electrical installations, refuelling of equipment, smoking on site.	Fire outbreaks	Specific area restricted to only authorized personnel and with fire extinguishers, should be allocated for fuel storage. Fire management drills for the workers should regularly be done.	Throughout construction	Contractor	Any time during construction
OPERATIONAL PHASE					
Regulation of water flow from dam through the sluice gates	Modification of flows for downstream usage	Maintain 10% of flow as environmental flow for the survival of the existing ecosystem before it is considered degraded (Montana, 1997).	At the time of releasing water for irrigation	- Water User's Association (WUA)	All through operation
		Clean irrigation canal and to allow for adequate water supply downstream.	At the time of releasing water for irrigation	- Cooperatives	All through operation
Application of excess fertilizers and pesticides	Water pollution from non-point sources	<ul style="list-style-type: none"> - Pest Management Plan (PMP) as guidance for pest management. - Training of local farmers on the safe and appropriate amounts of application of pesticides and fertilizers. 	Training before every season of planting.	<ul style="list-style-type: none"> - RAB - Cooperatives 	Training twice a year.
		<ul style="list-style-type: none"> - Water quality tests to understand the impact of the project on the quality of water bodies and curb any likely impacts there may be before water quality deteriorates. 	Water quality tests at the end of every 2 years of cultivation	<ul style="list-style-type: none"> - RAB - Rwanda Natural Resources Authority 	Tests once every 2 years

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Activity	Adverse Impacts	Proposed Mitigation/Enhancement measures	Implementation schedule	Responsible Institution	Occurrence
Irrigation of field	Water logging	- Regulated water quantity released from reservoir for irrigation based on crop water requirement could minimise occurrence of water logging.	Through the irrigation	- RAB - Cooperatives - Formed WUA.	As long as irrigation scheme exists
		- Training of farmers to regulate quantities of water used will be a long term investment in sustaining the chemical properties of the soil for continuous fertility.	At the beginning of each season	- RAB	Once year
	Vandalism of Irrigation infrastructure	- Sensitization of farmers to ensure project ownership and effecting community policing as a means of ascertaining security, will collectively avoid vandalism. - Punitive actions towards perpetrators by the authorities will facilitate compliance by the locals thereby avoiding vandalism	Throughout the project implementation	- Cooperatives - Cooperative Union - Rwamagana District	As required
	Wastage of water during irrigation	- Train members and technician of Water Users Association (WUAs) to manage quantities of apportioned for each paddy field hence reducing on likely water misuse.	During operational phase	- RAB	As required
		- Frequent inspection and repairs of leaking infrastructure is necessary to reduce on losses of water through leakages.	Throughout operational phase	- WUAs technician	On-going

Activity	Adverse Impacts	Proposed Mitigation/Enhancement measures	Implementation schedule	Responsible Institution	Occurrence
	Increased spread of Waterborne related diseases	- Planting of <i>Phytolaca decocandra</i> which will destroy the Bilharzia snails that serve as hosts of <i>shistosomiasis</i> along the shores of the lakes and river.	Before water harvesting	- Cooperatives - Rwamagana District	As required
		- Sensitization of farmers on the use of mosquito nets for those who don't have as a way of to reduce on the spread of malaria.	Before water harvesting	- Ministry of Health - Rwamagana District	As required
Growing rice	Destruction of central drain boundaries and main canals	- A buffer zone should be established along the main canals and farmers should be sensitised to protect canals	During canal construction	- Cooperatives - Farmers	As required
		- Regular maintenance of irrigation canals to ensure a proper drainage network allowing for return flow from the plantation plots into the stream	Throughout the operational Phase	- Farmers - Cooperatives	As required
	Water pollution from fertilizers and pesticides	- Farmers training on Integrated Pest Management practice for the proposed the crops (rice).	Throughout the operational Phase	- Farmers - Cooperatives	As required
	Loss of birds due to conflict with rice farmers and bird's species.	- There is an existing conflict where by big birds feed on rice and in some cases they destroy a considerable amount of rice. Traditional means of scaring birds Known as «Baringa» instead of	During the maturity of Rice	- Farmers	As required
	Eutrophication of dams by water hyacinth	Regular remove of water hyacinth.	During the operation phase	Farmers WUAs	As required

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Activity	Adverse Impacts	Proposed Mitigation/Enhancement measures	Implementation schedule	Responsible Institution	Occurrence
Cultivation on the hillside catchment area of the reservoir	High sedimentation levels in the Reservoir	- Bench Terraces on the catchment area of the reservoir.	When demarcations of reservoir have been established.	- Rwamagana districts -	Once
Application of fertilizers on plantations of the upstream catchment.	Reduction of aquatic life due to reservoir eutrophication	- Periodic manual removal of weeds from the reservoir.	Weed removal every 3 months.	- Cooperative. - RAB.	As required.
		- Introduction of fish species that feed on invasive aquatic weeds and mosquito larvae.	Fish introduction once reservoir is filled.	- Cooperatives - RAB	On-going
Water harvesting in reservoir	Floods from reservoir over flow or dam collapse	Dam design includes. - A well designed and maintained Spillway and regular inspection of likely areas of weakness along the dam (such as; cracks, fissures) and repair is crucial to avoid such calamities.	- Design phase	- Study team	Through the life cycle of the dam
		Installation of dam monitoring instrument	- Design phase	- Study team	once
		Regular monitoring	- Operation phase	- WUA - Rwamagana District	As required

Activity	Adverse Impacts	Proposed Mitigation/Enhancement measures	Implementation schedule	Responsible Institution	Occurrence
Using water for non-irrigation activities	Drowning of children and livestock	- Sensitization of locals on the dangers of swimming and fetching water in the reservoir.	During operational Phase	- RAB - Rwamagana District	As required
		- Establishing of panels of restricted activity in the reservoir and make public awareness	Before the completion of construction	- Contractor	Once
EXPECTED IMPACTS DURING DECOMMISSIONING					
Demolishing of the irrigation infrastructure	Land depreciation from abandoned Infrastructures	- Plan for a better income generating project for the area before this irrigation project is replaced.	- At the pre-feasibility stage of a replacing project	- MINAGRI -	Once
Decommissioning of the Dam	Dust and noise pollution from demolition activities	- Protective gear, such as; eye goggles, ear phones and nose masks. - Spray of water to reduce dust. - Compaction of soils in areas where demolition is complete.	- During demolition	- Contractor.	All through the demolition period
Collapse of the dam during demolition	Possibility of downstream flooding	Controlled draining of the reservoir is crucial to avoid recipients downstream or even the plots in the command area from flooding plus avoiding the river embankments from eroding.	- During demolition	- Contractor	Once when the dam is destroyed
Disposal of debris during demolition	Contamination and impaired environment	Monitoring of the waste disposal in authorized dumping areas to avoid contamination of receiving waters or causing human health hazards.	- During demolition	- RAB	Once during debris disposal
Total Budget					

8.2. Environmental Monitoring Plan

This section describes the monitoring plan and proposed key indicators to be monitored. It also indicates measurements of parameters, responsibility and cost estimates of outcomes of the proposed mitigation measures.

8.2.1. Environmental Monitoring Plan for Construction and operational phase

Table 50: Environmental Monitoring Plan

Adverse Impacts	Proposed Mitigation/Enhancement measures	Monitoring indicator	Means of verification	Responsible institution	Timeframe/Frequency
PLANNING AND CONSTRUCTION PHASES					
Loss of Land	Land for land compensation for government land through land redistribution	Number of PAPs	Compensation report	RAB	Once
	Land for land compensation or compensation of land in cash	Number of PAPs	Compensation report	RAB	Once
Loss of crops and trees	Monitory compensation on market value and disturbance allowances	Number of PAPs	Compensation report	RAB	Once
Income loss due to missed season	Employment opportunity	Number of PAPs	Compensation report	RAB	On-going
	Financial compensation based on number of season missed and expected production	Number of PAPs	Compensation report	RAB	On-going
Income loss for Cooperatives and union	Financial assistance in payment of employee	Amount paid	Payment receipt	RAB	Monthly
Water conflicts arising from the creation of irrigation scheme	Creation and operationalize water Users association and include other users in the association;	Registration certificate of WUA	Certificate	RAB	Once

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Adverse Impacts	Proposed Mitigation/Enhancement measures	Monitoring indicator	Means of verification	Responsible institution	Timeframe/Frequency
	- Construction at least two water points par site outside the dam for cattle keepers	Number of structure constructed	Field report	- RAB	Once
Workers safety including Injuries	Preparation and implementation of Contractor Occupational Health and Safety plan	OSH report	Field report	Contractor	Once
	Provision of Personnel Protective Equipment (PPEs) to workers (wellington boots, helmets, nose masks, eye goggles...)	Number of PPE	Field report	Contractor	As required
	Life insurance for workers	Number of workers insured	Field report	Contractor	Once
	Provision of First Aid Kit, one per site and provide training its use	Number of First Aid Kit	Field report	Contractor	once
Communicable diseases	Health insurance known as «Mutuelle de Santé»	Number of workers with health insurance	Field report	Contractor	Once
	Spraying water regularly to suppress excessive dust during construction	Water spraying report	Field report	Contractor	On daily
	Sensitisation of workers and communities on communicable diseases and HIV	Number of sensitization meeting	Minutes and attendance list	Contractor	Twice
Occupational risks	Training of workers on occupational and health measures and adherence to them	Number of trained people	Training report	Contractor	As required

