

ザンビア共和国  
小規模農民のための灌漑開発プロジェクト  
中間レビュー調査報告書

平成27年8月  
(2015年)

独立行政法人国際協力機構  
農村開発部

農村
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## 序 文

独立行政法人国際協力機構は、2012年11月21日ザンビア共和国と締結した討議議事録(R/D)に基づき、2013年5月より技術協力プロジェクト「小規模農民のための灌漑開発プロジェクト」を約3年7カ月の計画で実施しています。

この度、本プロジェクトが協力期間の中間地点に至ったことから、プロジェクトの進捗や実績を確認のうえで目標及び成果達成に向けた貢献・阻害要因を分析すること、評価5項目（妥当性、有効性、効率性、インパクト及び持続性）の観点から日本・ザンビア国側双方で総合的に評価を行うとともに、今後の対応方針を検討することを目的として、2014年11月24日から12月11日まで中間レビュー調査団を現地に派遣しました。

現地ではザンビア共和国側の団員と合同評価調査団を形成し、評価結果を合同評価報告書に取りまとめ、ザンビア共和国側の政府関係者と今後の方向性について協議し、ミニッツ（M/M）に署名を取り交わしました。本報告書は、その結果を取りまとめたものであり、今後のプロジェクトの実施にあたり広く活用されることを願うものです。

終わりに本調査にご協力とご支援を頂いた内外の関係者の皆様に対し、心から感謝の意を表します。

平成27年8月

独立行政法人国際協力機構  
農村開発部長 北中 真人



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# プロジェクト対象州位置図



	州名
①	ルアプラ (Luapula)
②	北部 (Northern)
③	ムチンガ (Muchinga)



## 現地写真



建設中の恒久堰



住民参加による恒久堰の建設



恒久堰建設に参加する農家



簡易堰堰堤（歩いているのは堰堤部分）



簡易堰（写真上部が上流、堰で流れをせき止め、写真左の取水口に水が流れる）



取水口から圃場までの水路



プロジェクトで支援している灌漑農業デモファーム（オン・ファーム研修を実施）



灌漑農業を行っているキャベツ圃場（他にケールやピーナッツ、トマトなどが栽培されている）



## 略 語 表

略語	正式名称	和文
BEO	Block Extension Officer	ブロック普及員
CEO	Camp Extension Officer	キャンプ普及員
COBSI Study	Study for the Capacity Building and Development for Community-based Smallholder Irrigation Scheme in Northern and Luapula Provinces (JICA)	小規模農家のための灌漑システム開発計画調査
C/P or CP	Counterpart Personnel	カウンターパート
DACO	District Agricultural Coordinator	郡農業調整官
DoA	Department of Agriculture	農業局
DSA	Daily Subsistence Allowance	日当
GRZ	Government of Republic of Zambia	ザンビア政府
JCC	Joint Coordinating Committee	合同調整委員会
JICA	Japan International Cooperation Agency	独立行政法人国際協力機構
JOCV	Japan Overseas Cooperation Volunteers	青年海外協力隊
MAL	Ministry of Agriculture and Livestock	農業畜産省
M/M	Minutes of Meeting	協議議事録
NAP	National Agricultural Policy	国家農業政策
NIP	National Irrigation Plan	国家灌漑政策
OJT	On-the-Job Training	現場・実務研修
O&M	Operation and Maintenance	運営維持
PACO	Provincial Agricultural Coordination Officer	州農業調整官
PDM	Project Design Matrix	プロジェクト・デザイン・マトリックス
PIU	Project Implementation Unit	プロジェクト実施ユニット
R/D	Record of Discussion	討議議事録
T-COBSI	Technical Cooperation Project on Community-based Smallholder Irrigation (JICA)	小規模農民のための灌漑開発プロジェクト
ToT	Training of Trainers	研修指導員研修
TSB	Technical Services Branch	技術サービス部門



## 評価結果要約表（和文）

1. 案件の概要	
国名：ザンビア共和国	案件名：小規模農民のための灌漑開発プロジェクト (Technical Cooperation Project on Community-based Smallholder Irrigation (JICA) : T-COBSI)
分野：農業	援助形態：技術協力プロジェクト
所轄部署：農村開発部	協力金額（評価時点）：212,248,000 円
協力期間	(R/D)：2013年5月7日～ 2016年12月31日
	(延長)：
	(F/U)：
	(E/N)（無償）
	先方関係機関：農業畜産省（Ministry of Agriculture and Livestock : MAL）
	日本側協力機関：農林水産省
	他の関連協力：
<p>1-1 協力の背景と概要</p> <p>ザンビア共和国（以下、「ザンビア」と記す）では、就業人口の約 50%、農村部人口の約 90% が農業に従事しており、農業人口の約 76% が土地所有 1ha 未満の小規模農家である。小規模農家の多くは灌漑施設へのアクセスがなく、天水依存型農業に従事しているため、干ばつ・洪水など気候変動の影響に極めて脆弱であり、これまでも食料不足に直面してきた。</p> <p>他方、ザンビアは水量が豊富で季節変動の少ない河川も多く、灌漑開発に係る高いポテンシャルを有している。そのため、ザンビア政府は小規模農家向け灌漑開発の推進を通じて農業生産性の向上を図ることをめざしており、独立行政法人国際協力機構（Japan International Cooperation Agency : JICA）は、ザンビア政府の要請に基づき、比較的降水量が多く表流水が豊富で重力式灌漑の導入ポテンシャルが高い北部州及びルアプラ州を対象に、開発調査「小規模農家のための灌漑システム開発計画調査（2009～2011年）」（以下、「開発調査 COBSI」と記す）を実施した。開発調査 COBSI では、住民参加型により、①現地で入手可能な自然材料（木・竹・粘土・石等）を用いた「簡易堰」の建設、②簡易堰のうち維持管理効果の高い堰を対象に粗石練積みやコンクリートでアップグレードする「恒久堰」の建設、の2種類の小規模灌漑開発に係るパイロット事業を実施した。その結果、上記2種類の小規模灌漑開発手法の有効性及び同手法の他地域への普及展開の可能性が確認されたことから、北部州及びルアプラ州に対する同手法導入のための行動計画が策定された。</p> <p>これらの経緯から、ザンビア政府は開発調査 COBSI の成果を高く評価し、小規模灌漑開発手法を普及することを目標とした技術協力をわが国に要請した。本技術協力プロジェクト「小規模農民のための灌漑開発プロジェクト」は、2012年11月に署名・交換（2013年7月に修正・署名・交換）された討議議事録（Record of Discussions : R/D）に基づき、2013年5月より協力を開始した。</p> <p>しかしながら、協力開始後、両国間で協力内容は合意済みであったにもかかわらず、MAL 側から簡易堰に関する活動の削除が提起された。その後、急遽調査団を派遣し MAL と協議した結果、やむを得ず簡易堰を削除し恒久堰を中心に活動を展開することとし、2013年7月 R/D 変更に関する M/D が合意・署名した。他方、(ア) 地形的、技術的観点からも、簡易堰を小規模灌漑のエントリーポイントとする必要性が高い、(イ) 簡易堰に係る活動の削除を主張して</p>	

いた農業省関係者（次官、農業局長）が職を離れたことから、簡易堰に関する活動を再びプロジェクト・デザイン・マトリックス（Project Design Matrix：PDM）に加える方向で可能性を探ってきた。

本中間レビューは、(A) ザンビア側と合同でプロジェクト活動の進捗状況の確認、達成度の検証を行い、さらに評価5項目（妥当性、有効性、効率性、インパクト、持続性）の観点から評価すること、(B) 簡易堰に関する活動の追加実施の可能性につきザンビア側と協議し合意形成すること、を目的に実施する。

## 1-2 協力内容

### (1) 上位目標

対象地域における灌漑農業生産が向上する。

### (2) プロジェクト目標

対象地域における灌漑施設の整備を通じ灌漑面積が増加する。

### (3) 成果

成果1： 実地研修を通じ、小規模灌漑スキームによる恒久堰設計、建設、運営、管理技術が農業畜産省（MAL）農業局技術サービス部門（Technical Services Branch：TSB）職員に移転される。

成果2： 実地研修を通じ、小規模灌漑スキームによる恒久堰建設、運営、管理技術がMAL普及員に移転される。

成果3： 灌漑農業やアップグレードされた恒久堰の運営、維持管理に対する農家の知識や技術が向上する。

### (4) 投入（レビュー時点）

日本側：

専門家派遣：8名

本邦研修：1名

第三国研修（ケニア）：1名

機材供与：コピー機、カラープリンター、ラップトップ・コンピュータ、車両等

ローカルコスト負担：56,135,000円、3,197,000Zambian Kwacha（JICA指定レートによりZkw=17.564円）

相手国側：

カウンターパート配置：9名（MAL）、TSB職員、普及員、農民グループ

ローカルコスト負担：プロジェクト事務室、灌漑施設用工具保管所等

## 2. 評価調査団の概要

調査者	総括	天目石 慎二郎	JICA 農村開発部	農業・農業農村開発第二グループ 第四チーム 課長
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	協力企画 大岩 拓也	JICA 農村開発部 農業・農村開発第二グループ 第四チーム ジュニア専門員
	評価分析 岸並 賜	株式会社国際開発アソシエイツ 国際協力部 シニアコンサルタント
調査期間	2014年11月24日－2014年12月11日	評価種類：中間レビュー調査
<b>3. 評価結果の概要</b>		
3-1 実績の確認		
(1) 成果		
活動は PO に沿って実施されており、成果は以下のとおり、一部達成されつつある。		
1) 成果 1：2014年12月現在、12名の TSB 職員が設計、建設、運営維持（Operation and Maintenance：O&M）を実施することが可能であり、実際の建設には従事していないものの、キックオフ研修や中間研修に、それぞれ 31 名、34 名の職員が参加している。なお、開発調査（COBSI）で建設された簡易堰調査に関するアンケートの結果、423 の簡易堰のデータが取りまとめられ、そのうち、約 25%の簡易堰が恒久堰へアップグレード出来る可能性があると判断された。		
2) 成果 2：これまでに、キックオフ研修で 56 名、中間研修で 52 名の普及員が小規模灌漑スキームによる恒久堰建設、運営、管理技術にかかる知識やスキルを習得した。2014 年 11 月に実施された評価ワークショップでの調査によると、56 名の普及員のうち、40 名（約 70%）が農家グループに対して技術移転を実施している。		
3) 成果 3：現在プロジェクトにより、7つの恒久堰が建設中（12月中に完成予定）であり、今後の調査で同成果に対する実績を調査する予定である。本プロジェクトによって建設された簡易堰サイトでの調査では、56%の農民が普及員から学んだ灌漑農業技術を適用している。		
(2) プロジェクト目標		
2014年12月現在プロジェクトにより、7つの恒久堰が建設中であるが、約 35ha が灌漑されると見込まれている。実績については、今後、調査を実施する予定である。恒久堰建設サイトは、既に簡易堰による灌漑農業を導入しているサイトから選択されているため、小規模灌漑技術を継続して実施する可能性は高いと言える。		
(3) 上位目標		
恒久堰の建設開始が 2014 年 9 月ということもあり、「対象地の作物生産の増加」という指標については、今後、調査予定である。		
3-2 評価結果の要約		
(1) 妥当性		
妥当性は以下の理由から高いと判断された。		
本プロジェクトは、国家灌漑政策（National Irrigation Plan：NIP）や国家農業政策（National		

Agricultural Policy : NAP) などのザンビアの国家開発政策・農業開発戦略の方向性、並びに灌漑促進等、日本の協力政策における重点分野に合致している。また、TSB 職員や普及員は農家グループを指導する立場にあるが、プロジェクトで実施された研修内容は実用的であり、高く評価されている。対象地域は比較的安定した雨量があるものの、農民の約 70% は貧困レベル以下の生活をしており、小規模灌漑の導入により、作物の増産、収入の増加などが期待される。よって、対象地域及び農民のニーズにも合致している。

(2) 有効性

有効性は以下の理由から、比較的高いと判断された。

本プロジェクトの活動は活動計画 (PO) に沿って順調に進捗しており、成果についても達成が見込まれることから、プロジェクト目標である「灌漑農地の拡大」の実現可能性は高いと思われる。しかしながら、中間レビュー時には、指標の数値目標が設定されておらず、またプロジェクトで実施している恒久堰の建設が完了していないことなどから、今後のモニタリングが重要である。また、3 つのアウトプットはプロジェクト目標の達成に必要な十分な項目である。

(3) 効率性

効率性は以下の理由から、中程度と判断された。

上記のとおり、成果は着実に発現している。プロジェクトの重要な構成要素である研修については、内容、講師、期間等の点で受講者から高く評価されており、実際の堰の建設や灌漑農業にも十分活かされている。また、本プロジェクトの運営において、日本側の投入、特に恒久堰、簡易堰建設サイトへの訪問に不可欠なモーターバイクの燃料はプロジェクト活動が効率的に実施されている大きな要因となっている。一方、ザンビア側の投入は、カウンターパートの配置や事務所スペースなどは計画どおり実施されたものの、予算が執行されない等、不十分な点も見られた。

(4) インパクト

中間レビュー時には恒久堰の建設が完了していなかったことから、プロジェクト活動で建設された灌漑堰を利用した灌漑農業はいまだ実施されておらず、本調査の段階で上位目標の達成に関する見込みを判断することは困難である。しかしながら、プロジェクトにより農民が共同作業を開始したことで、地域農民の結束が強くなったことや、農民が灌漑用水を利用した魚の養殖を計画するなど、正のインパクトが発現しつつある。なお、本調査において、負の効果、影響は特定されなかった。

(5) 持続性

持続性は、以下の理由から中程度と判断された。

国家農業政策に沿って策定された NIP は持続的な農業開発を促進するための灌漑利用の推進を掲げていることから、政策・制度的な持続性は確保される見込みである。また、プロジェクトの活動は実施機関の所掌範囲に合致しており、組織的な持続性についても担保されている一方、実施機関の人的・財政的制約が指摘されており、特に MAL の予算執行

率が低く財政面での持続性の確保には課題がある。また、実施機関の技術面での持続性については、恒久堰の設計など TSB 職員の経験が十分でない分野があること、技術者の数についても十分とはいえない。

### 3-3 効果発現に貢献した要因

#### (1) 計画内容に関すること

技術移転の流れを「プロジェクト専門家⇒TSB 職員⇒普及員⇒農家グループ」と設定したことは、灌漑開発に人的布陣の制約がある状況にかんがみたアプローチである。

#### (2) 実施プロセスに関すること

開発調査 COBSI において簡易堰を建設し、サイトの妥当性や水流を見極めたことは、恒久堰を建設するうえで、極めて有効であった。

### 3-4 問題点及び問題を惹起した要因

#### (1) 計画内容に関すること

協力開始後、両国間で協力内容は合意済みであったにもかかわらず、MAL 側から簡易堰に関する活動の削除が提起された。その後、やむを得ず簡易堰を削除し恒久堰を中心に活動を展開することとなった。

#### (2) 実施プロセスに関すること

ザンビアの予算が、インフラ建設に優先配分されていることもあり、MAL の 2014 年度予算執行率は、同年 7 月現在、15%~20%にとどまっている。このため、普及員によるモニタリング用の燃料代が不足するとともに、ザンビア側のイニシアティブによる恒久堰の建設が実施されていない。

### 3-5 結論

プロジェクト活動はおおむね PDM 及び PO に沿って進捗しており、一部成果も発現している。しかしながら、プロジェクト目標及び成果レベルの指標の数値目標が設定されておらず、数値での客観的な評価は困難であった。評価 5 項目については、妥当性が高い、有効性は比較的高いと判断されたが、一方で持続性については、現状ではザンビア側の予算措置が十分でなく、特に COBSI アプローチの推進を担う TSB スタッフや普及員の日当 (Daily Subsistence Allowance : DSA) や移動手段に係る問題 (燃料代、バイクの修理代など) がプロジェクト活動上の制約要因となっている。現地調査の結果を踏まえて、合同レビューチームとして以下の提言を行った。これら提言に沿ってプロジェクト、ザンビア政府がそれぞれ対応策を講じることにより、成果の発現、プロジェクト目標の達成が進展すること、また活動 (COBSI アプローチの推進) 持続性が向上することが期待される。

### 3-6 提言 (当該プロジェクトに関する具体的な措置、提案、助言)

調査団は以下の提言を行った。

### 3-6-1 プロジェクトに対する提言

#### (1) プロジェクト成果の一層の促進

プロジェクト目標の達成（小規模灌漑開発の推進による①灌漑農業に従事する農家の増加、及び②灌漑面積の増加）に向けて、以下の提言を行った。

##### 1) 簡易堰への取り組み

これまでプロジェクトでは恒久堰の推進を中核に据えてきたが、そのエントリーポイントとして簡易堰の重要性を確認した。COBSI アプローチによる簡易堰の推進は、効率性、費用対効果の観点から非常に有効性が高く、農民にとっても簡便な方策である。簡易堰の推進はプロジェクト目標の達成に大きく貢献するものであることから、簡易堰の推進に向けた能力向上にプロジェクトの枠組みの中で取り組んでいく必要がある。

##### 2) 農民への技術指導の強化

現地調査を通じて、農家は水管理、作物管理、マーケティングなどの問題に直面していることを確認した。プロジェクト活動の一層の推進に向けて、プロジェクトは農業畜産省 MAL 農業局（Department of Agriculture : DoA）及び関連部署と連携のうえこれら分野の課題解決に取り組んでいく必要がある。

なお、北部州州農業調整官（Provincial Agricultural Coordination Officer : PACO）が 2014 年 11～12 月に市場志向型農業（SHEP アプローチ）に係る課題別研修（SHEP 行政官研修）に参加した。今後 PACO の得た知見を活かしてマーケティング関連のプロジェクト活動の強化を図っていくことが望まれる。

#### (2) PDM の改定

上記簡易堰への取り組みを含めて、合同レビューチームとして以下の点につき PDM を改定することを提案し、合同調整委員会（Joint Coordinating Committee : JCC）で承認を得た。

##### ● 簡易堰への取り組みの明示化

COBSI アプローチのエントリーポイントとして簡易堰に取り組むため、成果 1～3 における「恒久堰」に係る記述を「簡易堰及び恒久堰」に変更（プロジェクト目標、上位目標には該当箇所なし）。

##### ● 上位目標（指標の数値の明確化）

- ・ターゲット農民グループ数の決定（未定→700 農民グループ）

##### ● プロジェクト目標（指標の数値の明確化）

- ・ターゲット農民グループ数の決定（未定→500 農民グループ）
- ・目標とする灌漑面積の決定（未定→700ha）

##### ● 成果（指標の数値の明確化）

- ・成果 1：

調査する前フェーズで開発した灌漑スキーム数の決定（未定→400 堰）

開発する簡易堰・恒久堰数の決定（未定→500 堰）

・成果 2 :

研修参加者数の決定（未定→150名）

(3) 他のステークホルダーとの連携の促進

COBSI アプローチは現地資材を活用し低コストで小規模農家の農業用水へのアクセス改善を図る手法であり、小規模灌漑開発の観点からは非常に有効性が高く、更なる推進が求められる。他方、現在 TSB スタッフ、普及員は移動手段、燃料確保、日当不支給等の問題に直面しており、COBSI アプローチ推進上の障害となっている。上記問題の改善を図るため、現場レベルで他事業との連携を積極的に探り、上記問題を解決・改善を図ることが求められる。他事業との連携により双方の事業への相乗効果も期待できる。

3-6-2 ザンビア側に対する提言

(1) 予算措置

ザンビア側により協力開始当初から本プロジェクトへの予算措置の検討がなされてきたものの、実際の予算の拠出レベルは非常に低く、プロジェクト目標の達成及び成果の達成への影響が懸念される。ザンビア側は、特に日当、移動手段確保（バイク）に向けて十分な予算を確保することが求められる。

(2) 他のプロジェクトとの連携

プロジェクト対象地域では他のプロジェクトも実施されていることから、相互に相乗効果を図っていくためにも MAL が中心となり連携の可能性を図っていくことが望まれる。

(3) 他の部局との連携

小規模灌漑スキームの現地訪問を通じて、現地の小規模農民は水管理、作物管理、マーケティングに係る問題を抱えていることが判明した。これら問題の改善に向けて、DoA は他の関連部局と積極的に連携を図り、農民に対する技術的サポートを行っていくことが求められる。

(4) 灌漑施設改修に向けた受益農民による水利費の徴収の推進

現地調査を通じて、複数の灌漑スキームが農民主導で維持管理を目的に水利費の徴収を行っていることを確認した。灌漑スキームの持続的な活用の観点から、MAL は各灌漑スキームにおける水利費の徴収を積極的に推進していくことが求められる。

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

(1) 恒久堰建設前の簡易堰整備の重要性

TSB 職員、普及員及び農民は、簡易堰について、恒久堰を建設する前のエントリーポイントとして不可欠であると述べている。簡易堰を建設することによって、農民は恒久堰建設前に灌漑施設の利用方法や、施設について正しく理解することができ、水流や地形の特

徴など恒久堰建設に重要な要因を分析する際に役立つことが出来た。こういったプロセスは、簡易堰を建設することなく恒久堰を建設した他ドナーのケースを考えると極めて重要である。この恒久堰について、地域農民が灌漑農業の意義を十分理解せず、また水路の設計が不適切であったこともあり、全く使用されていない。

## 評価結果要約表（英文） Summary of Mid-Term Review

<b>1. Outline of the Project</b>	
<b>Country :</b> Republic of Zambia	<b>Project title :</b> Technical Cooperation Project on Community-based Smallholder Irrigation
<b>Issue/Sector :</b> Agriculture	<b>Cooperation scheme :</b> Technical Cooperation Project
<b>Division in charge :</b> Rural Development Department	<b>Total cost :</b> 1,783,147 US\$
<b>Period of Cooperation</b>	3.7 years from May 7, 2013 to December 31, 2016 (extension): none
	<b>Partner Country's Implementing Organization :</b> Ministry of Agriculture and Livestock (MAL)
	<b>Supporting Organization in Japan :</b> The Ministry of Agriculture, Forestry and Fisheries
	<b>Other related cooperation :</b>
<p><b>1-1. Background of the Project</b></p> <p>The Republic of Zambia (hereinafter, referred to as “Zambia”) has a total land area of 753,000 sq.km and its population was estimated at 13. 1 million as of 2010. About two thirds of the population live in the rural areas, and it was projected that nearly 90% of the rural population was engaged in agriculture. As of 2006, small-scale farmer population shared as much as 91.7% of the rural population and 96.2% of the total number of farmers. Of a total 75,261,200 ha of the national land, 5,265,000 ha was agricultural land of which, 360,000 ha (6.8%) was estimated irrigable land, though only 43% of it was under irrigation. About 72% of the total irrigated area fell under the category of small irrigation schemes.</p> <p>In order to enhance productivity, the National Irrigation Policy (NIP) was launched with the aim of developing irrigated area of 70,000 ha over a period of five (5) years from 2006 to 2011, of which the development of 30,000 ha was targeted for smallholder irrigation. Due to limited funding, irrigation development has been very slow, despite having potential provinces suited to gravity irrigation systems where perennial streams were yet to be fully utilized.</p> <p>The JICA development study on Capacity Building and Development for Smallholder Irrigation Schemes in Northern and Luapula Provinces in the Republic of Zambia” (hereinafter referred to as “the Study”), established a package of development technologies on community-based smallholder irrigation schemes (the COBSI Approach). The Study demonstrated the effectiveness of the technical package through a pilot scheme carried out in Northern and Luapula Provinces. Its implementation was appreciated as a very unique and viable approach. Given the fruitful outcomes from the Study, the Government of the Republic of Zambia (hereinafter referred to as “GRZ”) recognized the COBSI schemes as being one of the most cost-effective irrigation systems suited in areas where water potential was high. In order to further promote the COBSI schemes, GRZ requested Japan's technical cooperation and the “Technical Cooperation Project on Community-based Smallholder Irrigation (hereinafter referred to as “the Project)”. Accordingly, the Project commenced operations in May 2013.</p>	

## 1-2. Project Overview

(1) **Overall Goal:** Irrigated agriculture production in the target areas is increased.

(2) **Project Purpose:** To promote and increase irrigated land through the provision of irrigation infrastructure for smallholder farmers in the target areas

### (3) Outputs:

1) Through hands-on experience, practical skills in design, construction, operation, and maintenance of permanent irrigation facilities for smallholder irrigation schemes are transferred to TSB staff.

2) Through hands-on experience, practical skills in construction, operation, and maintenance of permanent irrigation facilities for smallholder irrigation schemes are transferred to MAL extension officers.

3) Knowledge and skills of farmers in irrigated farming and operation and maintenance of upgraded permanent irrigation schemes and facilities are improved.