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Adverse Impacts	Proposed Mitigation/Enhancement measures	Monitoring indicator	Means of verification	Responsible institution	Timeframe/Frequency
Migration of Birds due to works presence and destruction their Nests	Sensitisation of workers on fauna protection	Number of trained people	Training report	Contractor	Once
Destruction of amphibian eggs and destruction of snake's burrow	Before construction works start, workers need to be sensitized and briefed to avoid any killing of animal.	Number of sensitized people	Sensitization report	Contractor	Once
Loss some natural tree species	Maintain ecological flow in reservoir and canals	Ecological situation report	Field verification	Contractor	As required
Soil erosion	- Planting vegetation on the cleared sites immediately after construction;	Ha protected	Field verification	Contractor	Once
	- Stockpiling, backfilling and resurfacing after excavation to avoid facilitation of erosion agents.	Soil erosion control report	Field verification	Contractor	As required
Contamination of water bodies	- Restrict re-fuelling, oil change, maintenance works, repair works will need to allocated a restricted area, far from the water bodies; - Stock for fuels shall need to have a cemented floor and a sand stock for use in the absorption of spilled oil.	Status of contamination	Field verification report	Contractor	As required
Fire outbreaks	- Fire management drills for the workers should regularly be done.	Number of brief meeting	Briefing report	Contractor	twice

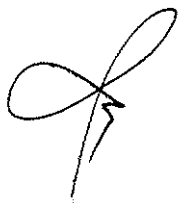
Adverse Impacts	Proposed Mitigation/Enhancement measures	Monitoring indicator	Means of verification	Responsible institution	Timeframe/Frequency
	- Provision of extinguisher at site	Number of extinguisher	Field verification	Contractor	As required
OPERATIONAL PHASE					
Modification of flows for downstream usage	Maintain 10% of flow as environmental flow for the survival of the existing ecosystem before it is considered degraded (Montana, 1997).	Quantity of released water	Flow measurement	- Water User's Association (WUA)	Quarterly
	Clean irrigation canal and to allow for adequate water supply downstream.	Status of canals	Field visit report	- Water User's Association (WUA)	All through operation
Water pollution from non-point sources	- Training of local farmers on the safe and appropriate amounts of application of pesticides and fertilizers.	Number of farmers trained	Training report	- RAB - Cooperative s	Every season
	- Irrigation Water quality tests to understand the impact of the project on the quality of water.	Level of biochemical parameters	Laboratory results	- RAB	Tests once every 2 years
	- Drinking water test for new constructed spring water	Level of biochemical parameters	Laboratory test	- RAB	Before handover
Water logging	- Training of farmers and WUA technician to regulate quantities of water	Number of trained people	Training report	- Formed WUA.	At the beginning of each season

Adverse Impacts	Proposed Mitigation/Enhancement measures	Monitoring indicator	Means of verification	Responsible institution	Timeframe/Frequency
Vandalism of Irrigation infrastructure	- Sensitization of farmers to ensure project ownership and effecting community policing as a means of ascertaining security, will collectively avoid vandalism.	Number of sensitization meeting	Sensitization report	- Cooperatives - Rwamagana District	As required
	- Punitive actions towards perpetrators by the authorities will facilitate compliance by the locals thereby avoiding vandalism	Number of case recorded	Field report	- WUA	Monthly
Wastage of water during irrigation	- Frequent inspection and repairs of leaking infrastructure is necessary to reduce on losses of water through leakages.	Inspection report	Field verification	- WUAs technician	On-going
Increased spread of Waterborne related diseases	- Planting of <i>Phytolaca decocandra</i> which will destroy the Bilharzia snails that serve as hosts of <i>shistosomiasis</i> along the shores of the lakes and river.	Number of trees planted	Field verification	- Cooperatives - Rwamagana District	On-going
	- Sensitization of farmers on the use of mosquito nets for those who don't have as a way of to reduce on the spread of malaria.	Number of meeting	Meeting report	- Ministry of Health - Rwamagana District	As required
	-	Cases of waterborne diseases	Survey report	- Ministry of Health Rwamagana District	Annually

Adverse Impacts	Proposed Mitigation/Enhancement measures	Monitoring indicator	Means of verification	Responsible institution	Timeframe/Frequency
Loss of birds due to conflict with rice farmers and bird's species.	- There is an existing conflict where by big birds feed on rice and in some cases they destroy a considerable amount of rice. Traditional means of scaring birds Known as «Baringa» instead of	Existing birds protection structure	Field verification report	- Cooperatives	As required
Eutrophication of dams invasive species	Regular remove of water hyacinth.	Level of water hyacinth in dams	Field verification report	WUAs	Monthly
	- Periodic manual removal of weeds from the reservoir.	Level of cleanness of dams	Field verification report	- Cooperative - RAB.	As required.
	- Introduction of fish species that feed on invasive aquatic weeds and mosquito larvae.	Quantity of fishes introduced	Field verification report	- Cooperative - RAB	On-going
High sedimentation levels in the Reservoir	- Bench Terraces on the catchment area of the reservoir.	Ha of protected area	Field measurement	- Rwamagana districts	On-going
Floods from reservoir overflow or dam collapse	- Regular inspection of likely areas of weakness along the dam (such as; cracks, fissures) and repair is crucial to avoid such calamities.	- Monitoring report	- Field verification	- WUA	Through the life cycle of the dam

Adverse Impacts	Proposed Mitigation/Enhancement measures	Monitoring indicator	Means of verification	Responsible institution	Timeframe/Frequency
Drowning of children and livestock	- Sensitization of locals on the dangers of swimming and fetching water in the reservoir.	Number of people who attended meeting	Report Sensitization meeting	- RAB - Rwamagana district	Once year
	- Establishing of panels of restricted activity in the reservoir and make public awareness	Presence of panels	Field verification	- RAB - Rwamagan a district	Once
Total budget					

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8.2.2. Environmental monitoring for specific parameters.

In addition to the monitoring of EMP implementation other parameters need to be monitored by the project to check the impact of project on the environment but also to the live hoods of marshland users. Monitoring is proposed for water quality especially to determine the level and concentration of pesticides and fertilizer content in the project area. We proposes the identification of three different points in order to monitor the quality of water, one point at the upstream end of the marshland, the point in the middle of the marshland and the third point at the end of the marshland downstream. Periodic taking of water samples should be undertaken twice a year during the cultivation season to determine water quality. These samples should be taken by the Project Environmental officer, or a private subcontracted company in water quality monitoring specialist who should then take them in an accredited laboratory for testing. The results should be used to design appropriate water quality mitigation programs. The same will apply to analysis of water quantities in relation to the abstraction impacts.

Furthermore, Monitoring social economic parameters should be measured including living condition of farmers, improvement of yield, diseases spread should be done to monitor the possible impacts of the marshland development to users. The table below shows the key parameters to monitor to assess the project impact on environment and farmers.

Table 51: Environmental monitoring plan for specific parameters

Impact	Parameter	Monitoring Indicator	Method	Frequency of Measurement	Responsibility	Cost Estimate
Physical Environment						
Water Pollution	Water quality	Nutrient Load (Nitrates, phosphates, potassium, sodium, etc.), pesticide residue, COD & BOD, Turbidity	Samples should be taken from the point where sampling were taken during baseline data collection watershed	Seasonally	Rwamagana district/ farmers cooperatives	
Potential reduction in Water flow downstream	Water flow	Flow rates per second	Stream gauging	Seasonally	Rwamagana district/ farmers cooperatives	
Soil erosion	Soil cover loss	Water turbidity	Observation and water test	Continuous	Rwamagana District/ farmers cooperatives	

Impact	Parameter	Monitoring Indicator	Method	Frequency of Measurement	Responsibility	Costs Estimate s (USD)
Flooding	Flooded area	Floods downstream of project area or in the middle of the marshland	Observation and reported cases of flooding	Continuous	Cooperatives managing the rice scheme,	
Socio-economic Environment issues to monitor						
Water-borne Diseases	Disease prevalence Microbes contained in water	Increased cases of waterborne diseases Types of microbes contained in water	Consultation of health records at near health centre in the project area Twice a year during wet and dry season (samples should be taken from the point where sampling were taken during baseline data collection watershed	Quarterly three Seasonally	Rwamagna District RAB and Ministry of Health	
Compensation and livelihood restoration	Production	Yield per ha	Survey	On season basis	Cooperative leaders RAB	
	Living standards	Income per House holds	Survey	Every two years	RAB Cooperatives	
Total Budget for monitoring						

8.3. Implementation arrangement for EMP

The chapter three has provided the institutional arrangement in relation with environmental management and the environmental management and monitoring plans have indicated the responsible institution that will implement each mitigation measures. Although the implementation arrangement is not yet established, this section provides key actors that will lead the implementation of the project and environmental management and monitoring plan.

8.3.1. MINAGRI and RAB

The overall responsibility of implementation of this EMP is under Ministry of Agriculture and Animal Resources, Rwanda Agriculture Board, Rwamagana District and the Construction Contractor. RAB should designate one of its officers to act as Environmental Officer (EO), to formally address environmental and social issues on a routine basis, who will have an oversight of environmental aspects of the construction contracts, including the enforcement of all monitoring provisions, the locations of construction and labour camps, etc. Before the commencement of construction, the designated EO will receive training in the environmental and social issues associated with irrigation facilities.

8.3.2. Rwanda Environment Management Authority/ REMA

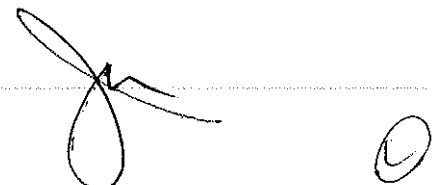
REMA was established in 2004 to act as the implementation organ of environment-related policy and laws in Rwanda. REMA is also tasked:

- to coordinate different environmental protection activities undertaken by environmental promotion agencies;
- to promote the integration of environmental issues in development policies, projects, plans and programmes;
- to coordinate implementation of Government policies and decisions taken by the Board of Directors and ensure the integration of environmental issues in national plan among concerned departments and institutions within the Government;
- to advise the Government with regard to the legislation and other measures relating to environmental management or implementation of conventions, treaties and international agreements relevant to the field of environment as and when necessary;
- To make proposals to the Government in the field of environmental policies and strategies; etc.

In relation to Regards to the implementation of this EMP, REMA will ensure that all policies and regulations related to environmental protection are observed and advise on the better way to implement EIA. REMA is also entrusted with monitoring and inspection of constructions activity to check whether they are compliant with laws. REMA will also ensure that conditions of approval provided by RDB are implemented.

8.3.3. Rwamagana District, sectors and cells

Generally, decentralized entities are responsible for the implementation of laws, policies, strategies, objectives and programmes relating to protection, conservation and promotion of the environment in Rwanda. Article 61: In the framework of conservation and protection of the environment, decentralized entities are particularly responsible for:



- ensuring activities related to better management of land, especially controlling soil erosion and tap rain water;
- afforestation, protection and proper management of forests;
- efficient management of rivers, lakes, sources of water and underground water; 4° efficient management and effective use of swamps;
- protection and proper management of reserved areas, historical sites, endangered animal and plant species

Article 62: Decentralized entities shall have the responsibility of designing plans of collecting and treatment of domestic waste. Decentralized entities are also responsible for collecting and piling domestic waste. This is carried out in collaboration with institutions Districts, Sector and Cells of or associations and authorized competent individuals.

Decentralized entities shall also put much emphasis on the removal of any other waste in any possible way depending on its nature and quantity, supervision and its treatment. Through district environmental officer, Rwamagana District will carry out regular monitoring and inspection work to ensure that the project is implemented in compliance with this environmental management and monitoring plan.

8.3.4. Environmental and social safeguards training

The training program will cover measurement techniques in the field, tools for the prediction of pollutants, conservation of water bodies including marsh lands, etc. Rwanda Environmental Management Authority, Rwanda Bureau of Standards and Rwanda Development Board may be consulted for such training. The need for additional and specialised training will be examined and appropriate training will be undertaken as required. Training of personnel to be deployed on the proposed project during construction and operation, with regard to environmental requirements should be the integral part of the planning. In addition all employees will be trained on safety, methods of disaster prevention, action required in case of emergency, fire protection, environmental risk analysis etc.

Capacity to quantitatively monitor water sediments or turbidity (by suitable portable test equipment) and noise is always advantageous, but monitoring will primarily involve ensuring that actions taken are in accordance with contract and specification clauses, and specified mitigation measures. Some awareness training will be provided to the contractor personnel to ensure that this occurs effectively.

8.3.5. Monitoring and reporting procedures

The project designated EO will visually assess contractor's practices and, if high pollutant levels are suspected instruct the contractor to make corrections. Photographic records will be established to provide useful environmental monitoring tools. A full record will be kept as part of normal contract monitoring. All applicable regulations need to be enforced by the Project manager and designated EO. Under the Environment Organic law (2005) water quality discharge standards, air pollution emission standards and noise standards have been established. It is a legal obligation of

the Contractor that any discharges from the work sites meet these standards. Steps will be taken by the Project manager and designated EO to ensure that regular monitoring of water quality parameters such as pH, suspended solids, turbidity, magnesium, oil and grease be carried out as provided in the contract. Regular monitoring of noise and dust will also be carried out as provided in the environmental monitoring program.

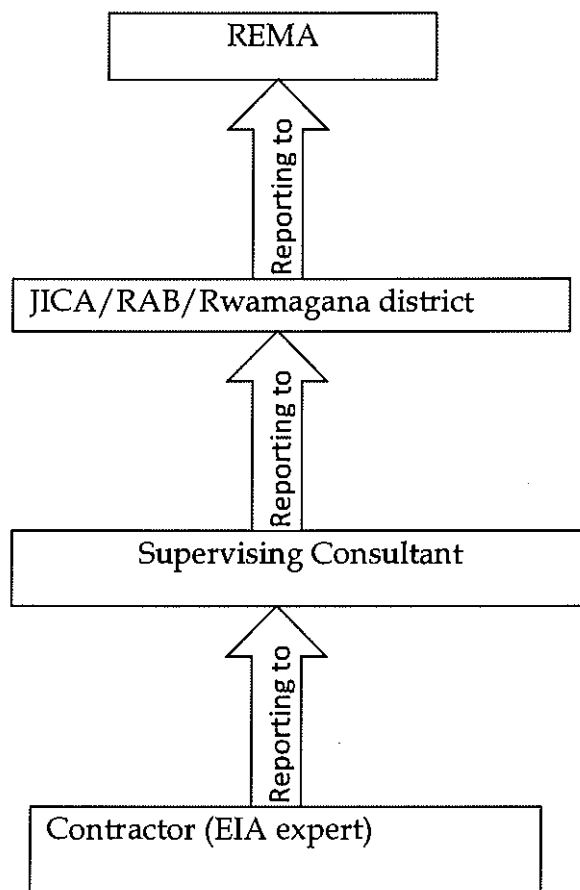


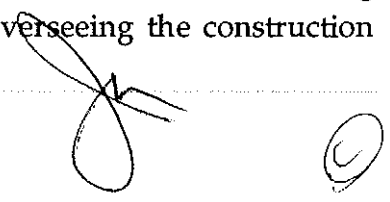
Figure 43: EMP reporting structure

8.3.6. Record Keeping

Monitoring form should be devised for documentation, analysis and record of parameter. The form should focus attention on environmental issues and provide feedback for the future stages of the work. Mitigation and enhancement measures adopted in final design will be explicitly under the bill of quantities (BOQ) so that performance and completion is readily documented. Daily project diaries would record environmental problems (spills, dust, noise, etc.) as well as safety incidents and will be retained as part of accepted modern contract management and summarized in Quarterly Environmental Reports.

8.3.7. Implementation schedule

The most important aspects of the implementation are the appointment of the Environmental Officer to oversee the implementation of the environmental mitigation measures incorporated in the design and contract specifications. Development and delivery of an environmental training program for selected staff and Project coordinators responsible for overseeing the construction



contracts can commence immediately thereafter. This will be an on-going process since contracts will be awarded over a period of time stretching over many months. Most of the planned mitigation measure will be implemented along with project activities and is provided in Environmental Management Plan and environmental monitoring Plan.

8.3.8. Summary of estimated EIA implementation budget

No	Item	Estimated Budget(USD)
1	Implementation of Environmental management plan	
2	Environmental Monitoring Plan	
3	Trainings and staffing	
	Sub Total	
	Grand Total	

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ANNEX-9

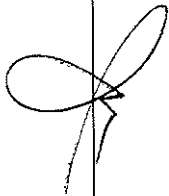
Environmental Checklist : 16 Agriculture, Irrigation, and Livestock

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1 Permits and Explanation	(1) EIA and Environmental Permits	(a) Have EIA reports been already prepared in official process? (b) Have EIA reports been approved by authorities of the host country's government? (c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? (d) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	(a) Y (b) N (c) N (d) N	(a) EIA Report has been prepared and to be submitted to RDB which is the authoritative agency of environmental approval of Rwanda. (b) EIA Report will be reviewed by REMA and expected to be approved after reviewing. (c) Condition will be informed by RDB after review. (d) No particular other environmental permits are required.
	(2) Explanation to local stakeholders	(a) (a) Have contents of the project and the potential impacts been adequately explained to the Local stakeholders based on appropriate procedures, including information disclosure? Is understanding obtained from the Local stakeholders? (b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?	(a) Y (b) Y	(a) Project information disclosure and consensus building were done through multiple public consultation meeting, stakeholder meeting, and one to one meeting, etc with local and central stakeholders. Understanding from the local stakeholders has been obtained. (b) The comment from the local residents obtained during above meetings has been reflected to the project design.
	(3) Examination of alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	(a) Y	(a) Plural alternative plans (including the zero option) such as different location of dam axis, different type of enhancement of water storage capacity is examined comprehensively with social and environmental

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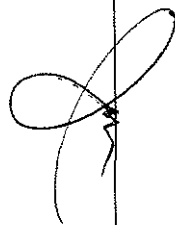
Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
				considerations.
2 Pollution Control	(1) Water Quality	<p>(a) Are considerations given to water pollution of the surrounding water bodies, such as rivers and groundwater by effluents or leachates from agricultural lands? Are adequate use/disposal standards for fertilizers, agrochemicals, and livestock wastes established? Is a framework established to increase awareness of the standards among farmers?</p> <p>(b) Is a monitoring framework established for water pollution of rivers and groundwater?</p>	<p>(a) Y (b) Y</p>	<p>(a) Existing water quality of the river and the groundwater is analyzed base on the baseline survey, and prevent measures towards the water pollution was established in the mitigation measures and the monitoring plan.</p> <p>(b) Monitoring items, frequency, implementation entity, and responsible organization are indicated in the monitoring plan.</p>
	(2) Wastes	<p>(a) Are wastes properly treated and disposed of in accordance with the country's regulations?</p>	<p>(a) Y</p>	<p>(a) First of all, project will reuse excavated soil as counterweight of dam as much as possible. Assumed wastes (other excavated soil, felled trees, and garbage from camping site) will be processed according to the regulation of Rwanda and the related local government.</p>
	(3) Soil Contamination	<p>(a) Is there a possibility that impacts in irrigated lands, such as salinization of soils will result?</p> <p>(b) Are adequate measures taken to prevent soil contamination of irrigated lands by agrochemicals, heavy metals, and other hazardous substances?</p> <p>(c) Are any agrochemicals management plans prepared? Are any usages or any implementation structures organized for proper use of the plans?</p>	<p>(a) N (b) Y (c) Y</p>	<p>(a) The source of salinization of soils has not been confirmed and it is not expected by the project implementation.</p> <p>(b) Soil contamination by the hazardous waste and heavy metals are not expected because the project doesn't have a plan to use them. Moreover, the ratio of heavy metals in the soil in project area within the limits.</p> <p>(c) Soil contamination by the spilt oil from construction machines and vehicles during construction period is anticipated, but to be prevented by mitigation measures</p>