### (4) Inputs (as of the Mid-term Review)

Japanese side :

Dispatch of Experts: 8

Training in Japan: 1

Training in third country: 1 (Kenya)

Equipment: photocopy machine, color printer, laptop computers, vehicles, etc.

Local cost: 56,135,000 Japanese Yen (JPY), 3,197,000 Zambian Kwacha (Zkw)

1 Zkw is approximately 17.564 JPY based on the designation rate.

Zambian side :

Counterpart 9 from MAL, TSB officers, extension officers, farmer groups

Land and Facilities: Project office and storage of construction tools of irrigation facilities

## 2. Evaluation Team

<b>Members of Evaluation Team</b>	<b>Leader: Mr. Shinjiro AMAMEISHI</b> Director, Team 4, Agricultural and Rural Development, Group2, Rural Development Dept., JICA	
	<b>Cooperation Planning: Mr. Takuya OIWA</b> Associate Expert, Team 4, Agricultural and Rural Development Group2, Rural Development Dept., JICA	
	<b>Evaluation Analysis: Atau Kishinami</b> Senior Consultant, International Development Associates Ltd	
<b>Period of Evaluation</b>	<b>Day/ month/ Year - Day/ month/ Year</b> 24/11/2014 – 11/12/2014	<b>Type of Evaluation :</b> Mid-term Review



### **3.PROJECT PERFORMANCE**

#### **3-1. Achievements**

##### **(1) Performance of Outputs**

The project activities are carried out in accordance with PO and Outputs are partially achieved.

##### **1) Output 1**

As of December 2014, a total of 12 TSB officers have experienced designing, construction and O&M of a total of seven (7) permanent weirs. It should be noted that even though they have not engaged in actual constructions, a total of 31 TSB officers acquired training experience through Kick-off Training; 34 TSB officers through Mid-term training. As a result of questionnaire survey conducted in November 2014, the data was compiled for a total of 423 simple irrigation schemes developed in the Study. It was then found that approximately 25% of the existing simple schemes maintain potential for the upgrading to permanent schemes.

##### **2) Output 2**

A total of 56 extension officers have acquired training experiences on smallholder irrigation farming and operation and maintenance of smallholder irrigation schemes through the Kick-off Training and, 52 farmers acquired such experience and skills through Mid-term Training. Among 56 extension officers, 40 officers (approximately 70%) have disseminated technologies concerned to farmer groups, according to the annual evaluation workshop held in November 2014.

##### **3) Output 3**

No information was obtained, since permanent weirs are still under construction. It will be studied during the remaining Project period. It is reported that 56% of farmers who use simple weirs developed by the Project have applied at least one (1) technology disseminated by the trained officers.

##### **(2) Performance of the Purpose**

As of December 2014, seven (7) permanent weirs are under construction. Although the size of the irrigated area is yet to be confirmed since permanent weirs are still under construction, 35 hectares would be the estimated to be irrigated. The Project plans to measure the actual size that is covered by the community-based smallholder irrigation schemes during the remaining period of the Project. The construction sites were selected from such schemes where irrigated agriculture is already well practiced through simple weirs, which indicates high possibility of introducing improved irrigated farming with community-based smallholder irrigation schemes.

##### **(3) Performance of Overall Goals**

Since constructions of permanent weirs started in September 2014, the progress of the indicator “increase in crop production” is assessed during the remaining period of the Project.

#### **3-2. Summary of Evaluation Results**

##### **(1) Relevance**

The relevance is high for the following reasons.

The Project is consistent with the national and agriculture development policies of Zambia, such as National Irrigation Policy (NIP) and National Agriculture Policy (NAP), as well as the cooperation policies of Japan, including the enhancement of irrigated area. As for necessity, TSB and extension officers are expected to instruct farmer groups and they highly evaluate the practical trainings provided by the Project. In addition, 70% of farmers live under the poverty line, despite relatively high annual precipitation of rain, and they are expected to enhance the crop production and income.

## **(2) Effectiveness**

The effectiveness is relatively high for the following reasons.

Project activities have been carried out in accordance with Plan of Operation (PO) and Outputs have gradually been generated. Therefore, it is considered that the Project Purpose of “increase in irrigated land” will be realized. However, since numerical targets of objectively verifiable indicators were not set and constructions of permanent weirs were not completed at the time of the Mid-term Review, it is essential to monitor the progress during the remaining period of the Project. Three (3) Outputs are necessary and sufficient factors for the achievement of the Project Purpose.

## **(3) Efficiency**

The efficiency is intermediate for the following reasons.

As mentioned above, Outputs have gradually been generated. The training, which is one of the most important elements of the Project, is highly evaluated by most of the participants in terms of the contents, duration and the instructors and is fully utilized and practiced in the actual constructions of permanent weirs and irrigated agriculture. In general, inputs from the Japanese side, particularly the provision of fuel for motorbikes has been made possible for extension officers to make regular visit to the simple and permanent irrigation facilities, which is an essential activity/requirement for counterpart officers. However, inputs from the Zambian side, such as operational costs, are not satisfactory, although assignment of counterpart personnel and provision of office space were conducted as planned.

## **(4) Impact**

It was difficult to make prospects for the achievement of the Overall Goal, since constructions of permanent weirs were not completed at the time of the Mid-term Review. However, some positive impacts are observed. For instance, Farmers have started to conduct joint activities that have been initiated by the Project and have been trying to diversify farming to include fish farming. No negative impacts are observed.

## **(5) Sustainability**

Sustainability is intermediate for the following reasons. Sustainability would be strengthened when the “Recommendations” specified in this summary are met.

The National Irrigation Policy (NIP), established in line with National Agriculture Plan, aims at promoting the use of irrigations for sustainable agricultural development and therefore, political support

is expected. The project activities are consistent with those of counterpart personnel and can be managed by the implementing agency and therefore, institutional sustainability is considered to be secured, while constraints are pointed out in terms of human resources and finance. In particular, low rate of budget disbursement of MAL hinders the financial sustainability. Regarding the technical sustainability of the implementing agency, it is recognized that TSB officers do not have enough experience in designing permanent weirs and that the number of technical staff is not sufficient.

### **3-3. Factors that have promoted project**

#### **(1) Planning**

The Project approach, which is under the process of technology transfer: from the project team to the TSB and extension officers, and from the TSB and extension officers to the peers and farmers”, is appropriate, considering the limited personnel engaged in irrigation development.

#### **(2) Implementation Process**

The development of simple weirs during the Study was quite useful in constructing permanent weirs, since permanent weirs are effectively constructed by analyzing important factors, such as water flow and geographical features, through the experiences obtained by simple weirs.

### **3-4. Factors that have inhibited project**

#### **(1) Planning**

After the Project commencement, despite the agreed framework of cooperation between both Japan and Zambia, MAL requested to delete activities concerning simple weirs. Based on the request, activities concerned were removed and a focus is put on activities for permanent weirs.

#### **(2) Implementation Process**

In Zambia, the budget allocation tends to be prioritized for infrastructure constructions and MAL has been facing a financial challenge. As of July 2014, the budget disbursement to the Provinces remained between 15%-20% of the activity budget of the year. As a result, disbursement for the mobilization of Government officers and the Government’s role in the construction of permanent weir has been hindered.

### **3-5. Conclusions**

The Project activities have been conducted in accordance with PDM and PO and accordingly, Outputs show some progress. However, since some indicators at the Project Purpose and Output levels are set without target figures, there were limitations on the numerical assessment. Evaluation based on five criteria (Relevance, Effectiveness, Efficiency, Impact and Sustainability) showed some positive results; high relevancy and relatively high progress of Outputs. It also clarified some negative aspects especially concerning sustainability such as the low rate of budget disbursement, which has affected DSA for TSB and extension officers as well as mobilization of officers that resulted in insufficient fuel and spare parts for extension activities by motorbikes. In order to overcome the situation, the Team

made several recommendations that are expected to be carried out by the Project team and GRZ. Sustainability would be strengthened when the recommendations specified in the next section are fulfilled.

### **3-6. Recommendations**

#### **3-6-1. Recommended Actions to be taken by the Project Teams**

##### (1) Enhancement of the Project's Positive Effects

The Team recommended the following items for the achievement of the Project Purpose, which are i) to increase No. of beneficiaries farmer groups and ii) to increase irrigated area.

##### 1) Promotion of Construction of Simple Weirs

Despite the fact that the Project focus is on the permanent weir schemes, the Team established the fact that the simple weir is still the entry point to the permanent weir scheme. Simple weir scheme based on the COBSI Approach is the most effective and easiest way in terms of the efficiency and cost performance. Promotion of simple weirs highly contributes to the achievement of the Project Purpose and the capacity concerning simple weirs should be strengthened within the framework of the Project.

2) Arising from the visits to various schemes, it is observed that farmers are facing challenges in water management, marketing and crop management. It is, therefore, recommended that the Project should promote collaboration with DOA and other relevant departments to address these challenges. Regarding marketing, it is noted that PACO of Northern Province was sent to participate in the training of JICA on the market-oriented agriculture promotion in Japan. Thus, it is expected that the obtained knowledge will be disseminated to strengthen the relevant activities of the Project.

##### (2) PDM Revision

The Team recommended the following revision of PDM, including the incorporation of above-mentioned "promotion of simple weirs into the cooperation framework and the revisions were accepted by Joint Coordination Committee.

- Incorporation of Promotion of Simple Weirs into the Project Framework

"Permanent irrigation facilities" specified in Outputs 1, 2 and 3 are to be modified to "simple and permanent irrigation facilities" in order to incorporate simple weirs into the project framework.

- Clarification of Objectively Verifiable Indicator at the Overall Goal Level

- The number of target farmer groups is set at 700.

- Clarification of Objectively Verifiable Indicator at the Project Purpose Level

- The number of target farmer groups is set at 500.
- Target irrigated area is set at 700ha.

- Clarification of Objectively Verifiable Indicator at the Output Level

- Output 1: The number of existing simple irrigation schemes to be surveyed is set at 400.

The number of simple and permanent weirs to be developed is set at 500.

- Output 2: The number of participants of trainings is set at 150.

### (3) Collaboration with other stakeholders

The Team recognized that the COBSI Approach, consisting of i) use of local materials and ii) improvement of access to water for farming by smallholder farmers, is unique and effective way of developing smallholder irrigation. On the other hand, TSB and extension officers have been facing challenges such as insufficient means of transportation, fuel and Daily Subsistence Allowance (DSA), which hinders the promotion of the COBSI Approach. In order to improve such situations, it is recommended to collaborate with other stakeholders at operation level to achieve synergy effects.

### **3-6-2. Recommended Actions to be taken by GRZ**

#### (1) Budget disbursement to the Project by GRZ

MAL has taken into consideration budget allocation to the Project since the project inception. However, actual budget disbursement has been quite low to enable yearly planning and the achievement of sufficient project results. It is strongly recommended that MAL should commit itself to provide adequate funds to support the project activities including operation costs such as Daily Subsistence Allowance (DSA) and transport needs for MAL staff.

#### (2) Strengthening of the linkage between MAL and the Project

It is strongly desirable that MAL takes initiative to engage with the all stakeholders in the project area to complement each other especially in resource utilization.

#### (3) Collaboration with relevant departments

Arising from the visits to various schemes, the Team observed that farmers are facing challenges in water management, marketing and crop management. The Team, therefore, recommends that DOA and other relevant departments should take an initiative in addressing these challenges.

#### (4) Fee collection for irrigation facility repair

The Team recognized some of the irrigation schemes in the project area have been collecting fees from scheme members to cater for maintenance of irrigation facilities. It is recommended that MAL should encourage the initiative across all the irrigation schemes.

### **3-7. Lessons Learnt**

The following are the lessons learnt for new projects or on-going similar projects.

#### (1) The importance of developing simple weirs before constructing permanent ones

TSB officers, extension officers and farmers, expressed that the development of simple weirs is essential as an entry point before constructing permanent weirs. By doing so, farmers can experience the use of irrigation and recognize its importance and learn to appreciate the facility before the construction of permanent weirs. This is also useful in analyzing the important factors in constructing permanent weirs, such as water flow and geographical features. This process is obviously quite important, considering the case of other donor's experience where a permanent weir was constructed without preparing a simple weir. The weir was totally abandoned without any use by farmers because of

lack of appreciation of irrigation agriculture by farmers and improper alignment of canals.

# 第1章 調査の概要

## 1-1 プロジェクトの背景と調査団の派遣の目的

### 1-1-1 プロジェクトの背景・経緯

ザンビア共和国（以下、「ザンビア」と記す）では、就業人口の約50%、農村部人口の約90%が農業に従事しており、農業人口の約76%が土地所有1ha未満の小規模農家である。小規模農家の多くは灌漑施設へのアクセスがなく、天水依存型農業に従事しているため、干ばつ・洪水など気候変動の影響に極めて脆弱であり、これまでも食料不足に直面してきた。

他方、ザンビアは水量が豊富で季節変動の少ない河川も多く、灌漑開発に係る高いポテンシャルを有している。そのため、ザンビア政府は小規模農家向け灌漑開発の推進を通じて農業生産性の向上を図ることをめざしており、JICAは、ザンビア政府の要請に基づき、比較的降水量が多く表流水が豊富で重力式灌漑の導入ポテンシャルが高い北部州及びルアブラ州を対象に、開発調査「小規模農家のための灌漑システム開発計画調査（2009～2011年）」（以下、「開発調査COBSI」と記す）を実施した。開発調査COBSIでは、住民参加型により、①現地で入手可能な自然材料（木・竹・粘土・石等）を用いた「簡易堰」の建設、②簡易堰のうち維持管理効果の高い堰を対象に粗石練積みやコンクリートでアップグレードする「恒久堰」の建設、の2種類の小規模灌漑開発に係るパイロット事業を実施した。その結果、上記2種類の小規模灌漑開発手法の有効性及び同手法の他地域への普及展開の可能性が確認されたことから、北部州及びルアブラ州に対する同手法導入のための行動計画が策定された。

これらの経緯から、ザンビア政府は開発調査COBSIの成果を高く評価し、小規模灌漑開発手法を普及することを目標とした技術協力をわが国に要請した。本技術協力プロジェクト「小規模農民のための灌漑開発プロジェクト」は、2012年11月に署名・交換（2013年7月に修正・署名・交換）されたR/Dに基づき、2013年5月より協力を開始した。

しかしながら、協力開始後、両国間で協力内容は合意済みであったにもかかわらず、MAL側から簡易堰に関する活動の削除が提起された。その後、JICAは急遽調査団を派遣しMALと協議した結果、やむを得ず簡易堰を削除し恒久堰を中心に活動を展開することとし、同年7月R/D変更に関するM/Dが合意・署名した。他方、(ア)地形的、技術的観点からも、簡易堰を小規模灌漑のエントリーポイントとする必要性が高い、(イ)簡易堰に係る活動の削除を主張していた農業省関係者（次官、農業局長）が職を離れたことから、簡易堰に関する活動を再びPDMに加える方向で可能性を探ってきた。

### 1-1-2 調査団派遣の目的

ザンビア側とJICAが合同でプロジェクト目標や成果の達成状況を検証し、評価を行う。また、評価結果に基づきプロジェクト後半の活動計画を検討し、改善策の提言や教訓の抽出を取りまとめる。同結果を中間レビュー報告書として取りまとめたうえで、内容を合意することを目的とする。

## 1-2 団員構成

### 【日本側】

担当分野	氏名	所属
団長/総括	天目石 慎二郎	JICA 農村開発部 農業・農業農村開発第二グループ 第四チーム 課長
協力企画	大岩 拓也	JICA 農村開発部 農業・農村開発第二グループ 第四チーム ジュニア専門員
評価分析	岸並 賜	株式会社国際開発アソシエイツ 国際協力部 シニアコンサル タント

### 【ザンビア側】

担当分野	氏名	所属
団長	Mr. Emmanuel Mabvuto NYIRENDA	Principal Irrigation Engineer, Department of Agriculture, Ministry of Agriculture and Livestock
評価団員	Ms. Harriet MATIPA	Economist, Policy and Planning Department, Ministry of Agriculture and Livestock

## 1-3 調査日程

2014年11月24日～12月11日（詳細日程は、付属資料1を参照のこと）



## 第2章 プロジェクトの概要

### 2-1 基本計画

PDM version 0 に基づくプロジェクト概要は、以下のとおりである。

#### (1) 上位目標

対象地域における灌漑農業生産が向上する。

#### (2) プロジェクト目標

対象地域における灌漑施設の整備を通じ灌漑面積が増加する。

#### (3) 成果

成果1： 実地研修を通じ、小規模灌漑スキームによる恒久堰設計、建設、運営、管理技術が農業畜産省（MAL）農業局技術サービス部門（TSB）職員に移転される。

成果2： 実地研修を通じ、小規模灌漑スキームによる恒久堰建設、運営、管理技術が MAL 普及員に移転される。

成果3： 灌漑農業やアップグレードされた恒久堰の運営、維持管理に対する農家の知識や技術が向上する。

#### (4) 活動

成果1を達成するための活動：

1-1. TSB 職員に対し、小規模灌漑スキームの建設、維持、運営に係るグループ研修を行う。

1-2. TSB 職員を対象にした実地研修を通じて、農家に対し、小規模灌漑スキームの基礎的な運営、維持に係る研修を行う。

成果2を達成するための活動：

2-1. 普及員に対し、小規模灌漑スキームの建設、維持、運営に係るグループ研修を行う。

成果3を達成するための活動：

3-1. 普及員に対し、農地内の水管理に係るグループ研修を行う。

3-2. 対象地域の農家に対し、農地内の水管理に係る知識や技術を普及する。

3-3. 普及員に対し、灌漑作物生産技術に係るグループ研修を行う。

3-4. 灌漑による作物栽培技術にかかる知識や技術を対象地の農民に普及する。

#### (5) プロジェクト対象地域

北部州、ムチンガ州、ルアプラ州

#### (6) ターゲット・グループ（最終裨益者）

上記対象地域における TSB 職員、普及員及び小規模農家

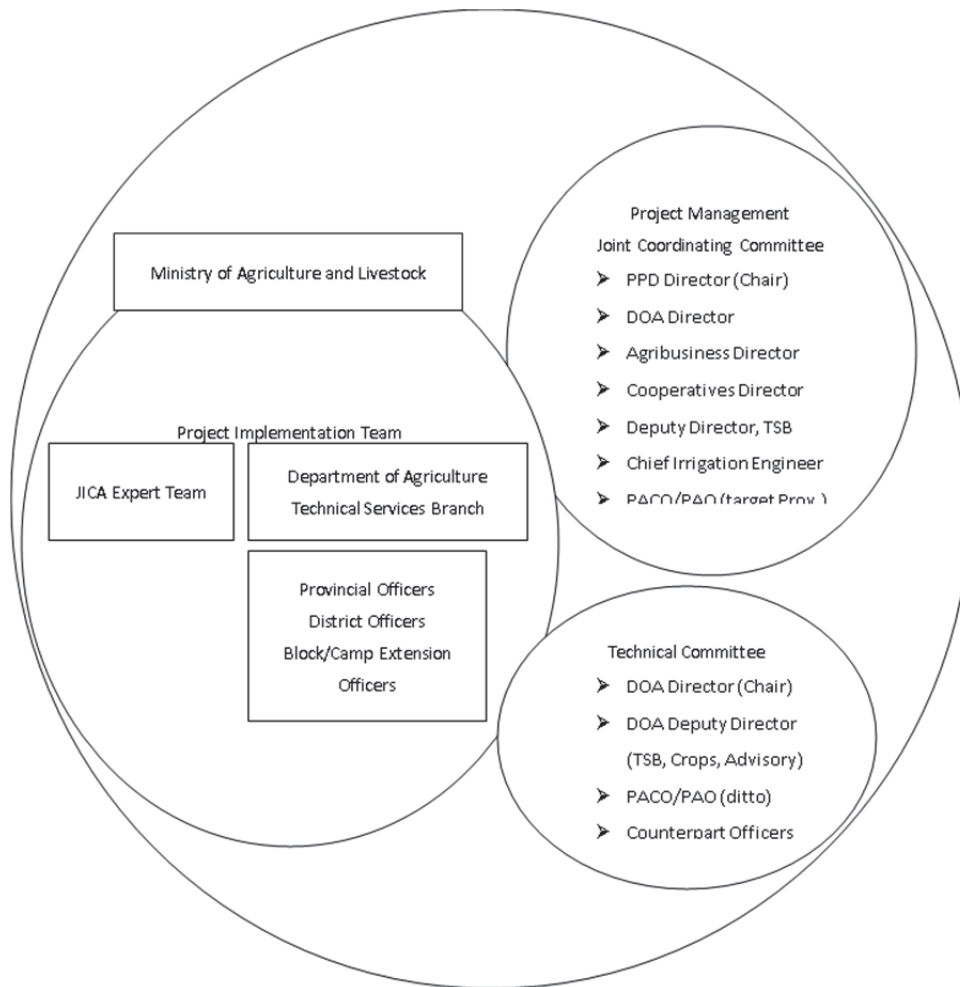
(7) プロジェクト期間

2013年5月7日から2016年12月31日まで（約3年7カ月間）

2-2 実施体制

プロジェクト活動は、MALのTSB職員とMALの州レベル、郡レベル（郡のさらに下の行政単位であるブロック、キャンプを含む）の事務所に配置されているTSB職員、普及員及びJICA専門家で実施された。以下の図にプロジェクトの実施体制概念図を示す。

プロジェクトの実施体制概念図



プロジェクトの実施体制概念図

## 第3章 中間レビュー評価の方法

### 3-1 評価手法

本中間レビューは、「新 JICA 事業評価ガイドライン第 1 版（2010 年）」に沿って、日本側及びザンビア側メンバーで構成される合同評価チームを結成し、プロジェクト関連資料のレビュー、プロジェクト関係者へのヒアリング、プロジェクト活動で建設された簡易堰及び建設中の恒久堰の視察及び裨益農家へのインタビューを実施し、PDM に基づき合同評価を行ったものである。評価においては、プロジェクトの実施プロセス、プロジェクト活動の進捗状況、プロジェクトの実績・成果の把握と分析を行い、また、5 項目評価（妥当性、有効性、効率性、インパクト、持続性）の観点からの評価も行った。現地においては、評価結果を英文報告書に取りまとめ、評価結果概要を、JCC 開催時にプロジェクト関係者に説明した。

### 3-2 評価項目

本プロジェクトに関する各種資料（詳細計画策定調査報告書、業務進捗報告書、プロジェクトチームが作成した中間レビュー向け事前資料などを参考にしつつ、また、PDM に基づき、プロジェクトの成果・実績、5 項目評価、実施プロセスに関する評価設問と収集が必要なデータ等を設定した。

### 3-3 データ収集方法

情報・データ収集は以下の方法により実施した。

情報・データ 収集方法	目的	主な情報源
①文献調査	プロジェクトに関連する政策、プロジェクトの実績に関連する資料	<ul style="list-style-type: none"> <li>◆ ザンビア政府の第 6 次国家開発計画改訂版 2013-2016 (The Revised Sixth National Development Plan 2013-2016)</li> <li>◆ 国家農業政策（改訂版 2013 年 12 月）〔The National Agricultural Policy (revised draft in December 2013)〕</li> <li>◆ 国家灌漑計画 2004-2015 (The National Irrigation Policy 2004-2015)</li> <li>◆ ザンビア国 国別援助方針（2014 年 6 月）（外務省）</li> <li>◆ ザンビア国小規模農民のための灌漑システム開発計画調査（JICA）</li> <li>◆ 詳細計画策定調査報告書（JICA）</li> <li>◆ 業務進捗報告書 No.1（2014 年 3 月）（業務実施コンサルタント）</li> <li>◆ 業務進捗報告書 No.2（2014 年 8 月）（業務実施コンサルタント）</li> <li>◆ 専門家作成のプロジェクトの投入・活動・実績に関する資料</li> </ul>
②インタビュー	プロジェクトの実績・進捗状況及び実施プロセスに関するヒアリング・確認	<ul style="list-style-type: none"> <li>◆ 日本人専門家（業務実施コンサルタント 3 名）</li> <li>◆ プロジェクト実施州農業調整官（PACO）並びにカウンターパート（TSB 職員、普及員）</li> <li>◆ MAL の州事務所及び郡事務所等の職員（ブロック、キャンプ配属の普及員を含む）</li> <li>◆ 裨益農家</li> </ul>
③質問票	プロジェクトの実績、成果の発現状況、効率性、インパクト、持続性に関連する事項の把握	<ul style="list-style-type: none"> <li>◆ 日本人専門家</li> <li>◆ カウンターパート（TSB 職員、普及員）</li> </ul>

## 第4章 プロジェクトの実績と実施プロセス

### 4-1 投入実績

#### 4-1-1 日本側投入

##### (1) 専門家の派遣

8名の専門家が、①チームリーダー/灌漑計画及び運営、②副チームリーダー/農業システム/研修計画、③灌漑施設設計/建設管理、④水管理/灌漑施設設計/建設管理(2)、⑤農業マーケット、⑥農村社会/農民組織/ジェンダー、⑦環境と社会配慮、⑧農業システム/農村社会(2)の分野で派遣された。

##### (2) 本邦研修・第三国研修

北部州の PACO が 2014 年 11 月 16 日から 29 日まで本邦研修を、また 2014 年 11 月 30 日から 12 月 6 日までケニアにおいて JICA によって実施された課題別研修「アフリカ地域市場志向型農業振興（行政官）(B)」を受講した。

##### (3) 機材供与

コピー機、カラープリンター、ラップトップ・コンピュータ、車両などが供与された。

##### (4) ローカルコスト

JICA によるローカルコストは、表 4-1 のとおりである。

表 4-1 JICA によるローカルコスト

項目	2013 年～2014 年	
	JPY	ZMK
一般	42,201,000	2,403,000
資機材	1,924,000	110,000
灌漑施設の建設	12,010,000	684,000
合計	56,135,000	3,197,000

注：実際の支出金額は、2014 年 12 月現在取りまとめ中であり、上記金額は予算である。なお、海外渡航費や専門家報酬は含まれていない。また、円は JICA 指定レート of 17.564 で換算している。

#### 4-1-2 ザンビア側投入

##### (1) カウンターパートの配置

MAL から合計 9 名のカウンターパートが配置された。また、州や郡の TSB 職員や普及員〔(Block Extension Officer : BEO)、(Camp Extension Officer : CEO)〕がカウンターパートとして配置された。

##### (2) ローカルコスト

JICA 専門家のためのプロジェクト事務室の電気代、水道代などの公共料金がザンビア側より負担された。

## 4-2 プロジェクト活動の進捗

プロジェクト活動は、一部例外はあるものの、おおむね計画どおり実施されている。中間レビュー時には、7つの恒久堰が建設中であり、2009年から2011年まで実施された開発調査 COBSI の実績から推定すると、建設後には約 35 ha が灌漑される予定である。これら恒久堰の建設は 2014 年 12 月に完了予定であるが、建設の完了が若干遅れている。理由として、農民の建設活動への参加が日によって予測より少ない場合があることや、恒久堰建設に係る建設資材の一部は農家グループ自ら調達しており、石や砂については建設サイトと離れた場所で採集し、建設サイトまで運ぶ手間がかかることなどが挙げられる。たとえば、プロジェクトが支援している Luapula 州 Mwensa 郡では、石などの資材採集場と恒久堰建設現場は約 10km、Nchelenge 郡では約 22km 離れている。

小規模灌漑の建設や O&M にかかる普及員向けのグループ研修は、目標人数に達していない。主な理由として、ザンビア側の要請により PDM を恒久堰中心の活動に変更する際、恒久堰建設堰数増加に伴い研修実施予算に制約が生じた。その後のプロジェクト活動では、研修に招聘する TSB 職員の数を増やす一方、普及員の招聘人数を年間 100 名規模から年間 40 名規模まで削減した。しかし、変更後の PDM に従前の PDM の指標（数字）が残されていたために齟齬が生じていた。本指標は、本中間レビューで適切な数字を検討し、JCC で協議され、承認された。

研修指導員研修（Training of Trainers : ToT）は主に州の TSB 職員対象に実施され、①プロジェクトの基本概念、②堰や水路の設計・建設、③灌漑農業などから構成されるキックオフ研修と、①キックオフ研修後の小規模灌漑開発のレビュー、②市場志向型農業、③農業開発におけるジェンダー配慮、④オン・ファームでの灌漑研修（含デモ・ファームの計画・活用）、⑤プロジェクトの進捗状況のモニタリングなどから構成される中間研修は主に郡 TSB 職員や普及員対象に実施された。

PDM に沿った活動に加え、プロジェクトはザンビア政府（Government of Republic of Zambia : GRZ）の了承のもと、恒久堰建設のエントリーポイントとして簡易堰建設にかかる技術支援を行っている。2014 年 12 月現在で、新たに建設された簡易堰が 121 カ所（推定灌漑裨益面積：93.9ha）、COBSI アプローチを利用して修復された簡易堰が 132 カ所（推定灌漑裨益面積：196.7ha）建設された。

## 4-3 成果（アウトプット）の達成状況

### 4-3-1 成果 1【実地研修を通じ、小規模灌漑スキームによる恒久堰設計、建設、運営、管理技術が農業畜産省（MAL）農業局技術サービス部門（TSB）職員に移転される】

成果 1 に係る達成状況は、表 4-2 のとおりである。プロジェクト活動はおおむね PO に沿って実施されている。まず、2014 年 5 月、ToT が日本人専門家により主に州 TSB 職員対象に実施された。キックオフ研修や中間研修は、小規模灌漑の設計、建設、O&M などについて、それぞれ同年 5 月と 7 月に開催された。また、2014 年 12 月現在、7つの恒久堰が建設中であり、少なくとも 1 名の郡 TSB 職員及び数人の州 TSB 職員が OJT の一環として各建設サイトにおいて指揮・管理を行うとともに、普及員が小規模灌漑施設の建設や基本的な O&M について農民に指導できるよう TSB 職員が普及員を支援している。2015 年度も乾季に同様の研修が実施される予定であり、成果 1 は徐々に達成されつつあると言える。

プロジェクトでは、TSB 職員に対し、PDM で規定された恒久堰に係る研修に加え、小規模灌漑スキームのエントリーポイントとして簡易堰に係る研修をキックオフ研修の中で実施した。

表 4-2 成果 1 の達成状況

指標	達成度
1-1 恒久堰アップグレードに向け、開発調査 COBSI で開発された最低 XX カ所の簡易堰サイトの開発調査準備調査活動を行う。	開発調査 COBSI で建設された簡易堰調査に関するアンケート（①地域の一般状況、②灌漑施設、③組織、④O&M、⑤農業活動、及び⑥マーケティングなどから構成）の結果、423 カ所の簡易堰のデータが取りまとめられた。そのうち、約 25%の簡易堰が恒久堰へアップグレード出来る可能性があると判断された（恒久堰化については、建設前に現場調査を行い、恒久堰に適した地形かどうかも判断される）。
1-2 最低 25 名の TSB 職員に対し、XX カ所の恒久堰設計、建設を通じて研修を行い、TSB 職員が技術を習得する。	2014 年 12 月現在、12 名の TSB 職員（北部州 TSB 職員 2 名、Luapula 州 TSB 職員 3 名、郡 TSB 職員 7 名）が設計、建設、O&M を実施することが可能である。プロジェクトではキックオフ研修と中間研修を通じて小規模灌漑スキーム（簡易堰、恒久堰）に係る技術移転を行っており、それぞれ 31 名、34 名の TSB 職員が参加している。両研修に参加している TSB 職員のうち、当該職員が担当するサイトで恒久堰建設が行われている場合は、併せて恒久堰建設に係る OJT を実施している。

#### 4-3-2 成果 2【実地研修を通じ、小規模灌漑スキームによる恒久堰建設、運営、管理技術が MAL 普及員に移転される】

成果 2 に係る達成状況は、表 4-3 のとおりである。プロジェクト活動はおおむね PO に沿って実施されており、キックオフ研修や中間研修、また堰の建設サイトでの TSB 職員の指導により、BEO、CEO の知識やスキルが着実に向上していると言える。しかしながら、上記 4-2 で述べたとおり、指標 2-1 で設定されている研修を受ける普及員の人数（300 名）については、プロジェクト開始当初から過大な指標であり、適正な数字に変更される必要があった。本中間レビューを通じ、活動内容の変更も加味した数字を本中間レビュー調査団で取りまとめ、JCC へ諮り、適切な人数へ変更された。

また、プロジェクトでは、普及員に対し、PDM で規定された恒久堰に係る研修に加え、小規模灌漑スキームエントリーポイントとして簡易堰に係る研修をキックオフ研修の中で実施した。簡易堰は、研修を受けた普及員と農民が現地で入手可能な資機材で建設可能な堰であり、建設場所の選定から数週間で建設することができる。中間レビューの時点で、キックオフ研修で簡易堰に係る研修を受けた普及員と農民により既に簡易堰が建設されており、乾季の灌漑農業が行われている農家グループもあった。これら簡易堰建設サイトでは、水へのアクセスが容易になったことにより労力が軽減されたなどのインタビュー結果が聞かれ、今後の成果発現に期待が持てる。しかしながら、灌漑農業に対する普及員や農家の知見は少なく、作物管理や圃

場内の水管理（畝間灌漑など）について改善の余地がある。

表 4-3 成果 2 の達成状況

指標	達成状況
2-1 300名以上の普及員が小規模農民向け灌漑農業や小規模灌漑スキームの運営、維持についての研修を受け、技術を習得する。	中間レビュー時点で、キックオフ研修で 56 名、中間研修で 52 名の普及員に対し小規模灌漑スキームによる恒久堰建設、運営、管理技術に係る技術移転を行った。また、これらの普及員は小規模灌漑スキームのエントリーポイントとして簡易堰に係る研修も受講している。
2-2 研修を受けた 90%以上の普及員が、担当地域の農家グループに対し、小規模農民向け灌漑農業や小規模灌漑スキームの運営、維持についての技術研修を行う。	中間レビュー時点で、恒久堰 7カ所が建設中である。これらのサイトは TSB 職員や普及員監督のもと、農家グループが建設に従事している。指標とする「灌漑農業」や「運営・維持」については、建設後、農家グループに技術移転される予定である。一方、2014 年 11 月に実施された評価ワークショップでの調査によると、プロジェクトで簡易堰建設について研修を受けた 56 名の普及員のうち、40 名（約 70%）が農家グループに対して技術移転を実施している。

#### 4-3-3 成果 3【灌漑農業やアップグレードされた恒久堰の運営、維持管理に対する農家の知識や技術が向上する】

成果 3 に係る達成状況は、表 4-4 のとおりである。プロジェクト活動はおおむね PO に沿って実施されており、普及員対象にオン・ファームでの水管理や灌漑作物生産技術にかかるキックオフ研修や中間研修が実施されている。本中間レビューの時点では恒久堰 7カ所が建設中であり、当該恒久堰サイトにおける裨益農民への灌漑農業に係る技術移転は今後のプロジェクト期間に実施される予定である。

プロジェクトでは、普及員に対し、PDM で規定された恒久堰に係る研修に加え、小規模灌漑スキームエントリーポイントとして簡易堰に係る研修を実施しており、本中間レビューの時点で既に簡易堰が建設され、灌漑農業を实践する農家グループがいくつか確認された。中間研修で灌漑農業に係る研修を受けた普及員により、農家グループに対し灌漑農業に対する技術移転が始まっているサイトも確認された。恒久堰建設後、同様の活動が恒久堰サイトで実施されることにより、成果 3 の達成が期待される。

また、開発調査 COBSI で恒久堰パイロットサイトとして選定された Mungwi 郡 Nselka では、開発調査 COBSI で研修を受けた普及員から農家グループに対し灌漑農業や市場志向型農業（マーケティングなど）などの知見が移転されており、実践されていた。同サイトでは裨益農民がメンバーとなり灌漑委員会が設立され水路の維持補修等を行っていた。

表 4-4 成果 3 の達成状況

指標	達成状況
3-1 50%以上の農家グループが、研修を受けた普及員を通じ最低1つ以上の灌漑農業技術指導を受ける。	中間レビュー時点で、恒久堰7堰が建設中であり、農家グループに対する「灌漑農業」技術移転は、建設終了後に実施される予定である。一方、2014年11月に実施された評価ワークショップでの調査によると、56%の農民がプロジェクトで簡易堰建設について研修を受けた普及員から学んだ灌漑農業技術を少なくとも1つ適用している。

#### 4-4 プロジェクト目標の達成見込み

【対象地域における灌漑施設の整備を通じ灌漑面積が増加する】

プロジェクト目標の達成度を測るため、小規模灌漑スキームを利用して灌漑農業を行う農家グループ数及び小規模灌漑スキームを利用した灌漑面積の2つの指標が設定されている。プロジェクト活動及び成果の進捗により、プロジェクト目標の達成が期待されるものの、いずれの指標も中間レビュー実施時には具体的な数字が設定されていない。プロジェクト後半の活動を考慮しながら具体的な指標（数字）を設定する必要がある。プロジェクト目標の達成状況は表 4-5 のとおりである。

表 4-5 プロジェクト目標の達成状況

指標	達成度
1 対象地域の XX 以上の農家グループが小規模灌漑スキームを利用した灌漑農業に従事する。	中間レビュー時点で、恒久堰7カ所が建設中である。中間レビュー時点で具体的な数字（指標）が設定されていないものの、恒久堰サイト1カ所につき、1農家グループが従事している。建設後の堰の維持管理などの持続性を念頭に裨益農家参加型の堰の建設を実施しており、農家グループの灌漑農業に対するコミットメントは高いと言える。
2 対象地域で小規模灌漑スキームによる灌漑面積を XXha 以上にする。	中間レビュー時点で、恒久堰7カ所が建設中であり、裨益面積を確定するのは不可能である。開発調査 COBSI では、同規模の恒久堰建設を行っており、開発調査 COBSI における実績を参考にすると、恒久堰1カ所あたり灌漑面積は約 5ha となり、中間レビュー時点で建設されている恒久堰における推定灌漑面積は約 35ha と見込まれる。 また、プロジェクトは GRZ の了承のもと、恒久堰建設のエントリーポイントとして簡易堰建設にかかる技術支援を行っており、中間レビュー時点で新たに建設されたが簡易堰が 121カ所（推定灌漑裨益面積：93.9ha）、COBSI アプローチを利用して修復された簡易堰が 132カ所（推定灌漑裨益面積：196.7ha）建設された。



## 4-5 実施プロセス

### 4-5-1 促進要因

技術移転の流れを「プロジェクト専門家⇒TSB 職員⇒普及員⇒農家グループ」と設定したことは、灌漑開発分野で人的リソースに制約があるザンビアの状況にかんがみられたアプローチであり、効果発現に貢献している。

また、開発調査 COBSI において簡易堰を建設し、建設サイトの妥当性や水流などを見極めたうえで、恒久堰へアップグレードするというステップを設けたことは、ザンビアにおける小規模灌漑スキームにおいては極めて有効であった。

### 4-5-2 阻害要因

協力開始後、両国間で協力内容が合意されていたにもかかわらず、MAL 側から簡易堰に関する活動の削除が提起された。その後、協議を重ねたものの、止むを得ず PDM から簡易堰に係る活動を削除し、恒久堰建設に係る活動を中心にプロジェクトが展開されている。簡易堰は、小規模灌漑スキームのエントリーポイントとして重要かつ有効であり、プロジェクト活動の根幹に対する理解についてザンビア側との共通認識を持つことが肝要である。プロジェクト後半の活動に向けて、ザンビア側と十分協議を行い小規模灌漑スキームについて共通の認識を醸成する必要がある。

また、ザンビアの予算が、インフラ建設に優先配分されていることもあり、2014 年の MAL の予算執行率は、同年 7 月現在で 15%~20%に留まっている。このため、TSB 職員や普及員のプロジェクト活動への参加や農家への技術移転の際の移動経費（モーターバイクの修理費用や燃料代）が十分ではなく、活動上の制約要因となっている。加えて、当初ザンビア側の費用負担により建設されるとされていた恒久堰建設も実施されていない。

## 第5章 評価5項目による評価結果と結論

### 5-1 妥当性

妥当性は以下の理由から高いと判断された。

#### (1) 必要性

対象地域は、農業従事者の人口が約85%と高く、ザンビアの主食であるメイズの主要生産地でもあるにもかかわらず、雨季に天水依存型農業を中心に営んでいる。年間降水量も比較的多く、季節変動の少ない河川を有することから灌漑ポテンシャルが高い地域であるが、灌漑開発が進んでおらず、灌漑事業へのニーズは高い。また、小規模農民の割合が高く、貧困率も約70%と高く、規模灌漑の導入により、作物の増産、収入の増加などが期待される。さらに、TSB職員や普及員は農民グループを指導する立場にあるが、プロジェクトで実施された研修内容は実用的であり、高く評価されている。よって、対象地域及びTSB職員、普及員、農民のニーズにも合致している。

#### (2) 優先度

NAPに沿って策定されたNIPは、①改良された灌漑技術・サービスの活用、②灌漑農業の生産性や安定性強化、③持続的な農業開発を促進するための灌漑利用の推進等を掲げている。また、ザンビア全体の灌漑ポテンシャルは、360,000haと推定されており、そのうち約154,800ha（このうち小規模農家向けの灌漑スキーム裨益面積は、約111,400ha）しか整備されていない。同国政府の年間開発目標は6,000haと高い目標を掲げており、優先度は高い。

#### (3) アプローチとしての妥当性

本プロジェクトは2009年から2011年に実施された開発調査COBSIで導入された小規模灌漑開発手法がザンビアで高く評価され、この手法を普及することを目標とした技術協力である。COBSIアプローチでは簡易堰建設をエントリーポイントとし、現地で入手可能な材料を用い、プロジェクトによる研修を受講したTSB職員指導のもと、裨益農民が施工にあたる。TSB職員、普及員の灌漑知識は十分ではなく、簡易堰をエントリーポイントとすることで、多くの職員が灌漑施設の設計、施工、維持管理、水管理の方法を習得することが出来る。また、農民グループが施工作业に参加することで、主体性が生まれ、その後の維持管理が持続的に行われることが期待できる。

### 5-2 有効性

有効性は以下の理由から、比較的高いと判断された。

#### (1) プロジェクト目標の達成度合い

前述のとおり、本中間レビュー時には、指標の数値目標が設定されておらず、またプロジェクトで実施している恒久堰の建設が完了していない。しかしながら、本プロジェクトの活動は活動計画(PO)に沿って順調に進捗しており、成果についても達成が見込まれることから、プロジェクト目標である「灌漑農地の拡大」の実現可能性は高いと思われる。

## (2) プロジェクト目標と成果の因果関係

PDM に記載されている 3 つの成果は、本プロジェクトのアプローチの基本的な概念であり構成要素となっている。すなわち、プロジェクトから TSB 職員、TSB 職員から普及員、TSB 職員及び普及員から農民への技術移転である。これらは、プロジェクト目標の達成に必要な項目であると言える。したがって、プロジェクト目標と成果の因果関係は理論的であり、外部条件が満たされれば、成果達成後にプロジェクト目標も達成されると考えられる。

## (3) 外部条件

プロジェクト目標が充分発現するためには、成果レベルの 3 つの外部条件「対象地域において小規模灌漑のための水源に負の影響を与える重大な出来事が発生しない」、「対象地域において農民間で重大な紛争が発生しない」及び「簡易堰から恒久堰へのアップグレードのための資金が供給される」が満たされる必要がある。このうち、資金の供給については、ザンビア政府の予算執行率が低いことから満たされているとは言い難い。結果として、ザンビア側予算で建設される予定であった恒久堰が、いまだに建設されていないなど、負の影響が生じている。

## 5-3 効率性

効率性は以下の理由から、中程度であると判断される。

### (1) 成果の達成度合い

第 4 章で述べたとおり、活動はおおむね計画どおりに実施されており、成果は着実に発現している。成果 1 については、恒久堰へのアップグレードの候補サイトとして、既に 423 の簡易堰が調査済みである。また、12 名の TSB 職員が OJT を含む研修を受けており、恒久堰建設に必要な経験やスキルを習得している。成果 2 に関しては、現行のプロジェクトの枠組みには簡易堰の建設が含まれていないため、研修を受ける普及員の数は目標値である 300 名に達する見込みはないが、約 70% の普及員が農家グループに技術移転を行っている。成果 3 の実績については今後、調査予定である。

プロジェクトの重要な構成要素である研修については、内容、講師、期間等の点で受講者からおおむね高く評価されており、実際の堰の建設や灌漑農業にも十分活かされている。数人の TSB 職員からは、恒久堰の設計・建設の研修期間が十分ではなかった、簡易堰の実際の建設に参加したい、などの意見・要望があった。なお、青年海外協力隊員（Japan Overseas Cooperation Volunteers : JOCV）が本プロジェクトの研修の一環として、マーケティングに関する講義を実施した。

### (2) 投入の活用度合い

本プロジェクトの運営において、日本側の投入は、おおむね計画どおりプロジェクト活動を実施するために活用され、成果の発現に貢献している。特に普及員の基本的な活動である恒久堰、簡易堰建設サイトへの訪問に不可欠なモーターバイクの燃料はプロジェクト活動が効率的に実施されている大きな要因となっている。一方、ザンビア側の投入は、カウンターパートの配置や事務所スペースなどは計画どおり実施されたものの、予算が執行されない等、

不十分な点も見られた。

### (3) 外部条件

成果が十分発現するためには、活動レベルの外部条件「対象地域において研修を受けた職員・普及員が業務を継続する」が満たされる必要があるが、数名の職員や普及員は予期せず異動になり、研修を受けたにもかかわらず実際に普及活動を行うことが出来なかった。したがって、外部条件は満たされているとは言い難い。

## 5-4 インパクト

上位目標が将来達成するかどうかを現時点で予想することは困難である。将来発現するプラスのインパクトが見られる。

### (1) 上位目標の達成見込み（将来）

#### 【対象地域における灌漑農業生産が向上する】

プロジェクト目標の達成度を測るための1つの指標が設定されている。上位目標の達成状況は表4-5のとおりである。中間レビュー時には恒久堰の建設が完了していなかったことから、プロジェクト活動で建設された灌漑堰を利用した灌漑農業はいまだ実施されておらず、本調査の段階で上位目標の達成に関する見込みを判断することは困難である。しかしながら、中間レビュー調査団は開発調査 COBSI 時に恒久堰へとアップグレードされたサイトを視察し、これらのサイトでは、灌漑により乾季における作物の生産が増加し、その結果収入が拡大していることが確認された。農民は収入・生活水準の向上により、家の建設や修理、肥料や殺虫剤など農業に不可欠なインプットの購入や子供達の通学などを実現した。本プロジェクトでも同様の効果が期待されている。

表5-1 上位目標の達成見込み

指標	達成度
1 対象地域における最低XXの農家グループにおいて、選定された作物の生産が、2020年3月までに増加する。	農民たちは伝統的な作物の他に、乾季に作付ける新規作物として米やサトウキビ、トマトやオレンジなどを栽培したいという意欲を持っており、作物の増産や収入の拡大が期待される。

### (2) その他のインパクト

以下のインパクトが観察された。

- プロジェクトにより共同作業が開始されたことで、地域農民の結束が強くなった。
- 農民が灌漑用水を利用した魚の養殖を計画するなど、収入源を多様化させようとする機運が生まれた。
- ジェンダー配慮については、プロジェクトの研修を通して研修参加者に徐々に浸透している。その結果、いくつかのサイトでは堰の建設に参加した女性に対し、農地が割りあてられる予定である。

- 負の効果、影響は特定されなかった。

## 5-5 持続性

持続性は、以下の理由から中程度と判断された。

### (1) 政策・制度面

上述 5-1「妥当性」で述べたとおり、プロジェクトの活動は、NAP に沿って策定され持続的な農業開発を促進するための灌漑利用の推進を掲げている NIP や第 6 次国家開発計画に沿ったものであることから、政策・制度的な持続性は確保される見込みである。普及員・農家レベルにおいては、現行の政策によって支援されている既存の農業普及システムを活用することによって、小規模灌漑を利用している農民への知識や技術・スキルの普及が可能である。

### (2) 技術面

プロジェクトの中心的な活動である恒久堰のエントリーポイントとして扱われている簡易堰建設技術は、必ずしも灌漑を専門としない普及員レベルでも習得できる非常に簡易なレベルであり、一方、恒久堰建設に必要な灌漑エンジニアリングは、技術的背景や経験が乏しい多くの TSB 職員にとっていまだ課題であり、特に堰の設計についてはサイトの状況に応じて千変万化するため経験と技術が必要になる。Luapula 州及び北部州の TSB 職員によると、現在恒久堰を独自に設計できる技術者は、各州に数人ほどしか存在しないとのことであった。加えて、灌漑技術者の人数についても十分とはいえない。

### (3) 組織・財政面

ザンビア側実施機関により事務所スペースやカウンターパート給与、光熱費などの一般管理費用が負担されているものの、2014 年 7 月現在、MAL による州への予算執行率は、予算比 15~20%にとどまっている。これにより、本プロジェクト内で北部州にザンビア側予算で建設する予定の恒久堰建設は、中間レビュー時点で恒久堰建設は着手されていない（当初予算 215,000ZMK 計上）。Luapula 州でも同様の状況が確認され、財政面での持続性の確保には課題がある。