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Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
				and monitoring.
	(4) Subsidence	(a) In the case of extraction of a large volume of groundwater, is there a possibility that the extraction of groundwater will cause subsidence?	(a) N	(a) Subsidence is not expected because extraction of a large volume of ground water will not be done during the construction and operation period by the project.
	(5) Odor	(a) Are there any odor sources? Is there a possibility that odor problems will occur to the inhabitants?	(a) N	(a) Although exhaust gas from construction machines can be an odor source, critical impacts are not expected because of little or no working of heavy machinery in a small area.
3 Natural Environment	(1) Protected Areas	(a) Is the project site or discharge area located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?	(a) N	(a) There is no protected area in the project area. Protected area in the country are well isolated, hence such impacts are not anticipated.
	(2) Ecosystem	(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)? (b) Does the project site or discharge area encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions? (c) Is there a possibility that the project will result in the loss of breeding and feeding grounds for valuable wildlife? If they are lost, are there substitutes for the grounds near the original locations? (d) Is there a possibility that overgrazing will cause ecological degradation, such as impacts on wildlife	(a) N (b) Y (c) N (d) N (e) Y	(a) The project area includes flood plain and marshlands whose most of the parts are already have been cultivated. However, ecologically valuable habitat in the project area is not reported or confirmed. (b) According to the EIA survey, three bird species listed in the country's protected list are confirmed. However, two of three are migrant birds and all of them are LC or NE according to the IUCN because population is big and getting increase or moderate. (c) There are alternative lands in the vicinity of the project area, so it is assumed that feeding and breeding grounds will not be lost. (d) There are cattle grazing, but mostly are domestic

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Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		habitats and desertification? (e) If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem?		activities and not a large scale. Therefore the impact on ecosystem and desertification of the project area is not expected. (e) Since the project mainly work for rehabilitation of existing facilities, such overgrazing or significant impact is not expected. Moreover, the project will introduce environmental buffer zone along the water reservoirs which will have a positive impact on the ecosystem.
4 Social Environment	(1) Resettlement	(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement? (b) Is adequate explanation on compensation and resettlement assistance given to affected people prior to resettlement? (c) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement? (d) Is the compensation going to be paid prior to the resettlement? (e) Is the compensation policies prepared in document? (f) Does the resettlement plan pay particular attention to vulnerable groups or people, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples?	(a) N (b) Y (c) Y (d) Y (e) Y (f) Y (g) Y (h) Y (i) Y (j) Y	(a) No resettlement is expected, but loss of lands, impact on a means of livelihood is expected. (b) Community consultation meetings and workshops will be held to explain about compensation and measures of livelihood restoration and to get agreement from the community people before project. (c) RAP was developed based on socio-economic studies as well as a number of meetings with various stakeholders. (d) Compensation will be paid prior to the resettlement according to the both Rwandan laws and JICA guidelines. (e) Entitlement Matrix is included in the RAP report. (f) Vulnerable persons and/or his/her family will be assisted during the compensation process, and be given priority of job opportunity during the construction period. (g) Agreements with the affected people will be obtained

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		<p>(g) Are agreements with the affected people obtained prior to resettlement?</p> <p>(h) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan?</p> <p>(i) Are any plans developed to monitor the impacts of resettlement?</p> <p>(j) Is the grievance redress mechanism established?</p>		<p>and compensation will be paid prior to resettlement.</p> <p>(h) There is no framework for the resettlement specifically in Rwanda; however, the RAP organization framework was suggested according to related Rwandan laws and JICA guidelines /WB OP 4.12 in the RAP. And also budget for preparation, implementation, and monitoring of RAP is estimated and the schedule of compensation and resettlement was discussed and presented in the report.</p> <p>(i) According to the Rwandan law, the grievance redress mechanism is proposed and will be established. Necessary cost for grievance redress mechanism is also calculated and presented in the RAP.</p>
	(2) Living and Livelihood	<p>(a) Is there a possibility that the project will adversely affect the living conditions of inhabitants? Are adequate measures considered to reduce the impacts, if necessary?</p> <p>(b) Is proper allotment made for rights to agricultural land use? Is there a possibility that the allotment will result in inequitable distribution or usurpation of land and available resources?</p> <p>(c) Are proper allotments, such as water rights allotment in the project area made? Is there a possibility that the allotments will result in inequitable distribution or usurpation of water rights and available resources?</p>	<p>(a) N (b) Y (c) Y (d) N (e) N</p>	<p>(a) The project will improve irrigation efficiency and agricultural production. Some adverse impacts anticipated will be mitigated with compensation and livelihood restoration measures.</p> <p>(b) RAB will consider proper allotment of the land by getting improved irrigation facilities as well as command area. In addition, it is not assumed that convenience will be maldistributed to specific area or person.</p> <p>(c) The water rights registration application of the project area will be done by RAB. However, it is emphasized that the unreasonable water fee will not be paid by community unless the regulations are corrected.</p>

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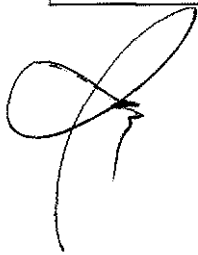
Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		<p>(d) Is there a possibility that the amount of water used (surface water, groundwater) by the project will adversely the downstream fisheries and water uses?</p> <p>(e) Is there a possibility that water-borne or water-related diseases (e.g., schistosomiasis, malaria, filariasis) will be introduced? Is adequate consideration given to public health education, if necessary?</p>		<p>(d) Impact on current spring water facilities used by community will be mitigated by construction of alternative facilities at each site. Hence, the community will be able to use the water constantly.</p> <p>(e) Though significant is not anticipated, RAB will work together with other agencies like Ministry of Health to sensitize community and provide necessary services like mosquito net etc as necessary.</p>
	(3) Heritage	(a) Is there a possibility that the project will damage the local archeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the country's laws?	(a) N	(a) No such facilities are identified in the project area.
	(4) Landscape	(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	(a) N	(a) Impact on landscape is not anticipated; rather it will be improved through the rehabilitation of old 60s-70s facilities.
	(5) Ethnic Minorities and Indigenous Peoples	<p>(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples?</p> <p>(b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources respected?</p>	<p>(a) N</p> <p>(b) N</p>	<p>(a) Not confirmed in the Project area.</p> <p>(b) Same as above.</p>

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5

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(6) Working Conditions	<p>(a) Is the project proponent not violating any laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project?</p> <p>(b) Are tangible safety considerations in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials?</p> <p>(c) Are intangible measures being planned and implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public health) for workers etc.?</p> <p>(d) Are appropriate measures taken to ensure that security guards involved in the project not to violate safety of other individuals involved, or local residents?</p>	<p>(a) Y (b) Y (c) Y (d) Y</p>	<p>(a) Securing of working condition is implemented according to the related Rwandan laws and international rules such as OHSAS.</p> <p>(b) Measures to prevent industrial accidents are secured by mitigation measures such as obligation of wearing safety boots and a helmet during the construction work and the monitoring, which includes countermeasures for the accidents.</p> <p>(c) Safety education through measures such as a morning gathering, a toolbox meeting, a motto, or signboard will be given to construction workers. Construction contractor will prepare a safety and sanitation plan.</p> <p>(d) Setting of the reputation to promote an invasion prevention fence and danger around the construction area is set up. Construction plan and schedule will be informed to the community through signboard or direct announcement in advance. It is assumed that a guard worker for the purpose of prevention of ensuring safety and theft is to be placed.</p>

5-96




Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
5 Others	(1) Impacts during Construction	<p>(a) Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)?</p> <p>(b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts?</p> <p>(c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?</p>	<p>(a) Y</p> <p>(b) Y</p> <p>(c) Y</p>	<p>(a) Noise, dust, water pollution are assumed. Mitigation measures and monitoring plan are established through EIA Study.</p> <p>(b) Though nests of the listed birds are not found during the field survey in F/S stage, move to the safer place if it's found during the construction.</p> <p>(c) Land acquisition, resettlement, temporarily halt of cultivation are assumed. Mitigation measures and monitoring plan are established through EIA Study and preparation of RAP.</p>
	(2) Monitoring	<p>(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts?</p> <p>(b) What are the items, methods, and frequencies of the monitoring program?</p> <p>(c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)?</p> <p>(d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?</p>	<p>(a) Y</p> <p>(b) -</p> <p>(c) Y</p> <p>(d) Y</p>	<p>(a) Monitoring plan has been made in the EIA process.</p> <p>(b) The monitoring items were decided considering the present condition survey results and impact evaluation. Monitoring methods were decided considering implementation practicability of Rwanda government and securing accuracy. Frequency was decided considering types of work, local situation, and health damage.</p> <p>(c) Monitoring framework has been suggested in the monitoring plan of both EIA and RAP. This framework has to be adapted reflecting the present condition of Rwanda as possible. RAB will designate one staff as Social Safeguard Officer of this project who will specifically work for the liaison with other organizations and a core actor of supervising the monitoring.</p> <p>(d) Monitoring report on RAP progress shall be submitted</p>

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Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
				by RAB in pre/post construction stage while Environmental Monitoring Report shall be prepared by Contractor and RAB during the construction period.
6 Note	Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Forestry checklist should also be checked. (b) For the projects including construction of large-scale weirs, reservoirs, and dams, where necessary, pertinent items described in the Hydropower, Dams, and Reservoirs checklist should also be checked.	(a) N (b) N	(a) Forest is out of the project object. (b) Small scale dam will be rehabilitated and constructed in the project.
	Note on Using Environmental Checklist	(a) If necessary, the impacts to transboundary or global issues should be confirmed (e.g., the project includes factors that may cause problems, such as transboundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	(a) Y	(a) It is anticipated that the rehabilitation of irrigation facilities especially dam, spillway, and water intake valve house etc. will enhance the resilience against flood and heavy rain to be happened due to climate change in future.

ANNEX 10 Environmental Monitoring Form
(draft)

A handwritten signature in black ink, consisting of a large loop and a smaller loop, with a horizontal line extending to the right.

ANNEX-10 Environmental Monitoring Form (Draft)
Project for Rehabilitation of Irrigation Facilities in Rwamagana District, Rwanda

Monthly Environmental Monitoring Form Reported to JICA

Site Environmental Compliance Inspection and Monitoring Form

Form-1 for Pre-Construction Phase

Provided below is a sample form which may be utilized and adapted as needed to record the results of a compliance inspection or ambient monitoring at a project site.