プロジェクトの活動は実施機関の所掌範囲に合致しており、組織的な持続性については担保されている。

## 5-6 結論

プロジェクト活動はおおむね PDM 及び PO に沿って進捗しており、一部成果も発現している。特に開発調査 COBSI で確立された住民参加型の小規模農民のための灌漑開発アプローチ（本報告書では「COBSI アプローチ」（※）とする）は、MAL 内の灌漑部局が非常に脆弱であるザンビアにおいては非常に有効であると考えられる。しかしながら、プロジェクト目標及び成果レベルの指標の数値目標が設定されておらず、数値での客観的な評価は困難であった。評価 5 項目については、妥当性が高い、有効性は比較的高いと判断されたが、一方で持続性については、現状ではザンビア側の予算措置が十分でなく、特に COBSI アプローチの推進を担う TSB 職員や普及員の DSA や移動手手段確保（燃料代、バイクの修理代など）などがプロジェクト活動上の制約要因とな

っている。現地調査の結果を踏まえて、合同レビューチームとして第6章に記載した提言を行った。これら提言に沿ってプロジェクト、ザンビア政府がそれぞれ対応策を講じることにより、成果の発現、プロジェクト目標の達成が進展することが期待される。

(※) COBSI アプローチ

開発調査 COBSI で確立された住民参加型の小規模農民のための灌漑開発の一連の活動ステップ、小規模灌漑について研修を受けた TSB 職員・普及員と裨益農家（グループ）自身の参加により、現地で入手可能な自然材料（木・竹・粘土・石等）を用いた「簡易堰」を建設する。この過程で、灌漑堰建設に係る維持管理手法や灌漑農業に対する知見を習得する。

「簡易堰」をエントリーポイントとし、簡易堰のうち維持管理効果の高い堰を対象に、TSB 職員・普及員と裨益農家（グループ）自身の参加により粗石練積みやコンクリートでアップグレードする「恒久堰」を建設する。既に簡易堰建設を通じ、維持管理手法や灌漑農業に対する知見を有しているため、恒久堰建設後の維持管理体制が整備されていることから持続性が確保できる。

評価5項目による評価結果の要約を下表に示す。

項目	評価	備考
妥当性	高い	
有効性	比較的高い	
効率性	中程度	
インパクト	- - -	複数のプラスのインパクトが観察されたものの、上位目標達成見込みについて、現段階で判断することはできない。
持続性	中程度	

## 第6章 提言・教訓

### 6-1 提言

#### 6-1-1 プロジェクト実施チームに対する提言

##### (1) プロジェクト成果の促進

プロジェクト目標として2つの指標が設定されている。すなわち、COBSIアプローチを基にした農家（グループ）参加型の小規模灌漑スキームを通じた裨益農家グループ及び灌漑面積の増加である。合同評価団は、本中間レビューを通じ、プロジェクト期間前半におけるいくつかの課題を確認し、それらに対応するためのため、以下のとおり提言する。

1) プロジェクト活動は恒久堰スキームを中心としているものの、簡易堰スキームがいまだ恒久堰スキームのエントリーポイントとして重要であることが確認された。COBSIアプローチに基づく簡易堰スキームは効率性や費用対効果の面で最も優れており、かつ簡易な方法である。TSB職員や普及員、農家における簡易堰建設、運営、維持に係る能力は向上しつつあるも、十分ではない。簡易堰スキームはプロジェクト目標である裨益農家と灌漑裨益面積の増加に大きく貢献することから、この能力強化を更に推進していくことが望まれる。

2) プロジェクトサイト訪問を通じ、合同レビューチームは、農家が水管理、マーケティング、作物管理に対する課題に直面していることが確認された。そのため、プロジェクトはこれらの課題に対応するため、DoAや他の関係部局と更に連携していくことが望まれる。

マーケティングについては北部州 PACO が JICA の課題別研修「アフリカ地域市場志向型農業振興」に参加しているところ、当該研修で得られた知識について TSB 職員や普及員を通じ農家グループに普及されることが期待される。

##### (2) PDM の改定

現在使用している PDM について、具体的な数字が定められていない指標があることから、いくつかの文言の加筆・修正と具体的な数字を含む PDM 改定案（Version 1）を付属資料3（和文のとおりに提言する。主な変更点は以下のとおりである。

- 簡易堰への取り組みの明示化
  - ・ COBSI アプローチのエントリーポイントとして簡易堰に取り組むため、成果 1～3 における「恒久堰」に係る記述を「簡易堰及び恒久堰」に変更。
- 上位目標（指標の数値の明確化）
  - ・ ターゲット農家グループ数の決定（未定→700 農家グループ）
- プロジェクト目標（指標の数値の明確化）
  - ・ ターゲット農家グループ数の決定（未定→500 農家グループ）
  - ・ 目標とする灌漑面積の決定（未定→700ha（恒久堰 70ha、簡易堰 630ha））
  - ・ 上記指標以外にザンビア側は独自の指標として、「対象地域の 36 カ所で計 180ha の恒

久堰を建設する」を設定した。この指標はザンビア政府によって評価される。

● 成果（指標の数値の明確化）

- ・ 成果 1：調査する前フェーズで開発した灌漑スキーム数の決定（未定→400 堰）  
： 開発する簡易堰・恒久堰数の決定〔未定→500 堰（恒久堰 14 カ所、簡易堰 486 カ所）〕
- ・ 成果 2：研修参加者数の決定（未定→150 名）

(3) 他のステークホルダーとの連携

COBSI アプローチは現地資材を活用し低コストで小規模農家の農業用水へのアクセス改善を図る手法であり、小規模灌漑開発の観点からは非常に有効性が高く、更なる推進が求められる。現場レベルで他のステークホルダーとの連携（移動手段、燃料確保、日当不支給等の解消だけでなく、カウンターパートや裨益農家グループに対する研修など）を積極的に図ることにより、COBSI アプローチの面的展開に期待するとともに、双方のプロジェクトにおける相乗効果も期待できる。

6-1-2 ザンビア側に対する提言

(1) ザンビア政府によるプロジェクト実施に係る予算配分

ザンビア側により協力開始当初から本プロジェクトへの予算措置の検討がなされてきたものの、実際の予算の拠出レベルは非常に低く、プロジェクト目標及び成果の達成への影響が懸念される。ザンビア側は、特に MAL 職員（TSB 職員、普及員）に対する日当、移動手段確保に向けて十分な予算を確保することが求められる。

(2) MAL とプロジェクト間の連携強化

プロジェクト対象地域では他のプロジェクトも実施されていることから、相互に相乗効果を図っていくためにも MAL が中心となり連携の可能性を模索していくことが望まれる。

(3) MAL 内の部局間での連携促進

本プロジェクトの現地訪問を通じて、現地の小規模農家は水管理、作物管理、マーケティングに係る課題を抱えていることが判明した。これら問題の改善に向けて、DoA は他の関連部局と積極的に連携を図り、農民に対する技術的サポートを行っていくことが求められる。

(4) 灌漑設備の維持管理を目的とした水利費の積み立て

現地調査を通じて、複数の灌漑スキームが農民主導で維持管理を目的に水利費の徴収を行っていることを確認した。灌漑スキームの持続的な活用の観点から、MAL は各灌漑スキームにおける水利費の徴収を積極的に推進していくことが求められる。

6-2 教訓

TSB 職員、普及員及び農民は、簡易堰について、恒久堰を建設する前のエントリーポイントとして不可欠であると述べている。簡易堰を建設することによって、農民は恒久堰建設前に灌漑施



設の利用方法や、施設について正しく理解することができ、水流や地形の特徴など恒久堰建設に重要な要因を分析する際に役立てることが出来た。こういったプロセスは、簡易堰を建設することなく恒久堰を建設した他ドナーのケースを考えると極めて重要である。本プロジェクト対象地域にある他ドナーの小規模灌漑堰（恒久堰）は、上述のような地域農民の灌漑や灌漑農業に対する理解が十分ではなかったこと、また水路の設計が不適切であったこともあり、現状では全く使用されていない堰もあり、本教訓の好例である。

### 6-3 団長所感

#### (1) 簡易堰への取り組みについて

当初本プロジェクトでは簡易堰の面的展開を中核に据え、一部の簡易堰の恒久堰化に対する協力を計画していた。しかし、協力開始後当時の農業局長、次官が R/D 署名後であるにもかかわらず簡易堰への取り組みに難色を示したため、協議の結果やむを得ず簡易堰の文言を PDM から外すこととした経緯がある。しかし、その後も現場から簡易堰自体の有効性や技術的な容易さ、コスト面の優位性（低コスト）を評価する声が多数挙げられたことから、本中間レビューでは今後の簡易堰の取り扱いが焦点であった。

現地調査の結果、簡易堰は恒久堰化のエントリーポイントとして極めて高く評価されていることが確認されたことから（ザンビア側レビューチームも高く評価）、再び PDM 上に簡易堰への取り組みを明記することとし、ザンビア側との間で合意を得た。

恒久堰は他の灌漑開発手法と比較すると安価（US\$4,000/ha 程度）であるものの、簡易堰（US\$300/ha 程度）と比べると高コストであり、財政的な不透明さが残るザンビアにおいて簡易堰は有効な灌漑開発手法である。これまで恒久堰化の前段として付随的に簡易堰に係る研修を実施する程度にとどめてきたが、今後は本格的に活動を展開していくこととなる。簡易堰は、①成果の発現が容易（低リスク）、②低コストであることから、面的展開の可能性を秘めており、これを機に一層の面的拡大が期待される。

#### (2) ザンビア側による恒久堰建設の動き

北部地域における灌漑開発の重要性にかんがみ、ザンビア側では来年度恒久堰 36 カ所分の予算措置を予定しており（ザンビア側は確保済と明言）、これに伴い本プロジェクトによる技術支援の要請を受けた（JICA 経費での実施分 14 カ所を含めると計 50 カ所）。しかし、プロジェクトでは今年度実施した 7 カ所の恒久堰建設が単年度で許容できる限界と判断し、ザンビア側と協議の結果上記 36 カ所分に対してプロジェクト側では対象 TSB 職員への技術研修の実施までを支援し、建設自体はザンビア側で行う（プロジェクトの枠外）ことで合意した。

今回上記整理を行ったものの、今後実際に記 36 カ所分の予算の拠出が可能となった場合（これまでは計画値と拠出に乖離あり）ザンビア側で建設を進めていくこととなるが、プロジェクト側（特に日本人専門家チーム）に更なる技術支援を求めてくる可能性が排除できない。プロジェクトによる過度な支援は人的リソースや時間的制約のため困難であることから、現状では上記ラインで対応していくのが適当と考えられる。

(3) 協力期間の延長について

本プロジェクトの現在の協力期間は 2016 年 12 月までであるが、同時期は丁度乾季の終わりにあたり、灌漑工事など現場の活動が最盛期となる。この場合、特に恒久堰関連の活動が協力期間中に完了できないリスクが生じる（12/11 現在すべての恒久堰（計 7 カ所）の工事を継続中）。また、COBSI アプローチの更なる普及を念頭に本プロジェクトの成果を普及・広報マテリアルに取りまとめる必要性を考えると、協力期間の半年延長が適当と判断した。この点につき JCC で合同レビューチームとして提案を行い、本方向性につき了解を得た。

今後は協力期間を 2017 年 6 月 30 日まで延長する方向で日本側、ザンビア側ともに必要な手続きを進めていくこととする。

(4) プロジェクト活動の更なる普及・発信について

簡易堰は現場の材料を用いて普及員と農民だけで建設するものであり、過去にマラウイでの協力ではその後自立的な取り組みにより簡易堰の建設が面的に広がっていった実績を有する。ザンビアにおいてもマラウイ同様一層の面的広がりが期待できるアプローチと考えられる。本アプローチは現在ザンビア北部の一部で実施しているにすぎないが、本アプローチの発信如何では一層大きなインパクトを与えることも期待できる。

今後は今まで以上に普及員・農民を中心に幅広く広報・啓蒙普及に力を入れることにより、プロジェクトの枠組みを越えたインパクトの発現が期待される。

(5) 他機関との連携の可能性について（IFAD のプロジェクトとの連携）

現場レベルでの関連事業との連携を念頭に今回 IFAD ザンビア事務所と協議を行ったところ、本プロジェクトと IFAD の「Smallholder Productivity Promotion Programme (S3P)」の間で親和性が認められ（対象地域、灌漑開発の推進が重複）、連携できる可能性が非常に高いことを確認した。今後プロジェクト間の協議に移行していくことになるが、相互に補うとともに成果の最大化を図るべく活動レベルで具体的な連携案につき、協議を進めていくことが望まれる。

(6) SHEP アプローチとの連携について

北部州の農業分野の責任者（PACO）が SHEP の課題別研修に参加した。PACO へのインタビューの結果、北部州における SHEP の推進に非常に積極的であり、作成した Action Plan の推進に向けて近々農業省次官、関係局局長を招集し報告会を開催するとともに、予算確保の上関連活動を開始する強い意向を有していることを確認した。

本プロジェクトにおいて堰の建設後の営農関連活動を進めるうえで SHEP の視点は有効性が高い。本プロジェクトの場合既に 260 カ所（簡易堰 253 カ所、恒久堰 7 カ所）で堰の建設が進んでおり、すべてのサイトで等しく SHEP アプローチを導入していくのは事実上困難であるが、今後同視点のプロジェクト活動への反映のあり方につき具体的に検討していくことが望まれる。

## 付 属 資 料

1. 調査日程
2. PDM version 0 (英文)
3. PDM version 1 改定案 (和文)
4. 評価グリッド
5. 面談記録
6. ミニッツ及び合同評価報告書 (英文)



# 1. 調査日程

No.	月日		JICA側評価メンバー			ザンビア側評価メンバー
			天目石(JICA)	大岩(JICA)	岸並(コンサルタント)	Mr. Nyirenda & Ms. Matipa (MAL)
1	11月22日	土			日本発	
2	11月23日	日			ザンビア着	
3	11月24日	月			・MAL表敬 ・事務所打合せ	
4	11月25日	火			・団内打合せ(ザンビア事務所・JICA本部TV会議) ルサカーマンサ移動(陸路)	
5	11月26日	水			・ルアブラ州PACO・PAO表敬/DACO表敬 ・ルアブラ州マンサ郡現場視察(簡易堰・裨益農家インタビュー) ・ルアブラ州ムエンセ郡現場視察(恒久堰・裨益農家インタビュー)	
6	11月27日	木			・ルアブラ州ンチェレンゲ郡現場視察(恒久堰・裨益農家インタビュー)	
7	11月28日	金			・北部州ルイング郡現場視察(恒久堰・簡易堰・裨益農家インタビュー)	
8	11月29日	土		日本発	資料整理/報告書作成	
9	11月30日	日		ザンビア着 ルサカーカサマ(陸路)	資料整理/報告書作成	ザンビア着 ルサカーカサマ(陸路)
10	12月1日	月		ルサカーカサマ(陸路) ・北部州PACO、PAO、PS表敬/プロジェクト概要ブリーフィング ・団内打合せ		
11	12月2日	火	日本発		・北部州ムングイ郡現場視察(恒久堰・簡易堰・裨益農家インタビュー)	
12	12月3日	水	ザンビア着 ・MAL表敬(PS含) ・事務所打合せ		・北部州ムポロコ郡現場視察(簡易堰・恒久堰・裨益農家インタビュー)	
13	12月4日	木	ルサカーカサマ(陸路) ・団内打合せ		・ムテンガ州ムビカ郡現場視察(簡易堰・恒久堰・裨益農家インタビュー)	
14	12月5日	金			・プロジェクトカウンターパート インタビュー ・中間レビュー報告書 団内協議	
15	12月6日	土	カサマールサカ(陸路) ・中間レビュー報告書 団内協議(日本人のみ)			
16	12月7日	日	・中間レビュー報告書 作成 ・中間レビュー報告書 団内協議(日本人のみ)			
17	12月8日	月	・中間レビュー報告書 団内協議 ・NUSFA(National Union for Small-Scale Farmers in Zambia) インタビュー			
18	12月9日	火	・中間レビュー報告書 団内協議			
19	12月10日	水	・JCC(Joint Coordination Committee)/中間レビュー調査結果説明 ・中間レビュー結果をプロジェクト専門家との協議			
20	12月11日	木	・Minutes of Meeting署名に係る協議(農業畜産省) ・日本大使館報告 ・ザンビア事務所報告 ザンビア発			

**Annex I: Project Design Matrix (PDM)****REVISED VERSION****Version: 0**

Title of the Project: Technical Cooperation Project on Community-based Smallholder Irrigation (T-COBSI)

Project Period: From May 7 2013 to December 31 2016

Implementing Organization: Ministry of Agriculture and Livestock (MAL)

Target Areas: Districts where the pilot project was implemented under the Study for Capacity Building and Development for Community-based Smallholder Irrigation Schemes in Northern and Luapula Province in the Republic of Zambia in 2009 to 2011

Target Beneficiaries / Groups: TSB officers, extension officers and smallholder farmers in the target areas

<b>Narrative Summary</b>	<b>Objectively Verifiable Indicators</b>	<b>Means of Verification</b>	<b>Important Assumptions</b>
<b>Overall Goal</b> Irrigated agricultural production in the target areas is increased.	1. Production of target crops ( <b>Note 1</b> ) by at least XX farmer groups ( <b>Note 2</b> ) is increased in the target area by March 2020. ( <b>Note 4</b> )	* Annual reports of the districts	* Smallholder irrigation continues to be a focus area of the policies
<b>Project Purpose</b> To promote and increase irrigated land through the provision of irrigation infrastructure for smallholder farmers in the target areas.	1. More than XX farmer groups in the target area are engaged in improved irrigated farming with community-based smallholder irrigation schemes. ( <b>Note 2 &amp; 4</b> ) 2. The community-based smallholder irrigation schemes cover XX ha or more in target area. ( <b>Note 4</b> )	* Results of the Project's monitoring survey * Annual reports of the districts	* No drastic climate change to negatively affect the agricultural production takes place.  * Prices of agricultural produce and agro-inputs do not change drastically.
<b>Outputs</b> 1. Through hands-on experience, practical skills in design, construction, operation, and maintenance of permanent irrigation facilities for smallholder irrigation schemes is transferred to TSB staff.	1.1 Preparatory activities are conducted for at least XX existing simple irrigation schemes which were developed in the previous study in 2009 to 2011 for upgrading to permanent schemes. ( <b>Note 4</b> ) 1.2 At least 25 TSB staff acquire training experience and skills through design and construction of XX permanent irrigation facilities ( <b>Note 3 &amp; 4</b> )	* Project's training reports * Annual reports of the districts	* There is no drastic incidence to negatively affect the conditions of the sources of water for smallholder irrigation in the target areas.
2. Through hands-on experience, practical skills in construction, operation, and maintenance of permanent irrigation facilities for smallholder irrigation schemes is transferred to MAL extension officers.	2.1 More than 300 extension officers acquire training experience and skills in smallholder irrigation farming and on operation and maintenance of smallholder irrigation schemes. ( <b>Note 3</b> ) 2.2 More than 90% of trained extension officers disseminate techniques in smallholder irrigation farming and operation and maintenance of smallholder irrigation schemes to farmer groups in their respective areas.	* Project's training reports * Annual reports of the districts	* There is no serious conflict among the farmers in the target areas.  * Funds for upgrading of simple weirs to permanent weirs are provided.
3. Knowledge and skills of farmers in irrigated farming and operation and maintenance of upgraded permanent irrigation schemes and facilities are improved.	3.1 More than 50% of farmer groups in the developed schemes apply at least one of the irrigated farming technologies disseminated by the trained officers.	* Results of the Project's monitoring survey * Annual reports of the districts	

<p><b>Activities</b></p> <p>1.1 Conduct group training for TSB officers on design, construction, operation, and maintenance (O&amp;M) of smallholder irrigation schemes.</p> <p>1.2 Train farmers on basic O&amp;M of smallholder irrigation schemes through the on-the-job training (OJT) for TSB officers.</p> <hr/> <p>2.1 Conduct group training for extension officers on construction, O&amp;M of smallholder irrigation schemes.</p> <hr/> <p>3.1 Conduct group training for extension officers on the on-farm water management.</p> <p>3.2 Disseminate knowledge and techniques of on-farm water management to the farmers in the target areas.</p> <p>3.3 Conduct group training for extension officers on techniques of irrigated crop production.</p> <p>3.4 Disseminate knowledge and techniques of irrigated crop production to the farmers in the target areas.</p>	<p><u>Zambian Side</u></p> <ul style="list-style-type: none"> <li>- Assignment of Project personnel             <ul style="list-style-type: none"> <li>a. Project Director</li> <li>b. Project Manager</li> <li>c. Counterpart personnel</li> </ul> </li> <li>- Assignment of supporting staff</li> <li>- Provision of office spaces at DOA headquarters and in each province</li> <li>- Provision of operational costs</li> </ul>	<p><b>Inputs</b></p> <p><u>Japanese Side</u></p> <ul style="list-style-type: none"> <li>- Dispatch of experts in the relevant fields such as:             <ul style="list-style-type: none"> <li>1) Team Leader/ Irrigation Planning and Management</li> <li>2) Co-Team Leader/ Farming System/ Training Design</li> <li>3) Irrigation Facility Design and Construction Control</li> <li>4) Water Management/ Irrigation Facility Design and Construction Control (2)</li> <li>5) Agricultural Marketing</li> <li>6) Rural Society/ Farmers Organization/ Gender</li> <li>7) Environmental and Social Considerations</li> </ul> </li> <li>- Training of counterpart personnel in Japan and/or the 3<sup>rd</sup> country</li> <li>- Provision of machinery, equipment and materials for training activities</li> <li>- Supplemental operational cost as needs arise (as per rules and regulations of JICA's Technical Cooperation Projects)</li> </ul>	<p>* Trained officers continue their services in the target areas.</p> <hr/> <p><b>Preconditions</b></p> <ul style="list-style-type: none"> <li>* Peace and order situation in the target areas is stable</li> <li>* Rural communities in the target areas are willing to take part in the project activities</li> </ul>
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\* **Note 1:** The target crops to be the indicator will be selected through discussion among the members of the Project Implementation Team after the commencement of the Project.

\* **Note 2:** “Farmer groups” referred in the indicators are the groups of farmers in the targeted irrigation schemes.

\* **Note 3:** Figures of TSB staff /extension officers are derived from calculation based on Stage I of the Action Plan formulated by the former Study.

\* **Note 4:** The concrete figures are to be agreed upon based on the result of potential survey to be conducted in target areas as a part of the preparatory activities.

Version: 1

## プロジェクト・デザイン・マトリックス (PDM)

案件名：小規模農民のための灌漑開発プロジェクト (T-COBSI)

プロジェクト期間：2013年5月7日～2016年12月31日

実施機関：農業畜産省 (MAL)

対象地域：ザンビア共和国の北部州及びビラブラ州において 2009 年から 2011 年に実施された開発調査「小規模農家のための灌漑システム開発計画調査」のパイロット・プロジェクトが実施された郡

対象者／グループ：TSB 技術職員、普及員、対象地域の小規模農家

プロジェクトの要約	指標	指標データ入手手段	外部条件
上位目標 対象地域における灌漑農業生産が向上する。	1. 対象地域において 2020 年 3 月までに 700 以上の農家グループ (注 1) によって作物が増産される。	* 郡年次報告書	* 小規模灌漑が継続して政策の焦点となる。
プロジェクト目標 対象地域における灌漑施設の整備を通じ、灌漑面積が増加する。	1. 対象地域の 500 以上の農家グループ (注 1) が小規模灌漑スキームを利用した灌漑農業に従事する。 2. 対象地域で小規模灌漑スキームによる灌漑面積を 700ha (恒久堰により 70ha、簡易堰により 630ha) 以上 (注 2、注 3) にする。  上記指標以外にザンビア側は独自の指標「対象地域の 36 カ所で計 180ha の恒久堰を建設する」を設定した。この指標はザンビア政府によって評価される。	* プロジェクト・モニタリングの調査の結果 * 郡年次報告書	* 農業生産に負の影響を与える重大な気候変動が生じない。  * 農産物や農業への投入物の価格が大きく変動しない。
成果 1. 実地研修を通じ、小規模灌漑スキームによる簡易堰・恒久堰設計、建設、運営、管理技術が TSB 技術職員に移転される。	1.1 恒久堰アップグレードに向け、2009 年から 2011 年まで実施された開発調査 COBSI で開発された最低 400 カ所の簡易堰サイトの開発調査準備調査活動を行う。 1.2 最低 20 名の TSB 技術職員に対し、14 カ所の恒久堰及び 486 カ所の簡易堰の設計、建設を通じて 研修を行い、TSB 技術職員が経験・技術を習得する。 1.3 最低 15 名の TSB 技術職員が GRZ により建設される予定の 36 カ所の恒久堰 (注 4) にかかる 経験・技術を習得する。	* プロジェクト研修報告書 * 郡年次報告書	* 対象地域において小規模灌漑のための水源に負の影響を与える重大な出来事が発生しない。  * 対象地域において農民間で重大な紛争が発生しない。
2. 実地研修を通じ、小規模灌漑スキームによる簡易堰・恒久堰建設、運営、管理技術が MAL 普及員に移転される。	2.1 150 名以上の普及員が小規模農民向け灌漑農業や小規模灌漑スキームの運営、維持についての研修を受け、技術を習得する。 2.2 研修を受けた 90% 以上の普及員が、担当地域の農家グループに対し、小規模農民向け灌漑農業や小規模灌漑スキームの運営、維持についての技術研修を行う。	* プロジェクト研修報告書 * 郡年次報告書	* 簡易堰から恒久堰へのアップグレードのための資金が供給される。



<p>3. 灌漑農業やアップグレードされた簡易堰・恒久堰の運営、維持管理に対する農家の知識や技術が向上する。</p>	<p>3.1 50%以上の農家グループが、研修を受けた普及員を通じ最低1つ以上の灌漑農業技術指導を受ける。</p>	<p>* プロジェクト・モニタリングの調査の結果 * 郡年次報告書</p>	
<p>活動 1.1 小規模灌漑の設計、建設、運営・維持(O&amp;M)にかかるグループ研修をTSB技術職員のために実施する。 1.2 TSB技術職員のOJTを通じて、小規模灌漑の基本的O&amp;Mについて農民に研修を実施する。 2.1 小規模灌漑の建設、O&amp;Mにかかるグループ研修を普及員のために実施する。 3.1 農地の水管理にかかるグループ研修を普及員のために実施する。 3.2 農地の水管理にかかる知識や技術を対象地の農民に普及する。 3.3 灌漑による作物栽培技術にかかるグループ研修を普及員のために実施する。 3.4 灌漑による作物栽培技術にかかる知識や技術を対象地の農民に普及する。</p>	<p>ザンビア側</p> <ul style="list-style-type: none"> <li>- プロジェクトスタッフ配置             <ol style="list-style-type: none"> <li>1) プロジェクト・ダイレクター</li> <li>2) プロジェクトマネジャー</li> <li>3) カウンターパート</li> </ol> </li> <li>- 支援スタッフ配置</li> <li>- DoA 本部及び各対象州における事務所スペースの提供</li> <li>- オペレーション・コスト負担</li> </ul>	<p>投入 日本側</p> <ul style="list-style-type: none"> <li>- 以下の分野の専門家派遣             <ol style="list-style-type: none"> <li>1) チームリーダー/灌漑計画及び運営</li> <li>2) 副チームリーダー/農業システム/研修計画</li> <li>3) 灌漑施設設計/建設管理</li> <li>4) 水管理/灌漑施設設計/建設管理 (2)</li> <li>5) 農業マーケット</li> <li>6) 農村社会/農民組織/ジェンダー</li> <li>7) 環境と社会配慮</li> </ol> </li> <li>- 日本及び第三国でのカウンターパート研修</li> <li>- 研修活動のための資機材の供与</li> <li>- 必要に応じて、オペレーション・コストを補完 (JICA 技術協力プロジェクトの規定による)</li> </ul>	<p>*対象地域において研修を受けた職員・普及員が業務を継続する。</p> <p>前提条件</p> <ul style="list-style-type: none"> <li>* 対象地域において平和と秩序が保たれる。</li> <li>* 対象地域の農村コミュニティがプロジェクト活動に積極的に参加する。</li> </ul>

\* 注1: 指標の「農民グループ」は対象灌漑サイトのグループのことである。

\* 注2: 恒久堰でカバーされるエリアは、パイロット・フェーズにアップグレードされた恒久堰の平均灌漑面積を基に算出している。

\* 注3: 簡易堰でカバーされるエリアは、2014年の評価ワークショップのデータを基に算出している。

\* 注4: GRZはT-COBSIのために2015年の予算を確保している。

Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
Were the input made as planned?		Have the Japanese experts been dispatched as planned?	Comparison with the planned figures and fields	List of Japanese experts	Project records	Document review, interviews	Eight Japanese experts have been dispatched in the relevant fields specified in PDM.
		Has the counterpart training been conducted as planned?	Comparison with the planned figures	Records on counterpart training	Project records	Document review, interviews	one storage room is provided for temporary storing of construction equipment of irrigation facilities.
		Have the machinery, equipment and materials been provided as planned?	Comparison with the planned figures	List of equipment provision	Project records	Document review, interviews	Main equipment include copy machines, vehicles, printers and laptop computers. They are well operated and maintained. In addition, personnel of Northern PACO have participated in training courses in Japan and Kenya.
		Have the counterpart personnel been assigned as planned?	Comparison with the planned figures	List of counterpart personnel	Project records	Document review, interviews	Nine C/Ps are assigned from MAL and work as Project Implementation Unit (PIU) members in 3 target provinces.
		Have the project office space been provided as planned?	Comparison with the planned facilities	Information on the facilities	Project records, opinions of experts	Interviews, site visit	As for the properconductof the project, MAL provided the project team with an enough size of office space with electricity and five sets of desks and chairs.
		Have the budgets to cover operational costs allotted as planned by the Zambian side?	Comparison with the planned figures	Records on budgetary allocation	Project records	Document review, interviews	MAL faced a challenge in 2014 as the budget disbursement remains allegedly 15%-20% of the activity budget of the year. As the result, disbursement for the mobilization of government officers as well as the government's own initiative in construction of permanent weir have also been hindered. In Northern province, in particular, 215,000ZMK was budgeted for this project, which was to serve for the construction of two permanent weir schemes. Same is true with Luapula province. Notwithstanding, the counterpart agency has provided some physical properties for this project such as: 1) government-owned vehicles, 2) dumpy level, and 3) office space, all of which have contributed to the mobilization of provincial TSB officers for the supervision of the construction at remote areas.

Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
Achievement	Have the outputs been produced properly?	How many preparatory activities have been conducted for existing simple irrigation schemes which were developed in the previous study in 2009 to 2011 for upgrading to permanent schemes?	Degree of achievement	Information on farmer groups	Project records, DOA/TSB officials, extension officers and farmer groups staff	Document review, interview and discussion	Questionnaire survey was conducted and the data was compiled for a total of 413 simple irrigation schemes developed in the COBSI Study. It was then found that approximately 25% of the existing simple schemes maintain some potential for the upgrading to permanent schemes.
		How many TSB and other related personnel officers have acquired training experience and skills through design and construction of permanent irrigation facilities?	Degree of achievement	Information on the area covered by irrigation schemes		Document review, interview and discussion	A total of 31 TSB officers acquired training experience through Kick-off Training; 34 TSB officers through Mid-term training; and at least 10 TSB officers have experienced the planning, and construction of a total of 7 permanent weirs.
		How many extension officers have acquired training experience and skills in smallholder irrigation farming and operation and maintenance of smallholder irrigation schemes?	Degree of achievement	Information on the technology dissemination to the extension officers and farmer groups	Training records, DOA/TSB officials, extension officers and farmer groups	Document review, interview and discussion	A total of 62 extension officers have acquired training experiences in smallholder irrigation farming and operation and maintenance of smallholder irrigation schemes through the Kick-off Training and 52 extension officers through Mid-term training. The activities to train extension officers 3 The main target area is Northern, Muchinga and Luapula provinces, while the sub target area is North-western and Copperbelt provinces. Mid-Term Review (T-COBSI) 11 JICA were constrained for the sake of construction of permanent schemes; thus, the number of extension officer trained so far is limited and the likelihood to achieve 300 extension officers is pronouncedly low.
		What percent of trained extension officers disseminate techniques in smallholder irrigation farming and operation and maintenance of smallholder irrigation schemes to farmer groups in their respective areas?	Degree of achievement	Information on the technology dissemination to the farmers groups	Project records, DOA/TSB officials, extension officers	Document review, interview and discussion	The annual evaluation workshop is scheduled in November as to monitor the performance of extension officers trained, by which number of officers who disseminated that technologies will be confirmed. It is however expected that almost all the participants have managed one or more irrigation sites.

Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
Is the Project Purpose likely to be achieved?		What percent of farmer groups in the developed schemes apply at least one of the irrigated farming technologies disseminated by the trained extension officers?	Degree of achievement	Information of farmer activities	Project records, DOA/TSB officials, extension officers, farmer groups	Document review, interview and discussion	No information is obtained yet. It will be studied during the second phase of the project.
		How many farmer groups in the target area are engaged in improved irrigated farming with community-based smallholder irrigation schemes?	Degree of achievement	Information of farmer activities	Project records, DOA/TSB officials, extension officers, farmer groups	Document review, interview and discussion	
		How many hectares are covered by the community-based smallholder irrigation schemes?	Degree of achievement	Information of farmer activities	Project records, DOA/TSB officials, extension officers, farmer groups	Document review, interview and discussion	Current detailed figure is to be confirmed. The number of sites developed by JICA's budget is 8sites whichi is approximately 168ha.. (T-COBSI leaflet)
Have the activities been implemented as scheduled?		Has the decision making mechanism of the Project been functional?	Existence of problems and countermeasures	Information on the JCC and other decision making mechanisms	Project personnel, Project records	Interview, discussion with Project staff	Joint Coordination Committee has a decision-making function.
		Has the communication among JICA HQ, JICA country Office, DOA been smooth?	Existence of problems and countermeasures	Ways and contents of the regular transactions	Officers in charge at JICA HQ and JCIA Zambia Office, Staff of DOA/TSB, Project personnel, Project records	Interview, discussion with Project staff	
Have there been any problem related to the		Has the communication among the Project personnel (Japanese experts, C/Ps, extension officers and farmer groups) been smooth?	Existence of problems and countermeasures	Ways and contents of the daily and regular transactions among the Project personnel	Project personnel, Project records	Interview, discussion with Project staff	
		Have there been any specific problems encountered in the course of Project implementation so far?	Existence of problems and countermeasures	Information on the managerial problems so far and countermeasures taken by the Project	Project personnel, Project records	Interview, discussion with Project staff	
		What are special measures taken in terms of the managerial aspects of the Project, if any?	Existence of problems and countermeasures	Information on the managerial measures taken by the Project	Project personnel, Project records	Interview, discussion with Project staff	

Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
Implementation processes	management of the Project?	Do the DOA and TSB understand the objectives and approaches of the Project?	Levels of understanding	Information on the understanding of the Project purpose, discussion & meeting records	Project personnel, Project records	Interview, discussion with Project staff	
		Have appropriate counterpart personnel been assigned?	Suitability of their expertise	Information on the qualification / background / experiences of the assigned personnel	Project personnel, Project records	Interview, discussion with Project staff	Appropriate counterpart personnel have been assigned in order to carry out activities.
		Have the counterpart personnel been committed and involved actively in the Project activities?	Degree of participation	Examples of the activities that were mainly conducted by the counterpart personnel	Project personnel, Project records	Interview, discussion with Project staff	
	Are the DOA/TSB committed and well aware of the Project?	Have TSB well recognize the Project activities?	Levels of understanding	Information on their understanding of the Project, records of explanatory efforts made by the Project	Project personnel, Project records, extension officers and farmer groups staff	Interview, discussion	
		Have the the extension officers and farmer groups participated actively in the Project activities?	Degree of participation	Information on their participation in the Project activities	Project personnel, Project records, extension officers and farmer groups staff	Interview, discussion	
	Are the extension officers and farmer groupss well aware of the Project?	Have there been any special measures taken in terms of implementation mechanism?		Information on the measures taken by the Project	Project personnel, Project records	Interview, discussion with Project staff	
		Have there been any special consideration given in terms of dealing with the extension officers and farmer groupss?		Information on the measures taken by the Project	Project personnel, Project records	Interview, discussion with Project staff	
		Is the Project still in line with the needs of the target area and society?	Confirmation on the current needs				
	Were there any special measures taken	Is the Project still in the line with the needs of the TSB, extension officers and farmer groupss?	Positive response from the extension officers and farmer groupss	Baseline information, opinion of Project personnel and target beneficiaries	Project reports and personnel, extension officers and farmer groups staff	Document review, interviews	

Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
	to ensure the smooth implementation of the Project?	Is the Project still consistent with the development plans of Zambia's Government?	Existence of the consistent stipulation in the document	Development plans and programmes of Zambian government	Policy documents	Document review	
Relevance	Does the Project address the needs of the target area and the extension officers and farmer groupss?	Is the Project still consistent with the plans and programs in irrigation and community-based smallholder irrigation sectors?	Existence of the consistent stipulation in the document	Policies & programs related to the irrigation and agriculture	Policy documents	Document review	
		Is the Project relevant to the Japan's Aid Policies?	Existence of the consistent stipulation in the document	Priority directions in Japan's Aid Program	Japan's Foreign Assistance Policy	Document review	Target area is of the unprivileged areas in the nation notwithstanding the rich water resources. Thus livelihood improvement though irrigation development responds to the center of their needs.
	Has the Project still been in line with the priorities in the development plans and program of Zambia and the sector ?	Does the Project properly address the needs and context of DOA/TSB/extension officers and farmer groups?	Existence of the consistent stipulation in the document	Plans and program of DOA/TSB	Policy documents	Document review	
		Does the Project appropriately address the issues of community-based smallholder irrigation sectors?	Existence of the consistent stipulation in the document	National policies & programs related to the local government and water sector	Policy documents	Document review	
		Have there been any synergy effects through cooperation with JICA's Projects and other donors'?	Positive response from the extension officers and farmer groupss	Baseline information, opinion of stakeholders	Project reports and personnel, DOA/TSB officials	Document review, interviews	
		Has the number of the extension officers and farmer groupss been appropriate?		No. and area of coverage, No. of beneficiaries	Project personnel, statistics, other secondary documents	Document review, interviews	

Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
	means to address the development issues in the country and the sector?	Has the Project equitably brought about the benefit?	Distribution of the Project benefits	Project benefits enjoyed by different starata of extension officers and farmer groupss	Project records and personnel, DOA/TSB officials	Document review, interviews	
		Has the cost been equally shared by the extension officers and farmer groups members?	Cost sharing ratio	Expenditure and source of funds	Project records and personnel	Document review, interviews	
	Is the selection of extension officers and farmer groupss appropriate?	Is there any advantage of Japanese technologies / experiences?		Technologies transferred through the Project	Project personnel, Project records	Document review, interviews	
		Have there been any changes in the social, political and other conditions assumed prior to the commencement of the Project?		Information on the environment of the Project	Project personnel, Project records	Document review, interviews	
		Is Project Purpose likely to be achieved, considering the current level of progress of inputs, outputs and activities?	Comparison of the actual achievement with the original plan	refer to the achievement grid	Project personnel, Project records	Interview, discussion with Project staff	
	Has the Project applied appropriate approach?	Are there any potential obstacles that may hinder the achievement of the Project purpose?		information on the potential risks and obstacles and possible countermeasures	Project personnel, Project records	Interview, discussion with Project staff	
	Have there been any changes in the environment of the Project?	Have there been any factors contributing to the achievement of the Project Purpose other than the outputs?		Information on the related events, programs/projects by other organizations in the target area	Project personnel, Project records, relevant documents	Interview, field visit, discussion with Project staff	
Is the prospect of achieving the Project purpose considered to be high?	Is the Project Purpose likely to be achieved, considering the current level of progress of Outputs?	Comparison of the actual achievement with the original plan	Information on the results of activiteis that indicate the cause-effect relationship	Project personnel, Project records	Interview, discussion with Project staff	Although detailed figures of the Project Purpose has not been confirmed yet, if the expansion of large area under irrigation is concerned, permanent irrigationscheme alone cannot be achieved.	

Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
Effectiveness	Have the outputs been appropriate to achieve the Project purpose?		Relation between the outcomes of the activities and outputs	Progress of Outputs and levels of achievements	Project personnel, Project records	Interview, discussion with Project staff	
	Is the logical sequence between Outputs and Project Purpose proper?	Confirmation on the logical sequence		Logical sequence between Outputs and the Project Purpose	PDM, Project personnel, Project records	Interview, discussion with Project staff	
	Has there been any influence by important assumptions?	Are the important assumptions adequate and realistic?		Information on negative incidence, conflicts and fund			Funds for construction of permanet weirs have not provided.
	Is the prospect of achieving Outputs considered to be high?	Is the Outputs likely to be achieved, considering the level of progress og activities?	Comparison with the planned figures	Records on Japanese experts	Project records	Document review, interviews	refer to the Achievement Grid.
	Have the activities been appropriate to produce the outputs?	Is it necessary to add or delete any activities?			Project records	Document review, interviews	Equipment was provided in accordance with R/D.
					Project records	Document review, interviews	
	Have the inputs been appropriate to procude the outputs?	Were the physical facilities sufficient to implement the Project activities?	Comparison with the planned figures	information on the facilities	Project records, opinions of experts	Interviews, site visit	
		Has the scale of Project output been appropriate for the planned inputs?	Comparison with the input costs	Budget and expenditure, local cost by Zambian side	Project record and personnel, JICA staff	Interview, discussion with Project personnel and JICA staff	



Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
Efficiency		Is it expectable to obtain enough project achievements to compensate the input costs?	Comparison with the input costs	Budget and expenditure, local cost by Zambian side	Project record and personnel, JICA staff	Interview, discussion with Project personnel and JICA staff	
		Are there any outputs that were realized by cooperation with other JICA schemes or other donors?		Information from the Project	Project record and personnel, JICA staff	Interview, discussion with Project personnel and JICA staff	None.
	Have there been any factors that affect the efficiency?	Has there been any influence by important assumptions?		Information on the continuation of trained officers in the target areas	Project personnel, Project records	Interview, discussion with Project staff	
		Have there been any other factors affecting the efficiency?		Information on any relevant events in the course of Project implementation	Project personnel, Project records	Interview, discussion with Project staff	
	Have there been any factors hindering or contributing to the efficiency of the Project?	Will the achievement of the overall goal contribute to bringing positive impacts to the policies of Zambian government?	organizational commitment, existence of relevant programs	Current program, future plan of the government, opinion of the Project staff	Staff of the DOA/TSB, Project personnel	Document review, interviews, discussion	
		Are there any possible factors that hinder or contribute to the achievement of the Outputs?		Information on any relevant events in the course of Project implementation	Project personnel, Project records	Document review, interviews	
		Are methods or mechanism suggested to achieve the overall goal?		Future plan of the government, opinion of the Project staff	Staff of the DOA/TSB, Project personnel	Document review, interviews, discussion	

Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
Impacts	Is the prospect of achieving the overall goal assumed to be high?	Is the Overall Goal likely to be achieved, considering the level of progress of Project Purpose?	Confirmation on the logical sequence	Information on the results of activities that indicate the cause-effect relationship	Project personnel, Project records	Interview, discussion with Project staff	
		Are the important assumptions adequate and realistic?	Influence of surrounding factors on the Project implementation	Information on the relevant factors surrounding the Project	Project personnel, Project records	Interview, discussion	
		Has there been any effect beyond the intended extension officers and farmer groups?		Information on the sample cases in target area and other areas	Project personnel, Project records	Document review, interviews	
		Has there been any unexpected effect on the policies and programs of DOA/TSB?		Information on the relevant policies	Relevant documents, Project personnel, Project records	Document review, interviews	Not reported.
	Is the project purpose still appropriated to achieve the overall goal?	Has there been any change or formulation in terms of relevant organization, laws, rules and regulations?		Information on the changes and new setup	Project personnel, Relevant documents	Document review, interviews	Not reported.
		Has there been any unexpected change in technical and/or methodological aspects of the training?		Information on the changes that took place	Project personnel, Project records	Document review, interviews	Not reported.
	Have there been any other ripple effects?	Has there been any unexpected effect in terms of gender, human rights, ethnics, and poverty level?		Information on the cases of relevant events	Project personnel, Project records	Document review, interviews	Not reported.
		Has there been any unexpected effect on environmental concerns in the target areas?		Information on the cases of relevant events	Project personnel, Project records	Document review, interviews	Not reported.
		What are the factors that brought about the above mentioned positive and negative effects?	Project's attributes to the effects	Information on the other interventions and events in the target areas	Project personnel, sample beneficiaries	Interview, discussion with relevant staff, document review	Not reported.

Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
Sustainability	Will the policy of improving and expanding community-based smallholder irrigation continue ?	Is the possibility of continuation of the policies of smallholder irrigation sector high?	Policy commitment	Current program, future plan of the government, opinion of the Project staff	Policy documents, Project personnel	Interview, discussion with relevant staff, document review	
		Is it still important and ongoing trends to assist to the agricultural sector and to establish the irrigation system?					
	Will the necessary budget be allotted to continuously?	Are the necessary budget allotted for the continuous provision to construct irrigations, training, monitoring and evaluation activities?	Budget allocation, planned volume	Budget plan of DOA/TSB	Relevant staff of DOA/TSB, budget documents	Interview, confirmation of documents	
	Will the technologies and methodologies introduced by the Project continuously be utilized?	Are transferred technologies well understood and utilized by target personnel?	Utilization of transferred knowledge and skills at relevant agencies	Information on the cases of relevant events	Project personnel, Project records, sample beneficiaries	Interview, discussion	
		Will trained C/Ps stay with the same positions/duties? Are there any countermeasures against personnel changes?		Information related to the inputs	Project personnel, Project records & documents	Interview, discussion	
		Is there a mechanism to extend the technique transferred by the Project to other areas?		Information related to the process of implementation of the activities	Project personnel, Project records & documents	Interview, discussion	
measures to be taken	How the presumed	Is there any necessary change in terms of outputs and their target indicators of the Project?			Project personnel, staff of the DOA/TSB	Discussion with stakeholders and among the evaluation team	Three Outputs specified in PDM are the basic concepts/components of the Project's approach and they do not have to be modified.

Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
Identification of the Necessary	conditions at the time of the commencement of the Project been changed and addressed?	Is there any necessary change in terms of the Project purpose and its target indicators?			Project personnel, staff of the DOA/TSB	Discussion with stakeholders and among the evaluation team	Indicators at the Project Purpose level were modified and clarified as follows;
		Is there any necessary change in terms of the implementation mechanism of the Project?			Project personnel, staff of the DOA/TSB	Discussion with stakeholders and among the evaluation team	
		What are the other possible measures to further facilitate the Project implementation?			Project personnel, Project records	Interview, discussion	Refer to the above.