Project Name : Project for Rehabilitation of Irrigation Facilities in Rwamagana
 Implementing Agency : Rwanda Agriculture Board (RAB)

Location : Rwamagana
 Monitoring Agency : XXXX Inc. If any

Date Reported : DD/MM/YYYY
 Enforcement Agency : RAB

Reporting Period : XX Quarter of YYYY
(Monthly)

1. Project Proponent

RAB's Environmental Awareness	Yes/No	Actions Required	Contractor Response / Comment
RAB aware of mitigation requirements?			
RAB has a copy of EMMP?			

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ANNEX-10 Environmental Monitoring Form (Draft)

Project for Rehabilitation of Irrigation Facilities in Rwamagana District, Rwanda

2. Land Acquisition and Compensation

Resettlement Activities	Planned Total	Unit	Progress in Quantity		Progress in %		Expected date of completion	Responsible organization
			Till the last month	Up to the this month	Till the last month	Up to the this month		
1. Set up of RAP Implementation Structure								
1-1. Employment of Individual Valuer	1	Time						RAB
1-2 Designation of Social Safeguard Staff in RAB	24	M/M						RAB
1-3 Establish SRCC and DRCC	2	Committee						RAB
1-4 Training of officers involved for 1-3	2	Times						RAB
2. Update PAPs list and Final Asset Valuation								
2-1 Identification of final PAHs		PAHs						RAB
2-2 Announcement to Affected people		times						RAB
2-3 Cost estimation for expropriation		-						RAB
2-4 Consultation meeting		times						RAB
2-5 Revise RAP and signing based on the feed back at the consultation meeting		-						RAB
3. Progress of compensation in cash								
3-1. Cyaruhogo		PAHs						RAB
3-2. Gashara		PAHs						RAB
3-3. Bugugu		PAHs						RAB
3-4 Cyimpima		PAHs						RAB
3-5 Others		PAHs						RAB
4. Progress of compensation by land								
4-1. Cyaruhogo		PAHs						RAB
4-2. Gashara		PAHs						RAB
4-3. Bugugu		PAHs						RAB
4-4 Cyimpima		PAHs						RAB
4-5 Others		PAHs						RAB
5. Progress of land acquisition								
5-1 Cyaruhogo		Ha						RAB
5-2 Gashara		Ha						RAB
5-3 Bugugu		Ha						RAB
5-4 Cyimpima		Ha						RAB
5-5 Others		Ha						RAB
6. Construction of alternative water supply facilities								
6-1 Cyaruhogo		Pcs						Contractor
6-2 Gashara		Pcs						Contractor
6-3 Bugugu		Pcs						Contractor
7. Progress of any social supports such as job training, logistic assistance etc for vulnerables		HHs						RAB
8. Complain and Grievance Redress	N/A	Cases						
8-1 Nos. of solved cases by SRCC / DRCC	N/A	Cases						RAB
8-2 Nos .of unsolved cases by SRCC / DRCC	N/A	Cases						RAB

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ANNEX-10 Environmental Monitoring Form (Draft)
Project for Rehabilitation of Irrigation Facilities in Rwamagana District, Rwanda

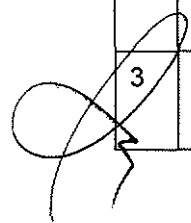
3. Record of Complain and Grievance Management

No	Date	Complain and Grievance from PAPs	Solution / Result / Any actions to be taken
1			
2			
3			
4			

4. Consultation Meetings with the Affected People

No	Date	Site	Nos of Participants	Key agenda and result of discussion
1				
2				
3				

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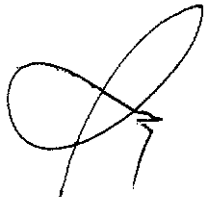

ANNEX-10 Environmental Monitoring Form (Draft)
Project for Rehabilitation of Irrigation Facilities in Rwamagana District, Rwanda

5. Notes;

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Inspection Completed by: _____

Date: _____



ANNEX-10 Environmental Monitoring Form (Draft)
Project for Rehabilitation of Irrigation Facilities in Rwamagana District, Rwanda

Monthly Environmental Monitoring Form Reported to JICA

Site Environmental Compliance Inspection and Monitoring Form

Form-2 for Construction Phase

Provided below is a sample form which may be utilized and adapted as needed to record the results of a compliance inspection or ambient monitoring at a project site.

Project Name : Project for Rehabilitation of Irrigation Facilities in Rwamagana
 Implementing Agency : Rwanda Agriculture Board (RAB)

Location : Rwamagana
 Monitoring Agency : XXXX Inc.

Date Reported : DD/MM/YYYY
 Enforcement Agency : Contractor(s)

Reporting Period : XX Quarter of YYYY
 Contractor(s) : XXXX Co., Ltd.

(Monthly)

1. Contractor(s)

Contractor(s) Environmental Awareness	Yes/No	Actions Required	Contractor Response / Comment
Contractor(s) aware of mitigation requirements?			
Contractor(s) have a copy of EMMP?			

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①

ANNEX-10 Environmental Monitoring Form (Draft)

Project for Rehabilitation of Irrigation Facilities in Rwamagana District, Rwanda

2. Mitigation Compliance Inspection

Impact / Mitigation Measures (From EMMP)	Mitigations Implemented? (Yes/No)	Mitigation Effective? (Yes/No)	Impact Observed/ Location	Action Required? (Yes/No) Describe if Yes:	Contractor Response / Comment
- Community is aware of construction schedule					
- Community is aware of contact address of complain and grievance redress mechanism					
- Equipment and vehicles are maintained and in good condition					
- Water is sprinkled on the dirt / unpaved road					
- Covering of all trucks against dust spread					
- Dust control equipment is installed at crushing plant					
- Drip trays are used when refuelling or maintenance					
- Reuse excavated material as much as possible					
- Solid waste are disposed at designated dumping site					
- Construction workers are provided education on site cleaning against litter					
- Safety Assemblage was held for workers					
- Safety tools (helmet, goggle, glove, etc) are provided to workers					
- Workers younger than 16 years old are not employed					

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ANNEX-10 Environmental Monitoring Form (Draft)

Project for Rehabilitation of Irrigation Facilities in Rwamagana District, Rwanda

Impact / Mitigation Measures (From EMMP)	Mitigations Implemented? (Yes/No)	Mitigation Effective? (Yes/No)	Impact Observed/ Location	Action Required? (Yes/No) Describe if Yes:	Contractor Response / Comment
- First-aid kits (FAK) are available at all construction sites and yard					
- An accident and emergency response manual is available					

3. Water Quality at Outlet of Discharge from Sedimentation Pond and Concrete Waste Water

Item	Unit	Baseline Data			Monitoring Result			Model of Equipment used	Standards max. Limits *1	Action Required (Yes/No) Describe if Yes:	Contractor Response / Comment
		Date	Location	Amount measured	Date	Location	Amount measured				
pH	-							<9.0			
TSS or	mg/L							<50*2			
Turbidity								*3			

*1: RS110/2009 Water quality – Tolerance limits of discharged domestic wastewater

*2 In case if TSS of baseline data was already exceed the set standards by RS110/2009, the figure measured by baseline data shall be used as maximum tolerance limit.

*3: In case Contractor(s) prefer Turbidity to TSS, the Contractor measure TSS and Turbidity in the Baseline survey and identify the turbidity level at pre-construction stage which shall be used as maximum tolerance limit.

4. Water Quality in Alternative Water Supply Facilities (After drilling)

Item	Unit	Baseline Data Date: / /	Monitoring Result		Model of Equipment used	Standards max. Limits *1	Action Required (Yes/No) Describe if Yes:	Contractor Response / Comment
			Date:	Amount measured				
pH	-					6.5-8.4		
EC	dS/cm					0-3		
Nitrates	mg/L					150		
TDS	mg/L					0-2000		

ANNEX-10 Environmental Monitoring Form (Draft)
Project for Rehabilitation of Irrigation Facilities in Rwamagana District, Rwanda

Item	Unit	Baseline Data Date: / /	Monitoring Result		Model of Equipment used	Standards max. Limits *1	Action Required (Yes/No) Describe if Yes:	Contractor Response / Comment
			Date:	Amount measured				
Total Hardness	mg/L					500		
F-	mg/L					0.6-1.2		
SO ₄ ²⁻	mg/L					150		
Total Coli.	CfuX/ml					100		
Chloride	Mg/L					500		
Fe	mg/L					1-3		
Mn	mg/L					0.1-0.5		

*1: WHO Water quality guidelines, use range in domestic potable water

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5. Natural Environment

Item	Monitoring Result			Action Required (Yes/No) Describe if Yes:	Contractor Response / Comment
	Date	Nest of protected bird nests found on the trees to be affected? Yes/No	If yes, Number and location found		
Relocation of Bird nests					

6. Notes;

Inspection Completed by: _____

Date: _____

①

ANNEX-10 Environmental Monitoring Form (Draft)

Project for Rehabilitation of Irrigation Facilities in Rwamagana District, Rwanda

Biannual Environmental Monitoring Form Reported to JICA

Site Environmental Compliance Inspection and Monitoring Form

Form-3 for Operation Phase

Provided below is a sample form which may be utilized and adapted as needed to record the results of a compliance inspection or ambient monitoring at a project site.

Project Name : Project for Rehabilitation of Irrigation Facilities in Rwamagana
Implementing Agency : Rwanda Agriculture Board (RAB)
Location : Rwamagana
Monitoring Agency : XXXX Inc. If any
Date Reported : DD/MM/YYYY
Enforcement Agency : RAB
Reporting Period : XX Quarter of YYYY
Contractor(s) : XXXX Co., Ltd.

(Biannual)

1. Project Proponent (RAB)

RAB's Environmental Awareness	Yes/No	Actions Required	Contractor Response / Comment
RAB aware of mitigation requirements?			
RAB has a copy of EMMP?			