## 5. 面談記録

場所：農業畜産省
日時：11月24日 13:15-14:15
野坂専門家
<p>① 予算執行について</p> <ul style="list-style-type: none"><li>➤ 2014年度執行率は、農業畜産省で3割弱、州レベルで5%以下、郡レベルでは15%程度であり、例年と比べても異例の低さであった。</li><li>➤ インフラ建設が優先され、農業部門への予算執行率が低下している。同部門においても、Farmers Input Support Program (FISP)による小規模農家への補助金、政府系 Food Reserve Agency (FRA) の備蓄量の増加に伴う費用などはある程度確保できているが、灌漑整備の金額は確保できていない。</li><li>➤ 農業畜産省の幹部は、2015年は2014年と比較して見通しは明るい述べているが、2015年1月20日の選挙結果により、内閣の改造が予想され、引き続き予算執行は不透明な状況である。</li></ul> <p>② 2015年以降の国家灌漑計画 (NIP)</p> <ul style="list-style-type: none"><li>➤ 世界銀行が現行のNIPの見直しを支援することとなっているが、全く進んでいない (コンサルタントのTORは1年以上前に公表されている)。具体的変更内容については不明である。</li><li>➤ 上記見直しは必ずしも2015年以降を見据えたものではなく、現行のNIPの見直しである。</li></ul> <p>③ ザンビア政府による、年間6,000haの灌漑開発計画の見直し</p> <ul style="list-style-type: none"><li>➤ 6,000haという数値目標は、かなり野心的であるため、一旦500haまで下げられたが、2015年度に向けたbudget speechにおいて、再度6,000haを目標とすることとなったようである。しかしながら、数値に根拠はないのではないかと。</li><li>➤ 世界銀行は大規模な灌漑開発支援プロジェクト (IDSP) を実施しているが、現在のところ、年間の灌漑整備面積は500~1,000ha以下である。</li></ul> <p>④ 他ドナーとT-COBSIの連携状態</p> <ul style="list-style-type: none"><li>➤ マラウイにおいて、IFADのS3P (Smallholder Productivity Promotion Programme) と研修分野で連携を実施しており、ザンビアにおいても可能ではないかと。</li><li>➤ SIPの次期案件が計画されており、現在、サイトの選定や開始時期の検討が始まっている。サイト及び開始時期によっては、MALのスタッフのT-COBSIへの関与度合いが低下する可能性があるため、MALから適宜情報を提供してもらう予定である (SIPについては、12月に発行されるAnnual Work Planに記載予定)。</li></ul>

⑤ JICA 他プロジェクトとの連携
<ul style="list-style-type: none"> <li>➤ 現在、農業分野では FoDiS-R 及び RESCAP が実施されているが、研修の共有をするなど、一定の連携があった。</li> </ul>
場所：Mansa PACO 事務所
日時：11月26日 08：00-09：15
Mr. Goodwin Chate (PACO)、 Mr. Osbert Hamweete (PAO)
① T-COBSI への評価
<ul style="list-style-type: none"> <li>➤ プロジェクトは堰の建設はもとより、食料安全保障においても重要である。地域住民の多くは、貧困ライン以下の生活をしていたが、プロジェクトの裨益者については、換金作物や魚の養殖により、生活が向上している。所得の上昇分は、翌年の肥料の購入などにも充てられている。</li> <li>➤ プロジェクトの結果、従来のメイズ、キャッサバの他、ニンジン、キャベツなど換金作物が栽培されるようになった。</li> <li>➤ TSB 職員のキャパシティ・ビルディングが進んだ。</li> <li>➤ Department of Water Affairs が実施しているプロジェクトについては、O&amp;Mに課題があり、持続性が低い。これに対して、T-COBSI は O&amp;M が適切に実施されており、持続性は高いと言える。</li> </ul>
② 灌漑と漁業
<ul style="list-style-type: none"> <li>➤ 灌漑を利用して、フィッシュ・ポンドを整備し、稚魚を育てている。</li> <li>➤ 漁業分野では、フィンランド政府による、Program for Luapula Agricultural and Rural Development II (PLARD II) が、地域住民による水産資源管理や、係るキャパシティ・ビルディングなどを支援している。PLARD は間もなく終了するが、S3P で同様の協力を実施する予定である。</li> <li>➤ T-COBSI としても、簡易堰を活用したフィッシュ・ポンドの整備を推進しており、デモ・フィッシュ・ポンドの整備を協力のフレームワークに組み込んでもよいのではないか（蛭田専門家）。</li> </ul>
③ 課題
<p>予算執行率の低さによる、普及員の不足、モーターバイクの燃料費不足などが挙げられる。普及員のモーターバイク保有率は、全州で約 90%であるが、Chipili など新しい郡では、新しく雇用した普及員に対して、いまだモーターバイクが支給されていないため、保有率はかなり低くなる。現在 PLADO IIにより、対象 89 キャンプのそれぞれにおいて、1 キャンプにつき、月 20L のガソリンが供給されており、また政府からは、州事務所に対して四半期に 1 度、モニタリング用の燃料代として、5,000K が支給されている（灌漑だけではなく、農業セクター全体への燃料支給額）。</p>

- ④ 簡易堰と恒久堰に対する認識
- (恒久堰はコストも高く、裨益人数も限られている。灌漑面積を着実に増加させるためには、簡易堰の推進が必要ではないか、との野坂専門家の問いに対して) 簡易堰の推進に全面的に合意する。来年度から T-COBSI の協力コンポーネントに含めてはどうか。
  - NIP においても、灌漑面積の増加が謳われており、大きな課題となっている。その意味でも簡易堰の導入は、大きな意義がある。
  - 恒久堰については、資金を得るための手続きに困難を伴うという課題もある。
- ⑤ その他
- 農民の中には、NGO である AgBiT と協力し、スーパーマーケット “Shoprite” に野菜などの販売ルートを開拓したグループがある (プロジェクトとの関連は不明)。
  - 現在、Mufulira・Chembe 間 (コンゴ領内通貨) の道路整備が進んでいるが、整備が完了すれば、Copperbelt など、大きなマーケットでの作物の販売が容易になる。

場所：Mansa DACO 事務所

日時：11月26日 09：15-10：00

Ms. Maswari Dailofa Mary DACO

- ① T-COBSI への評価
- プロジェクトの結果、換金作物の生産やフィッシュ・ポンドによる魚の養殖により、裨益者の所得が上昇した。所得の上昇分は、子供が学校に通う費用や次年度の肥料の購入などに充てられている。
  - 技術移転の方向が、TSB 職員⇒普及員⇒農家グループとなっており、このカスケード方式での技術移転は有効である。
- ② 課題
- 2014年10月～11月は水位が低いため、作物に十分水が行き渡らないケースもある。
  - 土壌の性質 (sand soil) によって、一部地域で水路沿いに漏水が見られるため、ライニングが必要と思われる。
  - 恒久堰はコストが高く、維持管理が難しい。
  - 普及員は皆モーターバイクを保有しているが、それらは古くかつ故障が多い。また、必要な予備部品が不足しているため、モーターバイクの稼働率は高くない。結果として、灌漑施設やその他農業普及活動のモニタリングが十分に実施

できていない。

- 上記に関連するが、2014 年において、マンサ郡では灌漑のための予算が執行されていない。

### ③ 簡易堰と恒久堰に対する認識

簡易堰から恒久堰にアップグレードすることは、農民の労力を低減するためにも重要である。一方で、恒久堰はコストがかかり、灌漑面積の拡大のためには、両スキームを並行して実施することが肝要である。

場所：Mwensa DACO 事務所及び恒久堰建設現場

日時：11月26日 15:30-17:15

Mr. Fidelis Mazuba (Acting DACO、Mwensa)、農民グループ及び普及員 (CEO)

#### ① DACO 事務所にて

本日は DACO が外出中のため、お会いできない。T-COBSI は非常に有益なプロジェクトであり、支援に感謝している。(Mr. Mazuba は、プロジェクトの詳しい状況を把握していないと思われたため、恒久堰建設現場へ向かう。)

#### ② 恒久堰建設現場にて

##### i) 概要

建設開始：2014年8月

建設終了予定：2014年12月

灌漑面積(予定)：40ha 今現在は8ha

裨益農家：40世帯、160名(3コミュニティ)

建設従事農民数：38名

##### ii) 新たに予定している作物等

トマト、バナナ、アイリッシュ・ポテトなど。その他、フィッシュ・ポンドを整備する予定である。生産物のほとんどはマーケットにて販売する予定であり、自家消費は数%程度である。

##### iii) 課題

- 恒久堰建設作業はほぼ問題ないが、設計については日本人専門家や州の TSB 職員の支援が必要である。
- セメントをはじめ多くの資材(石・砂)が約10km離れた場所から運搬されるため、コストが高くなる。
- 水路沿いで一部、岩盤が出ており、作業が滞っている。



iv) 簡易堰と恒久堰に対する認識

恒久堰は頑丈ではあるがコストが高い。恒久堰を建設する前に簡易堰を造ったことは、灌漑のメリットを知るうえでも大いに有益であった。簡易堰は、よい出発点になった。

場所：DACO 事務所 Nchelenge

日時：11月27日 10:30-11:30

DACO 不在のため、Mr. Wages Mambo (SAO)、Mr. Chewe Chileshe (TSB)

① T-COBSI への評価

- 作物の栽培方法などを学び、生産性が高まるとともに、コミュニティ住民の一体感が強くなった。
- 水路により、灌漑面積が広がった。

② 課題

- Nchelenge はもともと漁業が盛んな土地であるが、漁業から農業への転換が進んでいる。しかしながら、作物の生産方法など不慣れなことも多い（しかしながら、多くの人々が転換に乗り気である）。
- 12名の普及員全員がモータバイクを所有しているが、多くは予備部品が不足しており、機能していないケースも多い。予備部品は Lusaka や Copperbelt から取り寄せる必要があり、1カ月程度を要する。PLADO II 対象のキャンプについては、燃料や予備部品が支給されているものの、GRZ による予備部品の供給は滞っている。
- 郡事務所の人材（技術者）が不足している。
- 郡事務所によるモニタリングに対しても燃料配布を実施してほしい。
- ひとりの普及員が複数のキャンプを管轄する場合、月 30L の燃料支給では足りない。
- フェロー普及員に対するインセンティブが少ない。
- 関係者は、Allowance のレートがより高いプログラムへの参加する傾向にある。
- Transportation は最も重要なインセンティブである。

③ 研修

- 全普及員に対して、一度に研修を実施した方が良い。そうすることによって、普及員の間一体感が生まれる。
- キックオフ研修では、TSB 職員と CEO は分かれて研修をしており、TSB はエンジニアリングの理論が中心、CEO は簡易堰整備のための実用的な訓練を受けている。TSB も実用的な研修が必要であり、CEO と一緒に簡易堰スキームに係る

研修を受けられれば、なお良い。

- 簡易堰の展開を図るためには、より多くの officer に対し、研修を実施することが肝要である。
- 恒久堰の設計については、持続性の観点から、郡レベルの TSB により大きな関与をさせてほしい。

#### ④ 簡易堰と恒久堰に対する認識

- 壊れやすい簡易堰から頑丈な恒久堰へのアップグレードは望ましいことである。しかしながら、恒久堰はコストが高く、大きな労働力も必要である一方、簡易堰は、安価な地元の資材で整備が可能である。資源（資材、人材、資金など）の現状を考えると、恒久堰と簡易堰双方を推進する必要がある。
- 簡易堰の建設を T-COBSI の公式な活動としてほしい。
- 水源が遠くにあり水へのアクセスが困難であった農家が、簡易堰の整備により状況が改善された。
- 恒久堰の建設・維持管理にはエンジニアの関与が不可欠であるが、簡易堰に対しても普及員による農民への指導は欠かせない。
- 簡易堰スキームの実施に寄り、具体的な便益を農家に示すことで（恒久堰へのアップグレードに向けた）、農家の意欲が高まる。

場所：Nchelenge 恒久堰建設現場

日時：11月27日 12:30-15:00

農民グループ及び普及員（BE0・CEO 兼務）

#### ① 概要

建設開始：2014年9月

建設終了予定：2014年12月

灌漑面積（予定）：70ha 今現在は30ha

裨益農家：200世帯

建設従事農民数：35~42名

#### ② 増産を予定している作物等

メイズ、トマト、キャッサバ、キャベツ、アイリッシュ・ポテト、タマネギ、なすなど。その他、既存のフィッシュ・ポンドに水を供給する予定である。生産物のほとんどはマーケットにて販売する予定であり、自家消費は数%程度である。

#### ③ 課題

- 恒久堰建設作業はほぼ問題ないが、設計については日本人専門家や州の TSB 職

員の支援が必要である。

- 多くの資材（石・砂）が約 22km 離れた場所から運搬されるため、コストが高くなる。セメントに関しては、T-COBSI が Mansa で購入している。
- 水路沿いで一部、漏水がある。
- 自分のモーターバイクには問題はないが、他の普及員の中には、予備部品が不足しているため、普及活動に支障をきたしている者もいる。ちなみに、恒久堰を担当しているため、JICA から 40L/月の燃料を得ている（GE0・BE0）。

#### ④ 研修

新しい技術を学べ、満足している。特に i) コンポスト・マニュアル、ii) コンサベーション農法、iii) 複合農業などが有益であった。（GE0・BE0）

#### ⑤ 簡易堰と恒久堰に対する認識

簡易堰から恒久堰へのアップグレードは望ましいことである。しかしながら、コストが高く、大きな労働力も必要であり、資源（資材、人材、資金など）の現状を考えると、恒久堰と簡易堰双方を推進するのがベストではないか。

場所：Luwingu 恒久堰建設現場

日時：11月28日 11:30-14:00

農民グループ及び普及員（GE0）

#### ① 概要

建設開始：2014年9月

建設終了予定：2014年12月

灌漑面積（予定）：45ha 今現在は 20ha

裨益農家：55世帯

建設従事農民数：約 40名

#### ② 増産を予定している作物等

米、バナナ、オレンジ、キャベツ、サトウキビ、トマト、タマネギ、アイリッシュ・ポテト、なすなど。その他、フィッシュ・ポンドを整備する予定である。生産物のほとんどはマーケットにて販売する。

#### ③ 課題

- 石については建設現場の近くで得ることが出来るが、砂は 7~8km は離れた場所から運んでいるため、多くの労力が必要である。
- 岩を砕くハンマーが 3本支給されたが、2本は既に壊れ、残りの 1本で作業を

している。他に、けがを防ぐための丈夫な長靴や手袋が足りない。

➤ 水路沿いで一部、漏水がある。

#### ④ 研修

➤ 新しい技術を学べ、満足している。特にキックオフトレーニングでのシングルラインや、ダブルラインなどは、我々にとって新しいコンセプトであった。

(CEO)

➤ 理論と実践を組み合わせた研修は非常に有効であった。

#### ⑤ 簡易堰と恒久堰に対する認識

簡易堰から恒久堰へのアップグレードは望ましい。しかしながら、簡易堰整備の経験がない場所において、いきなり恒久堰を建設することは、失敗につながりかねない。このことは、Irish Aid の経験からも明らかである（下記⑥参照）。まず、出発点として簡易堰を造り、ロケーションの妥当性や水流を見極めるべきである。

#### ⑥ Irish Aid による恒久堰について

200,000k 以上の費用をかけ、2012 年に完成したが、堰を使用している世帯はない。原因としては、i) 建設場所が不適切であったこと、ii) 水路の alignment が適切ではなく、水流が低いところから高いところへ流れるよう掘削されていたこと、iii) 建設のために労働力を提供した農民や石工などの熟練労働者に現金を支給したため（農民：240k、熟練労働者：1,000k）、オーナーシップが希薄であったことなどが挙げられる。なお、設計は北部州及び郡の TSB である。

場所：Kasama DACO 事務所及び Chilyaeka 簡易堰

日時：12月2日 08:30-11:30

Mr. Gaston Phiri (DACO、Kasama)、Mr. Philip Chiliowawa (TSB Officer, Kasama)、農民

① DACO 事務所にて  
表敬訪問のみ。

#### ② Chilyaeka 簡易堰

v) 概要

建設時期：2014年8月～9月（5日間）

灌漑面積（予定）：6ha

裨益農家：10世帯、

建設従事農民数：12名

<p>③ 課題</p> <ul style="list-style-type: none"> <li>➤ (作物の状態が良くないとの、ザンビア側調査団 Nyirenda 氏の指摘を受けて) 1 年目は本来の目的である堰を建設することに集中したために、作物栽培についての指導はしていない。来季からはクロップ・マネジメントに係る指導を行う予定であり、作物の栽培状況は大きく改善するであろう。(Mr. Philip Chiliowawa)</li> <li>➤ ダブルラインを採用しているが、水量が多い雨季に決壊する可能性がある。洪水吐きを設けるなどの対策が必要である。(野坂専門家)</li> <li>➤ 圃場のアレンジメントが適切でないため、灌漑設備があるにもかかわらず、慣れ親しんだ従来のバケツによる灌漑方式を採用している農家がある。</li> </ul>
場所：Soume 簡易堰
日時：12 月 2 日 13：00-14：00
Mr. Philip Chiliowawa (TSB Officer, Kasama)、農民
<p>① 概要</p> <p>建設時期：2014 年 9 月 (2 日間)</p> <p>灌漑面積 (予定)：1ha</p> <p>裨益農家：10 世帯 (男性 21 名、女性 14 名)</p> <p>② 堰建設による便益</p> <ul style="list-style-type: none"> <li>➤ 水が利用できることにより、メイズ、キャベツなどの生産が増加した。</li> <li>➤ TSB の指導によって、現在では、簡易堰の維持管理は農民自らが実施している。</li> <li>➤ デモ・ファーム (プロジェクトにより対象郡に 1 カ所設置) によって、農民が灌漑について学べる環境が出来た。</li> </ul> <p>③ 課題</p> <ul style="list-style-type: none"> <li>➤ 堰を建設したことによって水位が上昇し、飲料水を取水する際に泥などが混じりやすくなっている。</li> <li>➤ 重力灌漑についての指導が徹底されていない (デモ・ファームでの取り組みが有効と思われる)。</li> <li>➤ 農民にクロップ・マネジメントの感覚が希薄である。</li> </ul>
場所：Mungwi DACO 事務所
日時：12 月 2 日 14：15-14：30
Mr. Jacob Shawa (DACO、Mungwi)
① 評価団より、挨拶、メンバーの紹介

- ② Mungwi District の灌漑施設状況  
 現在、簡易堰のうち、improvement site では目標 32 堰に対して 20 堰、new development site では目標 19 堰に対して 11 堰が実施されている。
- ③ 堰建設による便益  
 i) 灌漑農業の推進や、ii) 収入増により自転車や軽トラックを購入したり、iii) 自宅の屋根をトタンにしたりする農家が存在する。
- ④ 課題・要望  
 ➤ 簡易堰は漏水の問題が多く、出来るだけ多くの簡易堰を恒久堰にしたい。(恒久堰は経費がかかること、灌漑面積を拡大し受益者を増加させることが重要との観点から、恒久堰と簡易堰の双方を進める必要がある、との野坂専門家、蛭田専門家の意見に対し) そのように思う。(DACO)  
 ➤ 普及員が普及活動を実施するためには、モーターバイクや燃料が十分ではない。CEO に対してモーターバイクが支給されたのは、2009 年が最後であり、JICA に協力をお願いしたい。  
 ➤ ディストリクト事務所にも燃料を支給してほしい。

場所：Nselka 恒久堰 (COBSI)

日時：12 月 2 日 16:00-17:00

Ms. Beauty Chisanga (CEO、セルカ)、農民

- ① 概要  
 建設時期：2009 年に建設された簡易堰を 2010 年に恒久堰にアップグレード  
 灌漑面積 (予定)：7ha  
 裨益農家：農民 36 名  
 建設従事農民数：36 名 (うち、女性 12 名)
- ② 作付している主な作物  
 タマネギ、アイリッシュ・ポテト、パンプキン・リーヴ、ウィンター・ビーンズなど。
- ③ 建設による生活環境の変化  
 ➤ 建設後、恒久堰建設に携わった女性 12 名には、新たに灌漑された土地を割りあてられた。  
 ➤ Irrigation Committee が設立され、水路の維持管理を担っている。農家は会費として年間 200k を支払っている。

- 農地や自転車を購入した。今後は、より良い家や、自動車を購入したい。（現場にいた農民2名の回答）

④ 課題

- 作物の輸送料はKasamaまで2t・トラックで800kである。このため、1シーズンの利益は約2,500k/2~3リマであり、利益率は低い（市場が遠い）。（現場にいた農民2名の回答）
- 農家の中には、建設に参加したにもかかわらず、水路から遠いため、乾季に水が自分の農地に届かないケースがある。水路の見直し・調整が必要である。

⑤ 簡易堰と恒久堰に対する認識

- 恒久堰を導入することによって、常に水を利用できるという安心感が生まれた。（現場にいた農民2名の回答）

場所：Mpera 恒久堰

日時：12月3日 10:00-11:30

Mr. Brighton Mweemba (CEO)、農民

① 概要

建設開始：2014年9月  
 建設完了予定：2014年12月  
 灌漑面積（予定）：16ha 現在：8ha  
 裨益農家：35世帯

② 作付している主な作物

メイズ、キャッサバ、タマネギ、パンプキン・リーヴなど。

③ 建設による生活環境の変化

- 建設後、恒久堰建設に携わった女性には、新たに灌漑された土地を割りあてられる予定である。
- 恒久堰建設による、負のインパクトはない。

④ 簡易堰と恒久堰に対する認識

簡易堰の経験は、恒久堰を建設するうえでも重要であった。まず、出発点として簡易堰を造り、ロケーションの妥当性や水流を見極めるべきである。

場所：Itimbwe 簡易堰
日時：12月3日 14:00-15:30
農民
<p>① 概要</p> <p>建設開始：2014年初め</p> <p>建設期間：5日間</p> <p>灌漑面積：約6ha</p> <p>裨益農家：46farmers</p> <p>② 作付している主な作物</p> <p>ウィンター・メイズ、トマト、オクラ、タマネギ、パンプキン・リーヴなど。今後はコメを栽培したい。</p> <p>③ 建設による便益</p> <ul style="list-style-type: none"> <li>➤ 灌漑によって、作物の収量が増加した。</li> <li>➤ 建設を通し、TSB officer、CEO、農民リーダー、農民の協力体制が強化された。</li> </ul> <p>④ 課題</p> <ul style="list-style-type: none"> <li>➤ 種、殺虫剤、スプレー、が足りず、供給してほしい（ザンビア側評価団 Nyirenda 氏より、灌漑によって収量が増加した作物をマーケットで売り、その利益の一部を翌シーズンのための投資に回すことが必要であると説明）</li> <li>➤ クロップ・マネジメントやフィッシュ・ポンドにかかる研修を実施してほしい。</li> <li>➤ Dambo に建設したために、水位高くなった際、水路が機能しなくなる。水路の見直し・調整が必要である。</li> </ul>



6. ミニッツ及び合同評価報告書（英文）

MINUTES OF MEETING  
ON  
THE MID-TERM REVIEW  
ON  
TECHNICAL COOPERATION PROJECT ON  
COMMUNITY-BASED SMALLHOLDER IRRIGATION  
IN THE REPUBLIC OF ZAMBIA

Japan International Cooperation Agency (hereinafter referred to as “JICA”) and Ministry of Agriculture and Livestock organized the Mid-term Review Team(hereinafter referred to as “the Team”) from November 24 to December 10, 2014 in order to review the progress and achievements of the Technical Cooperation Project on Community-Based Smallholder Irrigation (hereinafter referred to as “the Project”).

After the intensive study and analysis of the progress and achievements of the Project, the Team prepared a Joint Mid-term Review Report (hereinafter referred to as “the Report”) attached and presented it to the Joint Coordinating Committee (hereinafter referred to as “the JCC”) held in Lusaka on December 10, 2014.

At the JCC, persons concerned with the Project discussed the major issues of the Project stated in the Report and agreed on the matters attached hereto.

Lusaka, December 10, 2014



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Mr. Hisanao NODA  
Chief Representative  
Japan International Cooperation Agency (JICA)  
Zambia Office



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Mr. Peter Lungu  
Director, Department of Agriculture,  
Ministry of Agriculture and Livestock  
Republic of Zambia

Main points of discussions based on the Report at the Meeting are as follows.

1. Acceptance of the Report

After the intensive discussion, persons participated in the Meeting accepted the Report and agreed to take necessary actions to each recommendation.

2. Revision of Project Design Matrix (PDM)

The Team proposed the revised PDM (version 1) and JCC agreed and accepted it after the intensive discussion.

3. Extension of the Project

The Project activities have been progressing well and the outputs have been getting attained. However JICA noted the necessity of continuous activities on the monitoring and evaluation of the COBSI Approach in the target areas. It is, therefore, proposed that the Project period be extended for six (6) months, starting from December 31, 2016 to June 30, 2017.

After the intensive discussion, JCC approved the proposal, and JICA and GRZ agreed to take necessary actions to the extension of the Project period.