ANNEX-10 Environmental Monitoring Form (Draft)

Project for Rehabilitation of Irrigation Facilities in Rwamagana District, Rwanda

2. Mitigation Compliance Inspection

Impact / Mitigation Measures (From EMMP)	Mitigations Implemented? (Yes/No)	Mitigation Effective? (Yes/No)	Impact Observed/ Location	Action Required? (Yes/No) Describe if Yes:	Any Comment
-Irrigation facilities are operated according to bylaw.					
-Irrigation facilities are maintained according to bylaw.					
-Sensitization workshop for provision of knowledge about waterborne disease was held.					
-Preventive measure like mosquito net was provided.					
-Protection fence at dam body is in good condition.					
-Accident cases are recorded and countermeasures are addressed					

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3. Natural Environment

Item	Unit	Monitoring Result	Action Required	Any Comment	Date & Locations
Fund from FONERA					
Afforestation in buffer zone					
Extant of protected bird species					
- Black-Headed Heron					
- Cattle Egret					
- Hamerkop					

5

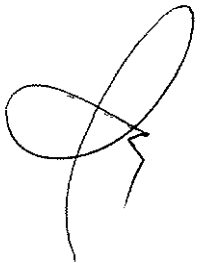
ANNEX-10 Environmental Monitoring Form (Draft)
Project for Rehabilitation of Irrigation Facilities in Rwamagana District, Rwanda

4. Notes;

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Inspection Completed by: _____

Date: _____



資料 5. ソフトコンポーネント計画書

ルワンダ国
ルワマガナ郡灌漑施設改修計画
ソフトコンポーネント計画書

2016 年 12 月

NTC インターナショナル株式会社

目次

1. ソフトコンポーネントを計画する背景
2. ソフトコンポーネントの目標
3. ソフトコンポーネントの成果
4. 成果達成度の確認方法
5. ソフトコンポーネントの活動（投入計画）
6. ソフトコンポーネント実施リソースの調達方法
7. ソフトコンポーネントの実施工程
8. ソフトコンポーネントの成果品
9. ソフトコンポーネントの概略事業費
10. 相手国側の責務

1. ソフトコンポーネントを計画する背景

本無償資金協力が対象とする事業は、1980年初頭に建設されたため池の改修（改修2基、新設2基）および、ため池から取水する灌漑水路の改修を行うものである。これまで、既設の灌漑施設（ため池、灌漑水路、それらの付帯施設）の維持管理は、受益地で水稻栽培を行っている4つのコメ生産組合がそれぞれの地域で行うことになっていた。しかしながら、灌漑施設の管理方法や施設の操作方法がコメ生産組合の担当者には、十分に理解されておらず、また組合で徴収する施設の維持管理費は道路や組合の建物の維持補修に使用され、灌漑施設は適切な管理が行われていないことが今般の現地調査を通じて明らかになった。

一方、省令で、灌漑施設の維持管理は、灌漑水管理組合（IWUO）を設立して実施することが2011年に規定され、対象地域ではIWUOの設立準備が進められている。このIWUOが無償資金協力で建設されるため池および灌漑水路、それらの付帯施設を使用した灌漑システムの運営・維持管理を行うことになる。

設立が進められている灌漑水管理組合（IWUO）は、関係する4つのコメ生産組合員が会員となり1つの組織が設立されることになる。建設される灌漑施設の適切な管理方法を行うには、IWUOの維持管理に関する担当者が、いかにして灌漑システムの維持管理方法を習得するかが課題である。

上記のような背景の下、本無償資金協力で供与される施設の供与に先立ち、施設の適切な維持管理方法を指導することは、プロジェクトの円滑な立ち上がりを促進する。また、施設利用者のオーナーシップの醸成、技術移転が図られることによって、プロジェクトの成果である農業生産性の向上がより安定的且つ持続可能なものとなることが想定される。特にチャルホゴ地区については、既存灌漑施設が存在しないため、日本人専門家によって施設の正しい維持管理手法を指導、啓発する意義は非常に高い。

また、採択済の技術協力プロジェクト「灌漑水管理能力向上プロジェクト」が、本事業対象地区をモデル地区として活用する計画が策定されている。同プロジェクトはルワンダ農業庁（Rwanda Agriculture Board）本部の組織強化を主たる目的としており、現地でのIWUOの立ち上げ支援を中心とする本ソフトコンポーネントとの重複は無く、むしろ立ち上げ後、同技プロにて長期的な運営指導管理がIWUOに対し行われる予定であるところ、本ソフトコンポーネントとの相乗効果の発現が期待できる。

2. ソフトコンポーネントの目標

ソフトコンポーネントの目標は、対象農家（農協のメンバーまたはIWUOのメンバー）が建設された灌漑施設の概要を理解するとともに、灌漑施設の維持管理に関する基礎知識、技術を習得することである。

3. ソフトコンポーネントの成果

3.1. ソフトコンポーネントの成果

本ソフトコンポーネントの成果を下表に示す。

表 ソフトコンポーネントの成果

直接的成果	成果達成のための活動	成果達成のための確認方法（指標）
成果1: 対象地域の一部においての事業データ・ベースが作成される。	活動1-1: 灌漑土地図作成支援を行う。 活動1-2: 水利用者リスト作成支援を行う。	BuguguまたはCyaruhogoサイトで灌漑土地図(約9ha)が作成される。
成果2: 一つのIWUOが設立される。	活動2-1: 一つのIWUOの設立のための支援を行う。 活動2-2: 設立されたIWUOの内部規則作成支援を行う。	IWUOの内部規則が作成される。
成果3: WUG・WDCが組織化される。	活動3-1: WUGおよびWDC設立。	モデルとなる圃場（BuguguまたはCyaruhogo）で、3つのWUGが設立される。
成果4: 農協灌漑施設担当者またはIWUO構成員の能力向上が行われる。	活動4-1: 建設期間中での施設建設および修復方法の習得の支援 活動4-2: 他事業視察支援	IWUOのメンバー20人～30人のトレーニング結果報告書を確認する、またはアンケート調査を行う。 IWUOのメンバー20人～30人のNtende地区などの視察報告書または、アンケート調査を行う。
成果5: 二次水路の建設・改修	活動5-1: 選定されたブロックにおいて二次水路建設・改修される。	BuguguまたはCyaruhogoのモデル圃場で、約3.5kmの二次水路が建設される。
成果6 灌漑用水の適正配分の実施	活動6-1: 選定ブロックにおいて、WDC選出のメンバーに水管理トレーニングを行うとともに、IWUOの他ブロックに関係するメンバーに対して灌漑方法の実証が行われる。	IWUO（WUGリーダー）50人以上のメンバーに対する灌漑方法に関する理解度の簡易調査（インタビューまたは簡易質問票）結果。

3.2. 成果達成のための活動

成果達成のための各活動の詳細を以下に示す。

活動1-1: 事業データ・ベースの作成

省令に準じ、IWUO 設立のために各筆の境界、サイズ、位置、取水位置を示す灌漑図を作成する（例：灌漑図例活動1-1）。また、適切なO&M組織を設立するために、水利用者リスト（例：表 水利用者リスト例）を作成する。

活動の主体は郡灌漑委員会(DISC)とルワンダ農業庁東部県事務所のIWUO担当者となる。日本人専門家は彼らを支援する。灌漑土地図の作成には、裨益者の協力のもと、グーグル・アースと携行用GPSを用いる。本活動では、日本人専門家は、ブググ (Bugugu) またはチャルホゴ (Cyaruhogo) のみを対象とした灌漑図作成支援を行う。

本活動の成果は、図1に示すような図が作成されることになる。携行用GPSで、各一筆の座標を測定し、グーグル・アース上に座標をおとすことで、一筆の大きさと位置を確認できるようになり、効率的な管理が可能となる。



図 灌漑図例 (活動1-1)

活動1-2: 水利用者リストの作成支援

活動1-1で作成した灌漑土地図を利用して、水利用者リストの作成を支援する。水利用者リストには、使用者名、土地規模、取水地点、ブロック番号、WUG名が示される。このデータ・ベースは、事業を適切・円滑に管理・運営するための重要な情報を提供するものになる。想定されるデータ・ベースは、下表に示す項目からなる。

表 水利用者リスト例

番号	筆番号	ブロック番号	使用者名	分水工番号	筆サイズ	グループ名	WUG名	WDC名
1	11	TW-2	Mr. XY	3	20	Twezim	TW-2	WDC-2
2	9	TW-3	Ms. AB	5	30	Twezim	TW-2	WDC-3

活動2-1: 一つの IWUOの設立支援

省令に準じ、全ての灌漑事業には、IWUOの設立が求められている。また、灌漑管理移転

協約書 (Irrigation Management Transfer Agreement : MTA)によると、事業がIWUOに移管される前には、IWUOの適切な組織化、強化および登録が必要となる。

日本人専門家は、IWUO設立に際して東部県及びルワマガナ郡における当該職員を支援する。具体的には数回のワークショップを開催し、郡職員は、日本人専門家支援の下、選出されたIWUO組合委員 (Committee members) に対する指導を行う。

対象地域では、現在、4つのコメ生産組合がある。一つのため池の灌漑施設を1つまたは二つのコメ生産組合で管理する状況であることが判明した。この場合、一つのため池の灌漑施設を1つの組合が管轄できるように管理管轄を区割りするのが困難である。一方で、4つのため池の灌漑施設をそれぞれ管理するIWUOを設立して管理するのは、IWUOの維持管理費の総計が大きくなる。従って、4つのため池の灌漑施設を一括して管理する一つのIWUOを設立すれば、全体の施設の管理が効率的におこなえる。加えて、IWUOの維持管理費も低減できる。これらの理由により、現在、4つのコメ生産組合で一つのIWUOの設立準備が進めている。

調査期間中に、第一段階として郡レベルの担当者やコメ生産組合および農民リーダーに、一つのIWUOの有用性と必要性を説明し、理解を得ているが、その後活動が停止している。

IWUO組織構成は、上位意思決定組織としての総会 (General Assembly)、管理組織としての執行委員会 (Executive Committee)、灌漑システムを管理・運営する配水委員会 (Water Distribution Committee)、水紛争を解決する紛争解決委員会 (Conflict Resolution Committee) などからなる (下図を参照)。