Attachment 1: List of Attendees


Attachment 2: Joint Mid-term Review Report



## List of Attendees

## Attachment 1

No	Name	Affiliation/Position	Station
<b>Ministry of Agriculture and Livestock</b>			
1	Mr. Peter K Lungu	Director of Department of Agriculture	Lusaka
2	Mr. David Mundia	Director of Department of Agribusiness and Marketing	Lusaka
3	Mr. Maketo Mubyana	Director of Department of Cooperatives	Lusaka
4	Mr. Sakara Emmanuel	Deputy Director of Technical Services Branch	Lusaka
5	Mr. Chate Godwin	Provincial Agricultural Coordinator, Luapula	Mansa
6	Dr. Victor Mulopa	Provincial Agricultural Coordinator, Muchinga	Chinsali
7	Mr. Andrew Banda	Provincial Agricultural Coordinator, Northern	Kasama
8	Mr. Osbed Hamweete	Principal Agricultural Officer, Luapula Province	Mansa
9	Mr. Fred Chikuta	Principal Agricultural Officer, Muchinga	Chinsali
10	Mr. Charles Kapalasha	Principal Agricultural Officer, Northern	Kasama
11	Mr. Saila Mayson	Provincial Irrigation Engineer, Luapula	Mansa
12	Mr. Syansingu Stephen	Provincial Irrigation Engineer, Muchinga	Chinsali
13	Mr. Sifaya Mufalali	Farm Power Mechanization Engineer, Northern	Kasama
14	Dr. Jiro Nozaka	JICA advisor	Lusaka
<b>Mid-term Review Team</b>			
15	Mr. Emmanuel Mabvuto Nyirenda	Principle Irrigation Engineer, Department of Agriculture	Lusaka
16	Ms. Harriet Matipa	Economist, Department of Policy & Planning	Lusaka
17	Mr. Shinjiro Amameishi	JICA headquarter	Tokyo
18	Mr. Takuya Oiwa	JICA headquarter	Tokyo
19	Mr. Atau Kishinami	Consultant	Tokyo
<b>Embassy of Japan</b>			
20	Hiroyasu KIRIOKA	Second Secretary, Embassy of Japan	Lusaka
<b>JICA</b>			
21	Mr. Hisanao Noda	JICA Chief Representative	Lusaka
22	Dr. Isaya Higa	ARR	Lusaka
23	Mr. Patrick Chibbamulilo	Senior Programme Officer	Lusaka
24	Mr. Tatsuya Iezumi	JICA Expert, T-COBSI	Kasama
25	Mr. Hideaki Hiruta	JICA Expert, T-COBSI	Kasama
26	Ms. Makiko Yamamoto	JICA Expert, T-COBSI	Kasama
<b>Others</b>			
27	Mr. Tokutaro Iino	JICA Expert, FoDiS-R	Lusaka

THE JOINT MID-TERM REVIEW REPORT  
ON THE PROJECT FOR THE TECHNICAL COOPERATION PROJECT  
ON COMMUNITY-BASED SMALLHOLDER IRRIGATION  
IN THE REPUBLIC OF ZAMBIA

Lusaka December 10, 2014

JOINT MID-TERM REVIEW TEAM

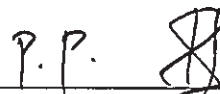


Mr. Shinjiro AMAMEISHI

Leader

Japanese Mid-term Review Team

Japan International Cooperation Agency



Mr. Emmanuel Mabvuto NYIRENDA

Leader

Zambian Mid-term Review Team

Ministry of Agriculture and Livestock

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## ANNEXES

- ANNEX 1: Schedule of the Mid-term Review
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- ANNEX 9: Progresses of Activities based on PO
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## 1. Introduction

### 1.1. Background of the Project

The Republic of Zambia (hereinafter, referred to as “Zambia”) has a total land area of 753,000 sq.km and its population was estimated at 13.1 million as of 2010. About two thirds of the population live in the rural areas, and it was projected that nearly 90% of the rural population was engaged in agriculture. As of 2006, small-scale farmer population shared as much as 91.7% of the rural population and 96.2% of the total number of farmers. Of a total 75,261,200 ha of the national land, 5,265,000 ha was agricultural land of which, 360,000 ha (6.8%) was estimated irrigable land, though only 43% of it was under irrigation. About 72% of the total irrigated area fell under the category of small irrigation schemes.

In order to enhance productivity, the National Irrigation Policy (NIP) was launched with the aim of developing irrigated area of 70,000 ha over a period of five (5) years from 2006 to 2011, of which the development of 30,000 ha was targeted for smallholder irrigation. Due to limited funding, irrigation development has been very slow, despite having potential provinces suited to gravity irrigation systems where perennial streams were yet to be fully utilized.

The JICA development study on Capacity Building and Development for Smallholder Irrigation Schemes in Northern and Luapula Provinces in the Republic of Zambia” (hereinafter referred to as “the Study”), established a package of development technologies on community-based smallholder irrigation schemes (the COBSI Approach). The Study demonstrated the effectiveness of the technical package through a pilot scheme carried out in Northern and Luapula Provinces. Its implementation was appreciated as a very unique and viable approach. Given the fruitful outcomes from the Study, the Government of the Republic of Zambia (hereinafter referred to as “GRZ”) recognized the COBSI schemes as being one of the most cost-effective irrigation systems suited in areas where water potential was high. In order to further promote the COBSI schemes, GRZ requested Japan's technical cooperation and the “Technical Cooperation Project on Community-based Smallholder Irrigation (hereinafter referred to as “the Project)”. Accordingly, the Project commenced operations in May 2013.

### 1.2. Background of the Mid-term Review

The GRZ and Japan signed the Record of Discussions (R/D) on 21<sup>st</sup> November 2012. Based on the R/D, the Project started operations for a five year duration in May 2013. The R/D and the Project Design Matrix (PDM) were revised with an agreement between MAL and JICA on 30<sup>th</sup> July 2013. In December, 2014 the Project reached half way into the project duration. Therefore, a Mid-term Review has been conducted jointly by the Zambian and Japanese Governments.

### 1.3. Objectives of the Mid-term Review

Objectives of the Mid-term Review were as follows:

- (1) To verify the achievement and implementation process of the Project in terms of the five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact and Sustainability) based on the Record of Discussion (R/D) and Project Design Matrix (PDM)
- (2) To identify the obstacles and contributing factors that have affected the implementation process and to review the project plan of the remaining period of the Project; and
- (3) To discuss and identify necessary measures for overcoming challenges of the project operation, report the results of discussions and recommend necessary measures to be taken by the relevant government agencies of Zambia and Japan.

### 1.4. Members of the Mid-term Review Team

#### (1) Japanese Side

Name	Designation & Organization
Mr. Shinjiro AMAMEISHI Leader	Director, Team 4, Agricultural and Rural Development Group2, Rural Development Dept., JICA
Mr. Takuya OIWA Planning of Cooperation	Associate Expert, Team 4, Agricultural and Rural Development Group2, Rural Development Dept., JICA
Mr. Atau KISHINAMI Evaluation Analysis	Senior Consultant, International Cooperation Department, International Development Associates, Ltd.

#### (2) Zambian Side

Name	Designation & Organization
Mr. Emmanuel Mabvuto NYIRENDA Leader	Principal Irrigation Engineer, Department of Agriculture, MAL
Ms. Harriet MATIPA	Economist, Policy and Planning Department, MAL

### 1.5. Schedule of the Mid-term Review

The schedule of the Mid-term Review is attached as ANNEX1.

(E)

H.M

## 1.6. Methodology of the Review

### 1) Procedures

The Project was reviewed by the Japanese and Zambian Joint Review Team (hereinafter referred to as “the Team”). The Team was composed of three (3) members from the Japanese side and two (2) members from the Zambian side. The Review included the analysis of documents, field survey and interviews with stakeholders such as counterpart personnel, JICA experts, Department of Agriculture (hereinafter referred to as “DOA”) / Technical Service Branch (hereinafter referred to as “TSB”) officials, extension officers and farmer groups using the PDM (refer to ANNEX 2), Plan of Operation (refer to ANNEX 3) and the Evaluation Grid (refer to ANNEX 4).

### 2) Item of Analysis

(a) Achievement of Project

(b) Implementation Process

(c) Five Evaluation Criteria described below:

Table1-1 : Definition of the Five Evaluation Criteria

Five Evaluation Criteria	Definitions as per JICA Evaluation Guideline
1	Relevance Relevance refers to the validity of the Project Purpose and the Overall Goal in connection with the development policy of a recipient country as well as the needs of beneficiaries.
2	Effectiveness Effectiveness refers to the extent to which the expected benefit of the Project has been achieved as planned. It also examines whether these benefits have been brought about as a result of the Project.
3	Efficiency Efficiency refers to the productivity of the implementation process, examining if the input of the Project have been efficiently converted into the outputs.
4	Impact Impact refers to direct and indirect, positive and negative impacts caused by the implementation of the Project, including the extent to which the Overall Goal has been attained.
5	Sustainability Sustainability refers to the extent to which an implementing agency can further develop the Project, and the benefits generated by the Project can be sustained under the recipient country’s policies, technology, systems and financial state.

### 3) Limitation

The Indicators of the Overall Goal, Purpose and Outputs levels of the Project were not set at the time of the Mid-term Review. However, the Team conducted field visits, series of interviews and extensive review of process documents prepared by the Project in order to assess



the progress of the Project.

## **2. Outline of the Project**

### **2.1. Summary of the Project**

#### **Project Title**

Technical Cooperation Project on Community-based Smallholder Irrigation (T-COBSI)

#### **Implementing Organizations**

Ministry of Agriculture and Livestock (MAL)

#### **Project Duration**

From 7th May, 2013 to 31<sup>st</sup> December, 2016

#### **Target Area**

The pilot projects were implemented under the Study for Capacity Building and Development for Community-based Smallholder Irrigation Schemes in Northern and Luapula Province in the Republic of Zambia from 2009 to 2011

#### **Target Group**

TSB officers, extension officers and smallholder farmers in the target areas

#### **Overall Goal**

Irrigated agriculture production in the target areas is increased.

#### **Project Purpose**

To promote and increase irrigated land through the provision of irrigation infrastructure for smallholder farmers in the target areas

#### **Outputs**

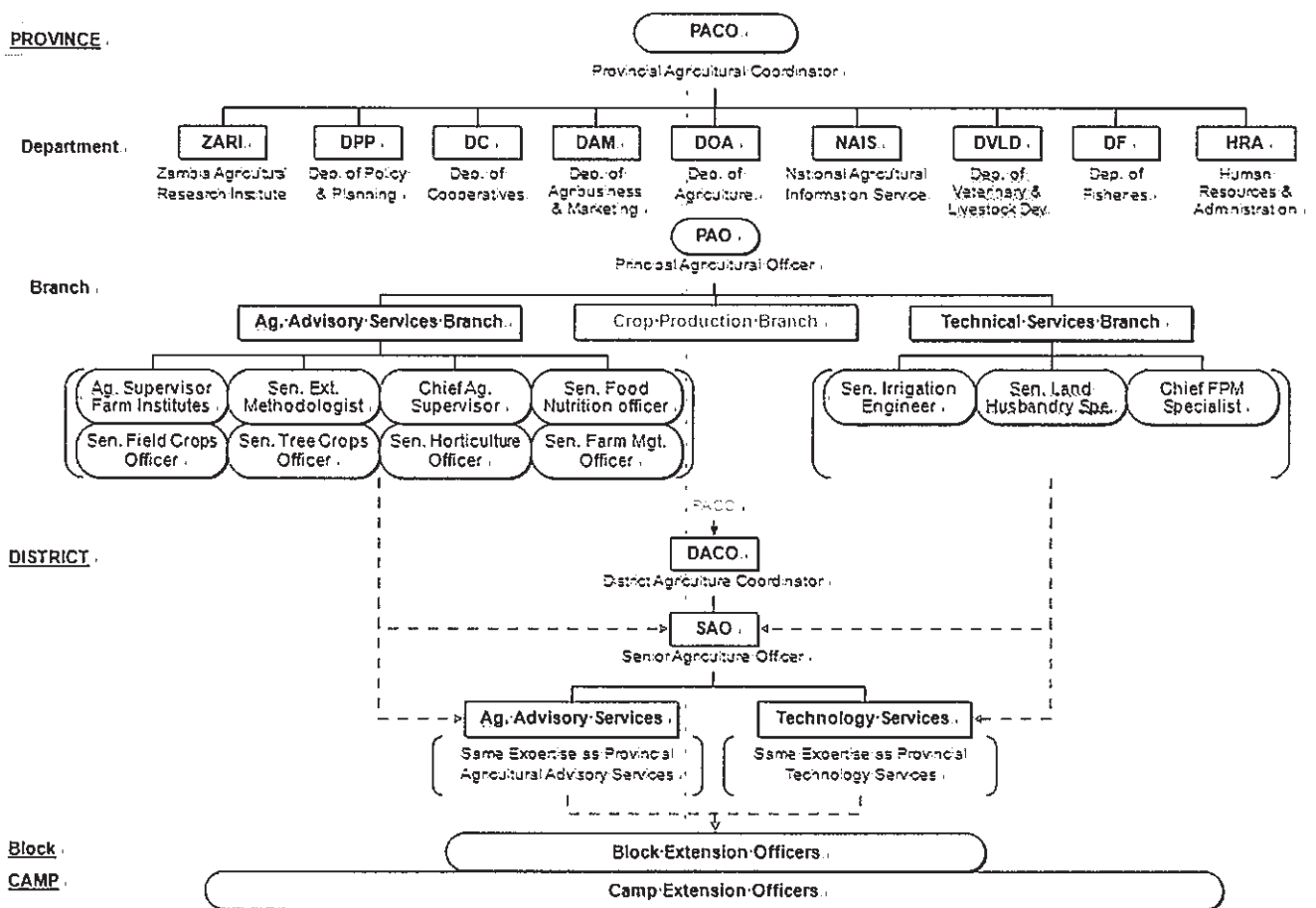
1. Through hands-on experience, practical skills in design, construction, operation, and maintenance of permanent irrigation facilities for smallholder irrigation schemes are transferred to TSB staff.
2. Through hands-on experience, practical skills in construction, operation, and maintenance

of permanent irrigation facilities for smallholder irrigation schemes are transferred to MAL extension officers.

3. Knowledge and skills of farmers in irrigated farming and operation and maintenance of upgraded permanent irrigation schemes and facilities are improved.

## 2.2. Implementation Structure of the Project

The Implementing agency of the Project is the Department of Agriculture (DOA) of MAL, while the actual operation and management of the Project are carried out by the TSB. The Provincial organizational structure of MAL is shown below.



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### 3. Achievement and Implementation Process of the Project

#### 3.1. Inputs

##### 3.1.1 Japanese side

###### (1) Dispatch of experts

JICA Experts were assigned as planned in the fields as follows (i) Team Leader/Irrigation Planning and Management, (ii) Co-Team Leader/Farming System/Training Design, (iii) Irrigation Facility Design/Construction Control, (iv) Water Management/Irrigation Facility Design/Construction Control (2), (v) Agricultural Marketing, (vi) Rural Society/Farmers Organization/Gender, (vii) Environmental and Social Considerations, and (viii) Farming System (2) / Rural Society (2). Details are shown in ANNEX 5.

###### (2) Acceptance of C/Ps for Training in Japan and the Third Countries

The PACO of Northern Province was dispatched to an overseas training from 16<sup>th</sup> to 29<sup>th</sup> November, 2014 in Japan and from November 30<sup>th</sup> to 6<sup>th</sup> December, 2014 in Kenya for a training on “Market-oriented Agriculture Promotion for Executive Officers in Africa organized by JICA.

###### (3) Provision of Equipment

Equipment, such as photo copy machine, color printer, laptop computers and vehicles have been provided as summarized in ANNEX 6.

###### (4) Local Expenses

Local expenses covered by JICA are summarized in the below table.

Table3-1: Local expenses covered by JICA

Item	Contract 1 (CY2013-2014)	
	Japanese Yen	Zambian Kwacha
General	42,201,000	2,403,000
Equipment	1,924,000	110,000
Construction of irrigation facilities	12,010,000	684,000
Total	56,135,000	3,197,000

Note: As the project books have not been closed yet, the figure shows the budget amount, which does not include the international travel cost and remuneration of the experts/ Japanese Yen is converted by JICA's designation rate @17.564.

##### 3.1.2 Zambian side

###### (1) Assignment of Counterpart Personnel

A total of nine (9) counterpart personnel have been assigned from MAL for the Project. Details

are shown in ANNEX 7. Besides Provincial and District TSB officers, extension officers (BEO, CEO) are also assigned as counterpart personnel.

## **(2) Facilities**

MAL has provided the project team with office space in Kasama, including five (5) sets of desks and chairs. In addition, one (1) storage room has been provided for temporary storing of construction tools of irrigation facilities such as hammers, wheel burrows, and buckets.

## **(3) Local Cost**

Local cost for utilities of the office for JICA experts such as electricity and water has been provided to support the Project by GRZ.

### **3.2. Progress and Main Achievements of the Project Activities**

In general, planned activities were implemented as scheduled, with a few exceptions. At the time of the Mid-term Review, seven (7) permanent weirs were under construction. After the completion of these works, the estimated irrigated area would be approximately 35 hectares, based on figure assessed during the Pilot Study of 2009 to 2011. Although the works were planned to be completed by the end of November 2014, they are slightly delayed due to limited labour and distant locations where farmers obtain construction materials.

Group trainings for extension officers on construction and O&M of smallholder irrigation schemes have not reached the expected targets, since the number of extension officers who were supposed to participate in the trainings was reduced to focus on the construction of permanent weirs by TSB officers. The training of trainers (TOT) was conducted mainly for Provincial TSB officers. The Kick-Off trainings consisting of (i) the basic concept of the Project, (ii) construction of weirs and (iii) irrigated agriculture, and Mid-Term trainings consisting of (i) review of smallholder irrigation development after kick-off training and (ii) marketing techniques were conducted mainly for District TSB and extension officers (refer to ANNEX 8). Progress of activities based on the PO are summarized in ANNEX 9. In addition to the official activities, the Project has been technically supporting the construction of simple weirs as an entry point with the recognition of GRZ. As of November 2014, a total of 121 simple weirs were newly developed (93.9ha) and 132 were improved (196.7ha) through the introduction of the COBSI technologies known as COBSI Approach.

### **3.3 Achievement of the Outputs**

The levels of achievement of the Outputs are outlined as follows:

**Output 1:** Through hands-on experience, practical skills in design, construction, operation, and maintenance of permanent irrigation facilities for smallholder irrigation schemes are transferred to TSB (Technical Service Branch) staff.

A summary of the level of achievement of Output 1 is presented in the Table 3-2. Although figures for the indicators were not set at the time of the Mid-term Review, most of the Project activities were carried out according to the PO and outputs are expected to be gradually generated. (For details, refer to ANNEX 4.)

Table3-2: Level of Achievement of Output 1

Indicator	Level of Achievement
1-1 Participatory activities are conducted for at least XX existing simple irrigation schemes which were developed in the previous study in 2009 to 2011 for upgrading to permanent schemes	Questionnaire survey consisting of i) general conditions, ii) irrigation facilities, iii) institution, iv) operation and maintenance, v) farming and vi) marketing was conducted and the data was compiled for a total of 423 simple irrigation schemes developed in the Study. It was then found that approximately 25% of the existing simple schemes maintain potential for the upgrading to permanent schemes. In addition to the maintenance activities that farmers conduct, it was observed in some scheme sites that farmers jointly rent a truck to ship their crops to the market by using fees that are regularly collected for such purpose.
1-2 At least 25 TSB staff acquire training experience and skills through design and construction of XX permanent irrigation facilities.	A total of 12 TSB officers (two (2): Northern Province, three (3): Luapula Province, seven (7): District TSB) have experienced designing, and construction of a total of seven (7) permanent weirs. According to the interviews conducted and questionnaire information gathered , in addition to acquiring knowledge on designing and construction of weirs, these TSB officers upgraded their skills and knowledge through trainings in terms of i) marketing, ii) land management, iii) pest control and iv) soil improvement. It should be noted that a total of 31 TSB officers acquired training experience through Kick-off Training; 34 TSB officers through Mid-term training. Prior to these trainings the training of trainers (TOT) was also conducted.

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**Output 2: Through hands-on experience, practical skills in construction, operation, and maintenance of permanent irrigation facilities for smallholder irrigation schemes are transferred to MAL extension officers.**

Summary of the level of achievement of Output 2 is presented in the Table 3-3. (For the details, refer to ANNEX 4.)

Table 3-3: Level of Achievement of Output 2

Indicators	Level of Achievement
2-1 More than 300 extension officers acquire training experience and skills in smallholder irrigation farming and on operation and maintenance of smallholder irrigation schemes.	A total of 56 extension officers have acquired training experiences on smallholder irrigation farming and operation and maintenance of smallholder irrigation schemes through the Kick-off Training and, 52 farmers acquired such experience and skills through Mid-term Training. According to information gathered through the interviews with extension officers of Luwingu and Nchelenge, they have also acquired new skills such as i) lining of canals, ii) conservation farming, iii) integrated farming and so forth.  NB: Overall focus of the Project is permanent weirs; however, all the officers have to be trained through simple weir technologies as an entry point.
2-2 More than 90% trained extension officers disseminate techniques in smallholder irrigation farming and operation and maintenance of smallholder irrigation schemes to farmer groups in their respective areas.	Among 56 extension officers, 40 officers have submitted a “site profile” of their target areas and are recognized to have disseminated technologies concerned to farmer groups, which accounts for approximately 70%. this is according to the annual evaluation workshop held in November 2014.

**Output 3: Knowledge and skills of farmers in irrigated farming and operation and maintenance of upgraded permanent irrigation schemes and facilities are improved.**

The summary of the level of achievement of Output 3 is presented in the Table 3-4. Most of the Project activities were carried out according to PO and it is likely that the Output has been gradually generated. (For the details, refer to ANNEX 4.)

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Table 3-4: Level of Achievement of Output 3

Indicator	Level of Achievement
3-1 More than 50% of farmer groups in the developed schemes apply at least one of the irrigated farming technologies disseminated by the trained officers.	No information was obtained, since permanent weirs are still under construction. It will be studied during the remaining cooperation period of the Project. It is reported that 56% of farmers who use simple weirs developed by the Project have applied at least one (1) technology disseminated by the trained officers. In addition, at the permanent weir site of Nseluka in Mungwi District, which was selected as a pilot site during the Study, Irrigation Committee was established and has been responsible for O&M of canals.

### 3.4 Achievement of the Project Purpose

To promote and increase irrigated land through the provision of irrigation infrastructure for smallholder farmers in the target area

The summary of the findings is presented in the Table 3-5. Although the figures for the indicators were not set at the time of the Mid-term Review, the Project Purpose has gradually been achieved with a progress of three (3) Outputs. (For the details, refer to ANNEX 4.)

Table 3-5: Level of Achievement of Project Purpose

Indicators	Level of Achievement
1 More than XX farming groups in the target area are engaged in improved irrigated farming with community-based smallholder irrigation schemes.	No information was obtained, since seven (7) permanent weirs are still under construction. It will be studied during the remaining cooperation period of the project. It should be noted, however, that construction sites were selected from such schemes where irrigated agriculture is already well practiced, which indicates high possibility of introducing improved irrigated farming with community-based smallholder irrigation schemes.
2 The community-based smallholder irrigation schemes cover XX ha or more in target area.	The number of sites developed by JICA's budget is seven (7). Although the size of the irrigated area is yet to be confirmed since permanent weirs are still under construction, 35 hectares would be the estimated to be irrigated. The Project plans to measure the actual size that is covered by the

	community-based smallholder irrigation schemes during the remaining period of the Project.
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**4. Results of the Evaluation**

**4.1. Relevance**

The relevance of the Project is considered high for the following reasons.

**4-1-1. Necessity**

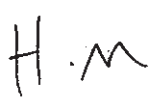
In the target areas, more than 85% of the population live in rural agricultural villages and practice farming, which largely depends on rainfall. These places are also main producing areas of maize which is the staple food of Zambia. The areas have potential for the development of irrigation scheme, since they have relatively high annual precipitation of rain and have rivers whose quantities of flow are, stable. From a topographical view points, the areas have potential for irrigation development. However, there is little progress made on irrigation and therefore, the needs for irrigation constructions are quite high. The poverty rate in the rural areas is very high hence the Project is expected to enhance income and improve livelihood by utilizing smallholder irrigation schemes in the dry seasons.

**4-1-2. Priority**

The National Irrigation Policy (NIP), established in line with National Agriculture Plan (NAP), aims at i) utilizing improved irrigation technologies/services, ii) strengthening of productivity and stability of irrigation agriculture, and iii) promotion of the use of irrigations for sustainable agricultural development. Although potential irrigation area in Zambia is estimated to be at 2,700,000ha, only 200,000ha are irrigated at present. GRZ intends to develop irrigated area of up to 6,000ha annually.

**4-1-3. Adequacy of the Project Design**

The Project started with the objective to disseminate irrigation development methods, under the“COBSI Approach”, which was started by the Study conducted between 2009 and 2011 and was highly appreciated by the Zambian side. Features of the COBSI approach include the construction of simple irrigation facilities as an entry point, using locally available materials and carrying out construction works by beneficiaries (farmers) under the instructions of the TSB officers who are trained by the Project. However the knowledge and skills on irrigation acquired by the TSB officers and extension officers of Zambia, need to be upgraded. ,By using simple irrigation scheme as an entry point, many extension officers will be able to learn the methods of



design, construction, maintenance and water management of these water facilities. In addition, through participating in the process of constructions farmer groups are expected to continuously maintain and manage the irrigation facilities even after the constructions.

#### **4.2. Effectiveness**

The effectiveness of the Project is considered relatively high for the following reasons.

##### **(1) Progress of Project Purpose**

As mentioned in the previous chapter, it is difficult to assess the degree of achievement of the Project Purpose, since permanent weirs are still under construction and the target figures of indicators were not set at the time of the Mid-term Review. Despite this limitation, the Team visibly observed the potential areas which are to be irrigated through COBSI Approach by the construction of permanent weirs.

##### **(2) Logic between Project Purpose and Outputs**

Three (3) Outputs specified in the PDM are the basic concepts/components of the Project's approach, which is under the process of technology transfer: from the project team to the TSB and extension officers, and from the TSB and extension officers to the peers and farmers". They are considered to be necessary and sufficient conditions to produce the Project Purpose.