現在、全構成員は総会に参加できるが、多数参加者の会議を開催することは現実的ではない状況である。現況を考えると代表者参加による会議が適切と考えられるため、本事業では、WUG・WDC代表者による代表者総会を提案している。

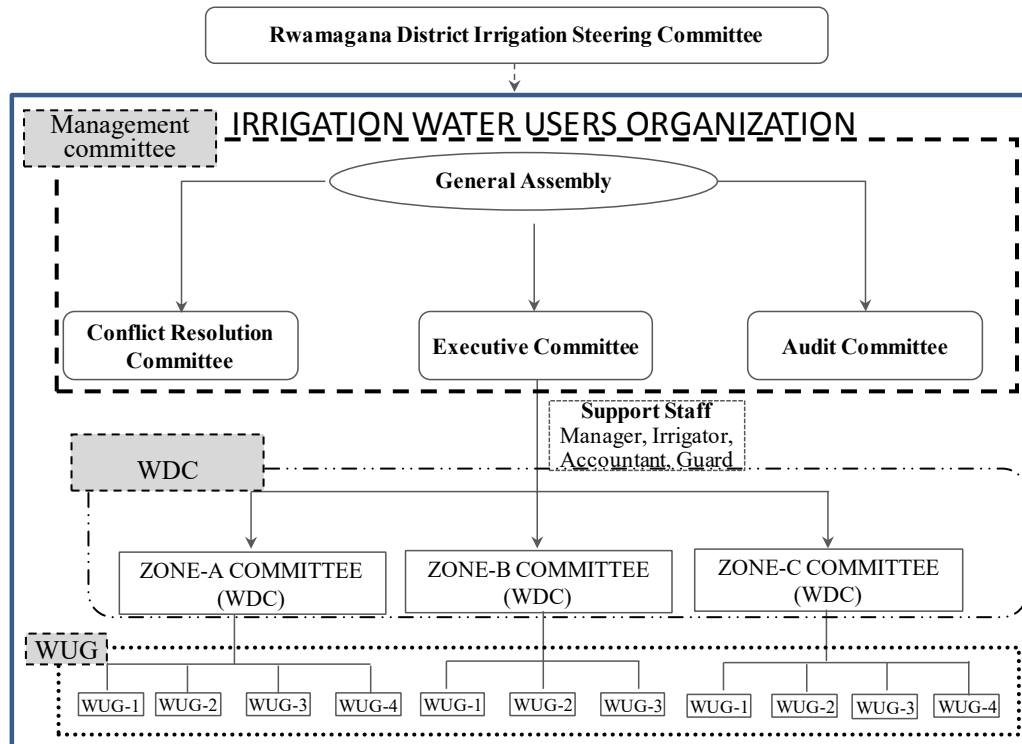


図 予定する IWUOの組織構造

IWUO設立時には、4つのコメ生産組合の既存ゾーンおよびグループは再構成され、新たに配水委員会（WDC）と水利用グループ（WUG）が設立される。配水委員会（WDC）は、ゾーン・レベルの委員会としての役割を持つことになる。

活動2- 2: 内部規則作成支援

省令はIWUOの設立については一般規則の他に、内部規則の設定を規定している。それを踏まえ、日本人専門家はルワンダ側関係者と協力し、IWUO内部規則の作成支援を行う。

活動3-1: WUGおよびWDC設立

IWUOの代表者総会は4つのコメ生産組合それぞれで設立されるグループから選出されるメンバーによって設立されることが想定される。しかしながら、事業の効果的な維持管理のためには、分水工（灌漑水路から一定の面積を灌漑する灌漑施設）の位置を踏まえたWUG・WDCの設立が重要である。これらの理由により、事業のO&Mを円滑に実施するためには、WUG及び総会（General Assembly）メンバーを再編する支援が重要となる。

IWUOは上図で示すように、下層の水利用グループ（Water User Group : WUG）、中層の配水委員会（Water Distribution Committee : WDC）、上層の管理委員会（Management Committee）からなる3層構造をしている。

WUGは、15～20 水稻農家からなる最小単位で、同一分水工あるいは水路から取水する農家である。各WUGはグループ・リーダーを選出し、リーダーはブロック内の水路・分水工の維持管理の責任者となる。また、リーダーは、新WUGメンバーの参加の可否、WUG代表としてのWDC会議へ参加することになる。

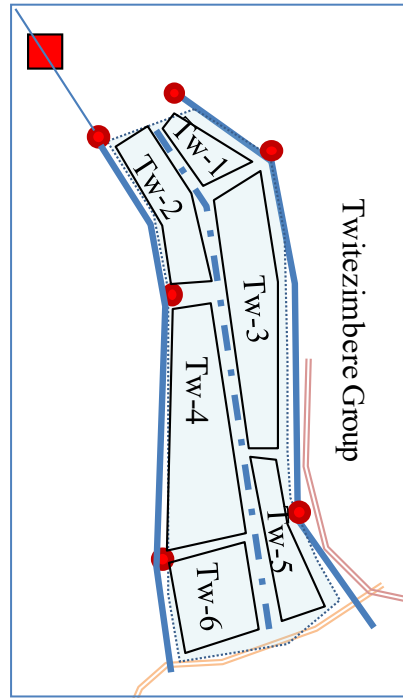
WDCは、3～5WUG（コメ生産者組合の場合はゾーン）で組織される。WDCは、同一用水路から取水している他ゾーンと協調し、自分が所属するゾーン内の灌漑スケジュールを作成する。また、WDCは、4つのコメ生産者組合のゾーン・リーダーと共に、営農活動計画（灌漑方法・時期、田植え時期、収穫時期、施肥等の計画を含む）を作成する。WDCリーダーは自分が管轄する灌漑地帯の灌漑者の責任者になる。一方、農家は、代掻き、育苗、田植え、除草、灌水などを、グループまたはゾーン・レベル毎に行う。WDCの代表者は、IWUOに参加し、全利用者の意思決定を取りまとめる。このため、計画されるシステムにおいては、情報共有や代表者の責務に対する理解度を育成することが重要となる。

建設される施設の灌漑施設を利用して農家が、効率的な灌漑を行うには、上記の灌漑運営体制と灌漑施設の内容を理解する必要がある。そのためには、各施設の建設時あるいは水配分計画時から、WDCとWUGメンバーに対する適切なトレーニングが重要となる。

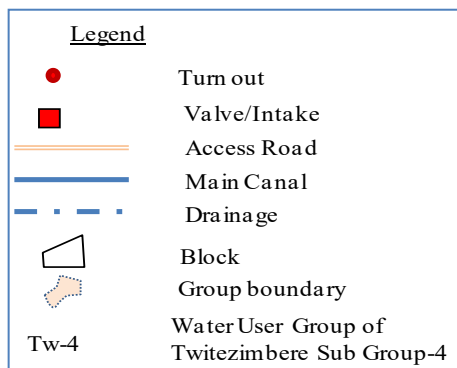
WUGおよびWDCの最終的なサイズや数は、灌漑計画が作成された後に決定される。なお、開始時は、4つのコメ生産者組合で結成されている既存のグループやゾーンがWUGとWDCを結成し、IWUOの代表者を選定する。

Box : WUG設立案と灌漑計画

WDC



WDC のWUG (Twitezimbere グループ, Bugugu)



Bugugu灌漑配分

Bugugu事業はコメ生産者組合による6グループに分かれ、分水工・水路により、各グループはWUG (例Tw-4) に分かれる。WUGは分水工・水路の責任者である。また、グループ・リーダーはIWUOによって設定された規則およびWDCで承認された灌漑スケジュールの責任者になる。

活動4-1: 重点グループの建設期間中での施設建設および修復方法の習得の支援

各組合もしくはIWUOが設立されていればIWUOのメンバーを選定して、工事期間中に建設現場、灌漑施設の位置を視察して、全体の灌漑施設の内容および、作業内容の修得を図る。この視察により農家の所有者自覚を助成する。この活動には、常駐監理者が行うことも考えられるが、ため池2つと灌漑水路2つの灌漑水路の施工監理を行っている状況では、常駐監理者が行うことは、困難となる。その為、ソフトコンポーネント担当者が、常駐監理者と協議をすすめながら、実際の活動支援を行うことになる。

なお、この活動は、WBの支援で実施されているRSSP (Rural service support program) 担当者が、維持管理をIWUOが行うことになるので、IWUOメンバーには、工事中からの施設に対する所有者自覚をもつようにするのが、良いとの助言のもとにソフトコンポーネントの活動に含むものである。

活動4-2: 他事業視察への支援

これまでにRABは、WBの支援を受け、当プロジェクト地域を含む全国の組合のリーダーを対象に、他の灌漑スキームへの視察研修を実施している。しかし、視察先のプロジェクトメンバーとの交流や会話が不足していたため、視察参加者は、維持管理組織と利益を求める組合活動を分離する重要性を理解できなかったことが報告されている。

本ソフトコンポーネントにおいては、IWUOメンバーの能力向上のために、Ntende 灌漑事業など、国内における成功事例の視察研修を行う。成功事例を学ぶことによって、本件の対象農家（組合員あるいは、IWUOメンバー）は、IWUOの設立目的、組織における各メンバーの責任、維持管理方法等に対する理解が深まると想定される。各組合のメンバーまたはIWUOが設立されていればIWUOのメンバー（20～40名）が視察の参加者として選定される。これらの視察研修の調整は、日本人専門家と協議の下、東部県IWUOスタッフ及びルワマガナ郡農業技官によって実施される計画とする。

過去の教訓を生かし、本ソフトコンポーネントにおける視察には、当該国の灌漑事業のみならず先進国及び先進地域における事例に明るい外部者（日本人専門家）が同行し、必要に応じて成功事例の解説・さらなるアドバイス等を交えた視察を行うことを計画する。これによって、視察側・被視察側共に学ぶ環境が創出され、視察先のメンバーとの交流及び対話が一層促進される。

視察後には、日本人専門家指導の下、東部県IWUOスタッフ及びルワマガナ郡農業技官が、視察参加者を対象としたアンケート調査を行い、視察結果を振り返るとともに、本事業への優良事例の適用可能性について検討を行う。

各組合のメンバーまたはIWUOが設立されていればIWUOのメンバー（20～40名）が視察の参加者として選定される。これらの視察研修の調整は、外部者（日本人）の協議のもと、東部県IWUOスタッフ及びルワマガナ郡農業技官によって実施される計画とする。

活動5-1: 二次水路建設・改修支援

無償事業によりため池・幹線水路が改修される。灌漑システムの効果的な運営のために、二次水路(小規模な土水路)の建設が重要である。これらの水路は裨益者が建設することになる。そのため、これらの水路の建設・O&Mに関するトレーニングが必要となる。特に、WUG・WDCレベルのIWUOメンバーを対象としたトレーニングの必要性は高い。IWUOが組織化さ

れていない場合には、管理主体となる農協のメンバーにトレーニングを行うことを考えている。

二次水路・改修計画の立案に際して、IWUO及び農協組合員に対する初期指導・調整が重要となるため、日本人専門家はソフトコンポーネントの中で支援を行う。日本人専門家は、1か所または2か所程度のモデルとなる圃場を定め、IWUOメンバーに対して二次水路の準備にかかる指導を行う。その後、二次水路の建設、改修の指導を、実際に3.5kmの二次水路を建設しながらOJTで実施していく。この活動は郡庁スタッフとRAB東部県事務所のIWUO担当者が二次水路建設を拡張していくことになっている。また、採択済の技協プロジェクトに、本活動の継続を含めることにより、本無償で整備される灌漑施設の有効性は向上することが期待できる。

調査期間中に、二次水路の必要性をコメ生産組合関係者より聞き取りしている。コメ生産者は二次水路の必要性を理解していることから、彼ら自身で二次水路の建設方法を修得することにより、二次水路の拡張が期待される。

活動6-1: 選定ブロックにおける、水管理トレーニングの実施、及び灌漑の実証支援

二次水路を含む建設の円滑なる実施を目指し、数個の分水工とWUGを含むモデルとなる圃場を選定する。このモデルとなる圃場において、WUGメンバー、WDC選出のバルブ開閉作業責任者に対する水管理トレーニングを行う。また、本圃場において灌漑用水の効率的な配分に関する実証試験を行う。この成果は、施設建設完了後に他地域へ展開されることとなり、ルワマガナ郡担当職員及びRAB東部県事務所におけるIWUO担当者は、他地域展開に際しての責任者となる。

IWUOが設立されていない場合には、各組合の既存のブロックで行うことになる。本活動を実施する場所は、活動1-2および1-2での成果を得たところになる。9haの面積では、WUGが約6グループできる想定となる。6グループで灌漑水の取水方法（グループで水を取水する順番や時間）を6グループで協議して灌漑を行うことを研修する。

調査より、現地のコメ生産者は、水配分の重要性を理解している。しかしながら、現在は適切な配分方法を理解していないところがある。従って、本活動により、水の配分方法を理解すれば、適切な配分方法が拡大していくことが期待できる。

4. 成果達成度の確認方法

「表 ソフトコンポーネントの成果」における成果達成のための確認方法（指標）(頁5-120)を参照

5. ソフトコンポーネントの活動（投入計画）

ソフトコンポーネントの活動を下表に示す。

表 ソフトコンポーネントの活動

成果	活動	時期	コンサルタント		ルワンダ側活動	
			投入	活動	政府職員	IWUO
1. 対象地域の一部においての事業データ・ベースが作成される。	活動1-1: 灌漑図作成支援を行う 活動1-2: 水利用者リスト作成支援	建設前、建設時	日本人 2MM 資材: 文房具 GPSなど	灌漑図 9ha 水利用利用者リスト (灌漑図 9haの面積に対して)		カウンターパートの配置
2. 一つのIWUOが設立される。	活動2-1: 一カ所のIWUOの設立支援 活動2-2: 内部規則作成支援	建設前、建設時	日本人 成果1の活動と並行としておこなう。 C/Pを指導する。 活動2-2については、前記2MM、後期3MM (成果5の活動と並行しておこなう)		C/P 配置、ワークショップ・ミーティングの手配・運営、農家への直接指導	
3. WUG・WDCが組織化される。	活動3-1: WUG・WDC設立支援	2018年10月、若しくは2019年5月	日本人 成果1の活動と並行としておこなう。 C/Pを指導する。		C/P 配置、ワークショップ・ミーティングの手配・運営、農家への直接指導	
4. 農協またはIWUO構成員の能力向上が行われる。	活動4-1: 建設期間中での施設建設および修復方法の習得の支援 活動4-2: 他事業視察支援	建設前、建設時	日本人 成果1の活動と並行して行う。		C/P 配置、ワークショップ・ミーティングの手配・運営	IWUO20～30名程度参加
5. 二次水路の建設・改修	活動5-1: 二次水路建設・改修支援	2018年10月、若しくは2019年5月	専門家、 資機材: 斧、ショベルなど	二次水路3.5kmの建設	C/P 配置、ワークショップ・ミーティングの手配・運営、農家への指導	
6. 灌漑用水の適正配分の実施	活動6-1: 選定ブロックにおける水管理トレーニングの実施、灌漑の実証支援	2018年10月、若しくは2019年5月	専門家、ワークショップ費用			C/P 配置、ワークショップ・ミーティングの手配・運営、農家への指導

6. ソフトコンポーネント実施リソースの調達方法

本ソフトコンポーネントの最大の目的は、人材の能力向上にある。そのため、主体的な活動は、ルワンダ国のカウンターパート（郡庁の農業技術者、組合担当職員およびRAB東部県事務所IWUO担当者）を主体として、組合員（IWUOが結成できている場合は、IWUO会員）の参加のもと、日本人専門家の指導により、灌漑施設の維持管理方法の基礎的な技術を習得する。

7. ソフトコンポーネントの実施工程

ソフトコンポーネントの開始は、灌漑水路工事が最初に完成するチャルホゴの工事完了半月前からとし、灌漑土地図作成支援や、水利用者リスト作成支援を開始する計画とする。また、建設現場での技術取得に関する活動については、まだ工事が行われているブググで行うことになる。

第1回目：2018年10月～2か月間

第2回目：2019年5月～3か月間 を計画する。

表 作業日程の算定

活動	実施数量	一日当たりの実施可能数量	作業必要日数	作業休止係数	工期（日）	工期（月）
灌漑土地図作成支援 （チャルホゴ）	9 ha	0.2ha	45 日	1.35	60.75日 60.75日	<u>2か月</u>
水利用者リスト作成支援 （チャルホゴ）						
WUG及びWDC設立支援 （チャルホゴ）	50メンバー （3WUG）	1WUG/ 5日/週				
一つの IWUOの設立支援 （全体）	1WUO				30.00 日	1か月
内部規則作成支援（全体）	IWUO設立1週間の内に作業を開始し、ソフトコンポーネント期間を通して、案の作成、協議、修正、最終案の作成を行う。					
建設期間中での施設建設 および修復方法の習得の 支援（ブググ、チャルホゴ）	水路建設期間中に実施する計画とする（数回）				工事期間 中10日程	0.3か月

他事業視察支援（全体）	準備期間を含め、10日間程度					0.15か月×2班
二次水路建設・改修支援 （ブググ、チャルホゴ）	3,500m	44m	68.2	1.35	92	3.07か月 (渡航期間、準備を含め3か月)
選定ブロックにおける灌漑方法の実証支援 （チャルホゴ）	約1か月を予定する					1か月

従って、日本人専門家の派遣期間は、
2か月（灌漑土地図作成＋水利用者リストの作成）＋3か月（二次水路建設・改修計画）＝5か月
となる。

8. ソフトコンポーネントの成果品

- ・ソフトコンポーネント完了報告書
- ・チャルホゴサイトの数ブロックの灌漑土地図
- ・チャルホゴサイトの数ブロック内の水利用者リスト
- ・水利用者グループ設立のためのガイドライン

9. ソフトコンポーネントの概略事業費

ソフトコンポーネントの概略事業費は、合計 17,160千円となる。

表 ソフトコンポーネント概略事業費

項目	数量	単価 (千円)	金額 (千円)
1. 直接人件費			3,660
灌漑水利組合支援 (4号)	5MM	732	(3,660)
2. 直接経費			5,887
旅費・日当・宿泊	1式		(2,602)
車両費	1式		(1,491)
現地傭人費	1式		(1,418)
その他 (先進地視察交通費)	1式		(376)
3. 間接費			7,613
その他原価率 (120%)			(4,392)
一般管理費率 (40%)			(3,221)
ソフトコンポーネント 計			17,160

10. 相手国側の責務

10.1 責務

- ・ソフトコンポーネント実施時には、RAB東部県事務所のIWUO担当者および郡の農業技師、組合担当職員が参加できるように調整する。RAB職員は、郡庁、各組合 (またはIWUO) に研修実施の日程、参加者の調整を行う。
- ・ワークショップ、ミーティングの開催手続き、運営、調整を行う
- ・IWUO構成員への直接指導

10.2 実現の可能性

灌漑維持管理は、2011年の省令で規定されIWUOを設立して行うことが規定されている。この事実は、RAB職員および関係組合のリーダーは理解している。本ソフトコンポーネントでは、こ

の理解をより深く、また理解者の増員することでもあり、彼らの要望に合致していることから実現性はあると判断される。

10.3 阻害要因と阻害されたときの必要な措置

本ソフトコンポーネントの実施の主体となるのは、RAB東部県事務所のIWUOの担当者であり、調査期間中からIWUOの活動に精力的に活動していたが、本担当者は年間契約のため（ルワンダ国では、多くの政府職員は単年度契約である）、担当者の契約が打ち切られた場合には、ソフトコンポーネントの実施の効率性が落ちることも想定される。この場合には、早期に新任の担当者をRABに要請して、新任者には、事業の重要性を理解してもらうように努める。

資料 6. 参考資料

別冊ANNEXを参照。