##### **(3) Important Assumptions**

There are three (3) important assumptions specified in the PDM at the Output level. Among them, "Funds for construction of permanent weirs are provided" is not satisfying due to insufficient budget disbursement of GRZ, which has negatively affected the degree of achievement of the Project Purpose.

#### **4.3. Efficiency**

The effectiveness of the Project is considered intermediate for the following reasons.

##### **(1) Progress of Outputs**

As mentioned above, figures for the indicator were not set at the time of the Mid-term Review. Although figure under indicator 1.1 was not available at the time of the Mid-term Review, 423 sites have already been surveyed. For indicator 1.2, a total of 12 TSB officers have already been trained. They are expected to acquire relevant training experience and skills through training. As for indicator 2.1, since the current project framework focuses on the construction of permanent irrigation facilities, the number of extension officers to be trained is not likely to reach 300

during the project period. Under indicator 2.2, approximately 70% of extension officers have disseminated technologies to farmer groups. As for indicator 3.1, it has not yet been monitored. With regards to the training contents, information collected through interviews, indicates that most of the participants are satisfied with the contents, duration and the instructors of the courses. However, some TSB officers expressed that the duration of training on permanent weir design and construction was short and that they wish to participate in the practical training of constructing a simple weir. It should also be noted that a JOCV cooperated with the Project by conducting a lecture regarding marketing in the course of the Project's training.

#### (2) Inputs

In general, inputs have sufficiently been utilized on planned activities and are producing Outputs. Provision of fuel for motorbikes, for instance, has been made possible by the Project for extension officers to make regular visit to the simple and permanent irrigation facilities, which is an essential activity/requirement for counterpart officers. However, inputs from the Zambian side, such as operational costs are not satisfactory. For details, refer to 4.5.3. "Financial Sustainability".

#### (3) Important Assumptions

There is one (1) important assumptions specified in PDM at Activity level, which is "trained officers continue their services in the target areas". However, officers are sometimes transferred unexpectedly leaving gaps and uncertainty. In such areas, few extension activities have been conducted on the ground despite the provision of series of training courses.

### 5.4 Impact

#### (1) Progress of Overall Goal

Figures for the indicator of the overall goal was not yet set and impacts have not been generated and at the time of the Mid-term Review. However, according to farmers interviewed, besides traditional crops, they wish to cultivate relatively new crops, including rice, sugarcane, tomato and orange, which will definitely contribute to the enhancement of income.

#### (2) Other Impacts

- The Team visited some simple and upgraded permanent weir sites developed at the time of the Study and found out that farmers using the schemes have experienced improved living conditions through enhanced income, caused by increased crop production due to irrigation. Most farmers talked that they have managed to build new house ,repair their houses, they are able to purchase farming inputs and are able to take their children to school using

income generated under irrigation farming. It is expected that similar events would happen in the target areas of the Project. Further, farmers have come up with new ideas and activities to further enhance productivity including

- Farmers have started to conduct joint activities that have been initiated by the Project.
- Farmers are trying to diversify farming to include fish farming
- Gender issues have also been gradually introduced among participants through trainings carried out by the Project. As a result of this, women who take part in the construction of weirs are to be allocated a land for farming.
- No negative impacts have been observed.

#### **4.5 Sustainability**

The sustainability of the Project is considered intermediate for the following reasons.

##### **4.5.1 Institutional and Policy Aspect**

The project activities are in line with National Irrigation Policy (NIP) and the sixth National Development Plan. Dissemination of technology, skills and knowledge to the smallholder irrigation farmers can be developed through the existing agricultural extension system that is well supported by the existing policy.

##### **4.5.2. Technical Aspect**

The level of technologies for simple weir schemes, which is out of the official framework, is kept very easy, while that associated with irrigation engineering for permanent weir construction is still a challenge for many of the TSB officers who do not have much technical background or experience in it. In addition, the number of irrigation engineers in MAL is low at any levels. According to a TSB officer of Luapula and Northern Provinces, there are only a few engineers who can deal with designing of permanent weirs in the province currently. Therefore there is need for more training.

##### **4.5.3. Financial Aspect**

MAL has been facing a financial challenge in 2014 as the budget disbursement to the Provinces remains between 15%-20%, as of July 2014, of the activity budget of the year. As a result, disbursement for the mobilization of Government officers and the Government's role in the construction of permanent weir has been hindered. In Northern Province, , 215,000ZMK was budgeted for this project, which was to serve for the construction of two (2) permanent weir schemes. However, due to lack of funds, the two planned permanent weirs have not been constructed. The same situation applies in Luapula Province. Notwithstanding, the counterpart

agency has provided some assistance to the Project such as: i) Government-owned vehicles, ii) dumpy level, and iii) office space, all of which have contributed to the mobilization of provincial TSB officers for the supervision and construction of weirs in remote areas. However, the future prospects were not certain at the time of the Mid-term Review.

#### **4.6. Conclusions**

The Project activities have been conducted in accordance with PO and accordingly, Outputs show some progress. However, since some indicators at the Project Purpose and Output levels are set without target figures, there were limitations on the numerical assessment. Evaluation based on five criteria (Relevance, Effectiveness, Efficiency, Impact and Sustainability) showed some positive results; high relevancy and relatively high progress of Outputs. It also clarified some negative aspects especially concerning sustainability such as the low rate of budget disbursement and limited number of engineers who can design permanent weirs. Sustainability, however, would be strengthened when the recommendations specified in the Chapter 5 are met.

### **5. Recommendations and Lessons Learned**

#### **5.1 Recommendation**

##### **5.1.1 Recommended Actions to be taken by the Project Teams (Zambian counterparts and Japanese experts) in the Remaining Cooperation Period**

###### **(1) Enhancement of the Project's Positive Effects**

The Project has two (2) indicators for Project Purpose which are to increase No. of beneficiaries farmer groups and to increase irrigated area through the community-based smallholder irrigation scheme based on the COBSI approach. Following the findings of the Joint Mid-term Review, the Team is making the following recommendations to address the observed challenges in the first half of the Project period.

- 1) Despite the fact that the Project focus is on the Permanent Weir Schemes, the Team established the fact that the simple weir is still the entry point to the permanent weir scheme. Simple weir scheme based on the COBSI Approach is the most effective and easiest way in terms of the efficiency and cost performance. Capacity to construct, operate and maintain simple weirs has been developed within TSB and extension officers as well as that of farmers. This capacity should be strengthened to achieve overall project objectives. Because the simple weir scheme highly contributes to increase both the Project focuses on the beneficiaries and irrigated farmland.

- 2) Arising from the visits to various schemes, the Team observed that farmers are facing challenges in water management, marketing and crop management. The Team, therefore, recommends that the Project should promote collaboration with DOA and other relevant departments to address these challenges.

Regarding marketing, the Team noted that PACO of Northern Province was sent to participate in the training of JICA on the market-oriented agriculture promotion in Japan and Kenya. Thus, it is expected that the obtained knowledge will be disseminated to the farmer groups through TSB and extension officers.

(2) PDM Revision

The Team noted that there are no specific target figures for the PDM. The Team, therefore, recommends the targets with some modifications as per attached in ANNEX 10.

(3) Collaboration with other stakeholders

The Team recognized that the COBSI Approach is unique and effective way of developing smallholder irrigation. However, without the Project being complimented by other projects in MAL, limited achievement can be expected. The Team strongly recommends collaboration with other stakeholders at operation level to achieve synergy effects.

**5.1.2 Recommended Actions to be taken by GRZ**

(1) Budget disbursement to the Project by GRZ

MAL has taken into consideration budget allocation to the Project since the project inception. However, actual budget disbursement has been quite low to enable yearly planning and the achievement of sufficient project results. It is strongly recommended that MAL should commit itself to provide adequate funds to support the project activities including operation costs such as Daily Subsistence Allowance (DSA) and transport needs for MAL staff.

(2) Strengthening of the linkage between MAL and the Project

The Team strongly recommends that MAL takes initiative to engage with the all stakeholders in the project area to complement each other especially in resource utilization.

(3) Collaboration with relevant departments

Arising from the visits to various schemes, the Team observed that farmers are facing challenges in water management, marketing and crop management. The Team, therefore, recommends that DOA and other relevant departments should take an initiative in addressing these challenges.

#### (4) Fee Collection for Irrigation Facility Repair

The Team recognized some of the irrigation schemes in the project area have been collecting fees from scheme members to cater for maintenance of irrigation facilities. It is recommended that MAL should encourage the initiative across all the irrigation schemes.

### **5.2. Lessons Learned**

#### (1) The Importance of Developing Simple Weirs before Constructing Permanent Ones

TSB officers, extension officers and farmers, expressed that the development of simple weirs is essential as an entry point before constructing permanent weirs. By doing so, farmers can experience the use of irrigation and recognize its importance and learn to appreciate the facility before the construction of permanent weirs. This is also useful in analyzing the important factors in constructing permanent weirs, such as water flow and geographical features. This process is obviously quite important, considering the case of other donor's experience where a permanent weir was constructed without preparing a simple weir. The weir was totally abandoned without any use by farmers because of lack of appreciation of irrigation agriculture by farmers and improper alignment of canals.

**ANNEX 1: Schedule of the Mid-term Review [T-COBSI]**

No	Date	Day	Time	Schedule
1	Nov. 23	Sun	-	Mr. Kishinami arrives in Lusaka
			7:00-18:00	Mr. Hiruta travel from Kasama to Lusaka
			19:00	Briefing at the hotel
2	Nov. 24	Mon	8:40-9:00	Courtesy to JICA RR/ briefing at JICA
			10:00-12:00	Courtesy and meeting at MAL
			13:00-17:00	Team meeting at JICA office (tentative)
3	Nov. 25	Tue	8:00-9:00	TV meeting
			9:00-18:00	Travel from Lusaka to Mansa
4	Nov. 26	Wed	8:00-8:30	Courtesy to PACO, and PAO
			8:30-9:00	Courtesy to DACO Mansa
			9:30-12:00	Visiting simple sites in Mansa
			13:00-14:00	Travel from Mansa to Mwense
			14:00-14:30	Courtesy to DACO Mwense
			14:00-16:00	Visiting permanent site in Mwense
5	Nov. 27	Thu	16:00-17:00	Travel from Mwense to Mansa
			7:00-16:00	Travel from Mansa to Lusaka
			8:00-11:00	Travel from Mansa to Nchelenge
			11:00-11:30	Courtesy to DACO Nchelenge
			11:30-14:00	Visiting permanent site in Nchelenge
6	Nov. 28	Fri	14:00-17:00	Travel from Nchelenge to Mansa
			8:00-11:00	Travel from Mansa to Luwingu
			11:00-12:00	Visiting permanent site in Luwingu
			13:00-16:00	Visiting simple site and an Irish-aid permanent site
7	Nov. 29	Sat	16:00-18:00	Travel from Luwingu to Kasama
			-	Documentation at hotel/ office
			-	Documentation at hotel/ office
8	Nov. 30	Sun	7:00-18:00	Traveling from Lusaka to Kasama (by road)
			15:30-18:00	Traveling from Lusaka to Kapiri (by road)
			6:00-14:00	Traveling from Kapiri to Kasama (by road)
9	Dec. 1	Mon	11:00-15:00	Team Meeting
			15:00-16:00	Courtesy to PACO/PAO, and PS
			16:00-17:00	Team Meeting
			8:00-17:00	Visiting simple and permanent sites in Kasama and around
10	Dec. 2	Tue	8:00-17:00	Visiting simple and permanent sites in Kasama and around
			-	Arriving in Lusaka
			15:00-16:00	Meeting at JICA office
			16:00-17:00	Courtesy to MAL (tentative)
			8:00-9:30	Travel from Kasama to Mporokoso
			9:30-10:30	Visiting permanent site in Mporokoso
11	Dec. 3	Wed	10:30-16:00	Visiting simple site in Kasama
			16:00-17:00	Interview to provincial TSB officers
			7:00-18:00	Travel from Lusaka to Kasama (by road)
			8:00-10:00	Travel from Kasama to Mpika
12	Dec. 4	Thu	10:00-10:30	Interview to DACO Mpika and TSB officer
			10:30-12:00	Visiting permanent site in Mpika
			13:00-15:00	Visiting simple sites in Mpika
			15:00-17:00	Travel from Mpika to Kasama
			19:00-21:00	Team meeting (dinner)
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No	Date	Day	Time	Schedule
13	Dec. 5	Fri	8:00-17:00	Team meeting
14	Dec. 6	Sat	7:00-18:00	Travel from Kasama to Lusaka
15	Dec. 7	Sun	16:00-18:00	Team meeting
			-	Report writing/ drafting the PDM
16	Dec. 8	Mon	-	Team meeting/ report writing/ distribution of the draft report/ courtesy to PS (option) Interview to PACO Northern Province in Lusaka Interview to NUSFAZ
17	Dec. 9	Tue	-	Team meeting/ discussion with the officers concerned
18	Dec. 10	Wed	10:00-12:00	JCC meeting @ Chrismer Hotel/ signing on the minutes
19	Dec. 11	Thu		Reporting to JICA office
				Reporting to the Embassy of Japan

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**Annex 2: Project Design Matrix (PDM)**

**REVISED VERSION**

**Version: 0**

Title of the Project: Technical Cooperation Project on Community-based Smallholder Irrigation (T-COBSI)

Project Period: From May 7 2013 to December 31 2016

Implementing Organization: Ministry of Agriculture and Livestock (MAL)

Target Areas: Districts where the pilot project was implemented under the Study for Capacity Building and Development for Community-based Smallholder Irrigation Schemes in Northern and Luapula Province in the Republic of Zambia in 2009 to 2011

Target Beneficiaries / Groups: TSB officers, extension officers and smallholder farmers in the target areas

(1)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<b>Overall Goal</b> Irrigated agricultural production in the target areas is increased.	1. Production of target crops (Note 1) by at least XX farmer groups (Note 2) is increased in the target area by March 2020. (Note 4)	* Annual reports of the districts	* Smallholder irrigation continues to be a focus area of the policies
<b>Project Purpose</b> To promote and increase irrigated land through the provision of irrigation infrastructure for smallholder farmers in the target areas.	1. More than XX farmer groups in the target area are engaged in improved irrigated farming with community-based smallholder irrigation schemes.(Note 2 & 4) 2. The community-based smallholder irrigation schemes cover XX ha or more in target area. (Note 4)	* Results of the Project's monitoring survey * Annual reports of the districts	* No drastic climate change to negatively affect the agricultural production takes place.  * Prices of agricultural produce and agro-inputs do not change drastically.
<b>Outputs</b> 1. Through hands-on experience, practical skills in design, construction, operation, and maintenance of permanent irrigation facilities for smallholder irrigation schemes is transferred to TSB staff.  2. Through hands-on experience, practical skills in construction, operation, and maintenance of permanent irrigation facilities for smallholder irrigation schemes is transferred to MAL extension officers.  3. Knowledge and skills of farmers in irrigated farming and operation and maintenance of upgraded permanent irrigation schemes and facilities are improved.	1.1 Preparatory activities are conducted for at least XX existing simple irrigation schemes which were developed in the previous study in 2009 to 2011 for upgrading to permanent schemes. (Note 4) 1.2 At least 25 TSB staff acquire training experience and skills through design and construction of XX permanent irrigation facilities (Note 3 & 4)  2.1 More than 300 extension officers acquire training experience and skills in smallholder irrigation farming and on operation and maintenance of smallholder irrigation schemes. (Note 3) 2.2 More than 90% of trained extension officers disseminate techniques in smallholder irrigation farming and operation and maintenance of smallholder irrigation schemes to farmer groups in their respective areas.  3.1 More than 50% of farmer groups in the developed schemes apply at least one of the irrigated farming technologies disseminated by the trained officers.	* Project's training reports * Annual reports of the districts  * Project's training reports * Annual reports of the districts  * Results of the Project's monitoring survey * Annual reports of the districts	* There is no drastic incidence to negatively affect the conditions of the sources of water for smallholder irrigation in the target areas.  * There is no serious conflict among the farmers in the target areas.  * Funds for upgrading of simple weirs to permanent weirs are provided.

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<p><b>Activities</b></p> <p>1.1 Conduct group training for TSB officers on design, construction, operation, and maintenance (O&amp;M) of smallholder irrigation schemes.</p> <p>1.2 Train farmers on basic O&amp;M of smallholder irrigation schemes through the on-the-job training (OJT) for TSB officers.</p>	<p><u>Zambian Side</u></p> <ul style="list-style-type: none"> <li>- Assignment of Project personnel               <ul style="list-style-type: none"> <li>a. Project Director</li> <li>b. Project Manager</li> <li>c. Counterpart personnel</li> </ul> </li> <li>- Assignment of supporting staff</li> </ul>	<p><b>Inputs</b></p> <p><u>Japanese Side</u></p> <ul style="list-style-type: none"> <li>- Dispatch of experts in the relevant fields such as:               <ol style="list-style-type: none"> <li>1) Team Leader/ Irrigation Planning and Management</li> <li>2) Co-Team Leader/ Farming System/ Training Design</li> <li>3) Irrigation Facility Design and Construction Control</li> <li>4) Water Management/ Irrigation Facility Design and Construction Control (2)</li> <li>5) Agricultural Marketing</li> <li>6) Rural Society/ Farmers Organization/ Gender</li> <li>7) Environmental and Social Considerations</li> </ol> </li> <li>- Training of counterpart personnel in Japan and/or the 3<sup>rd</sup> country</li> </ul>	<p>* Trained officers continue their services in the target areas.</p>
<p>2.1 Conduct group training for extension officers on construction, O&amp;M of smallholder irrigation schemes.</p>	<ul style="list-style-type: none"> <li>- Provision of office spaces at DOA headquarters and in each province</li> </ul>	<ul style="list-style-type: none"> <li>- Provision of machinery, equipment and materials for training activities</li> </ul>	<p><b>Preconditions</b></p>
<p>3.1 Conduct group training for extension officers on the on-farm water management.</p> <p>3.2 Disseminate knowledge and techniques of on-farm water management to the farmers in the target areas.</p> <p>3.3 Conduct group training for extension officers on techniques of irrigated crop production.</p> <p>3.4 Disseminate knowledge and techniques of irrigated crop production to the farmers in the target areas.</p>	<ul style="list-style-type: none"> <li>- Provision of operational costs</li> </ul>	<ul style="list-style-type: none"> <li>- Supplemental operational cost as needs arise (as per rules and regulations of JICA's Technical Cooperation Projects)</li> </ul>	<p>* Peace and order situation in the target areas is stable</p> <p>* Rural communities in the target areas are willing to take part in the project activities</p>

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\* **Note 1:** The target crops to be the indicator will be selected through discussion among the members of the Project Implementation Team after the commencement of the Project.

\* **Note 2:** "Farmer groups" referred in the indicators are the groups of farmers in the targeted irrigation schemes.

\* **Note 3:** Figures of TSB staff /extension officers are derived from calculation based on Stage I of the Action Plan formulated by the former Study.

\* **Note 4:** The concrete figures are to be agreed upon based on the result of potential survey to be conducted in target areas as a part of the preparatory activities.

### ANNEX 3: Plan of Operations (PO)

Version: 20120721

Project Title: Technical Cooperation Project on Community-based Smallholder Irrigation (T-COBSI)

Overall Goal: Irrigated agricultural production in the target areas is increased.

Project Purpose: To promote and increase irrigated land through the provision of irrigation infrastructure for smallholder farmers in the target areas.

Project Period: Four (4) years from the date of the first dispatch of Japanese Expert(s)

Activities	JFY2013												JFY2014				JFY2015				JFY2016				JFY2017				Responsibility
	Q3		Q4		Q1		Q2		Q3		Q4		Q1		Q2		Q3		Q4		Q1		Q2		Q3				
<b>Preparatory Activities</b>																													
0-1 Set up the Project																													HQ TSB officers
0-2-1 Conduct follow up monitoring of the pilot projects in the former Study on irrigation and agronomy, and revise the training materials, if necessities arise. The monitoring team will consist of Headquarter (HQ) TSB officers (C/P), provincial officers and JICA experts.																													HQ TSB officers, Provincial TSB offices
0-2-2 Revise the training plan, if necessities arise.																													HQ TSB officers, Provincial TSB offices
<b>Output 1: Through hands-on experience, practical skills in design, construction, operation, and maintenance of permanent irrigation facilities for smallholder irrigation schemes is transferred to TSB staff.</b>																													
1-1 Conduct group training for TSB officers on design, construction, operation, and maintenance (O&M) of smallholder irrigation																													Provincial and district TSB officers
1-1 Conduct group training for TSB officers on design, construction, operation, and maintenance (O&M) of smallholder irrigation																													
1-1-2 Arrange and conduct kick-off training																													
1-1-3 Conduct refresh training																													
1-2 Train farmers on basic O&M of smallholder irrigation schemes through the on-the-job training (OJT) for TSB officers.																													Provincial and district TSB officers
1-2-1 Conduct site identification, design, BOQ, Costing																													
1-2-2 Conduct up-front, procurement of foreign materials and tools.																													
1-2-3 Conduct construction supervision.																													
<b>Output 2: Through hands-on experience, practical skills in construction, operation, and maintenance of permanent irrigation facilities for smallholder irrigation schemes is transferred to MAL extension officers.</b>																													
2-1 Conduct group training for extension officers on construction, O&M of smallholder irrigation schemes.																													BEOs/CEOs
2-1-1 Arrange and conduct training of trainers (TOT) course																													
2-1-2 Arrange and conduct kick-off training																													
2-1-3 Arrange and conduct follow up training (monitoring the performance)																													
2-1-4 Conduct total follow up training (total monitoring of the performance)																													
2-1-5 Inspect and give advices for extension officers to supervise farmer groups.																													
<b>Output 3: Knowledge and skills of farmers in irrigated farming and operation and maintenance of upgraded permanent irrigation schemes and facilities are improved.</b>																													
3-1 Conduct group training for extension officers on the on-farm water management.																													BEOs/CEOs
3-1-1 Arrange and conduct training of trainers (TOT) course																													
3-1-2 Arrange and conduct kick-off training																													
3-1-3 Arrange and conduct follow up training (monitoring the performance)																													
3-1-4 Conduct total follow up training (total monitoring of the performance)																													
3-2 Disseminate knowledge and techniques of on-farm water management to the farmers in the target areas.																													BEOs/CEOs
3-2-1 Inspect and give advices for extension officers to disseminate the management technologies.																													
3-3 Conduct group training for extension officers on techniques of irrigated crop production.																													BEOs/CEOs
3-3-1 Arrange and conduct training of trainers (TOT) course																													
3-3-2 Arrange and conduct kick-off training																													

	2015		2016				2017				2018				2019			Responsibility		
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3			
3-3-3 Arrange and conduct follow up training (monitoring the performance)									■				■				■			
3-3-4 Conduct total follow up training (total monitoring of the performance)																	■			
3-4 Disseminate knowledge and techniques of irrigated crop production to the farmers in the target areas.																				
3-4-1 Inspect and give advices for extension officers to disseminate the management technologies.								■	■			■	■			■	■			BEOs/CEOs

MAL: Ministry of Agriculture and Livestock    HQ: Headquarters    TSB: Technical Services Branch    BEOs: Block Extension Officers    CEOs: Camp Extension Officers

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Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
Were the input made as planned?		Have the Japanese experts been dispatched as planned?	Comparison with the planned figures and fields	List of Japanese experts	Project records	Document review, interviews	Eight Japanese experts have been dispatched in the relevant fields specified in PDM.
		Has the counterpart training been conducted as planned?	Comparison with the planned figures	Records on counterpart training	Project records	Document review, interviews	Training courses, such as training of trainers, kick-off and mid-term trainings have been conducted as planned. Most of the participants are satisfied with the contents, duration and instructors of the courses. PACO of Northern province participated in training courses in Japan and Kenya.
		Have the machinery, equipment and materials been provided as planned?	Comparison with the planned figures	List of equipment provision	Project records	Document review, interviews	Main equipment include copy machines, vehicles, printers and laptop computers. They were provided as planned and are well operated and maintained.
		Have the counterpart personee been assigned as planned?	Comparison with the planned figures	List of counterpart personnel	Project records	Document review, interviews	9 C/Ps are assigned from MAL and work as Project Implementation Unit (PIU) members in 3 target provinces. Besides them, provincial and district TSB officers, extension officers are assigned as counterpart personnel.
		Have the project office space been provided as planned?	Comparison with the planned facilities	Information on the facilities	Project records, opinions of experts	Interviews, site visit	As for the proper conduct of the project, MAL provided the project team with an enough size of office space with electricity and five sets of desks and chairs.

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Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
Achievement		Have the budgets to cover operational costs allocated as planned by the Zambian side?	Comparison with the planned figures	Records on budgetary allocation	Project records	Document review, interviews	MAL faced a challenge in 2014 as the budget disbursement remains allegedly 15%-20%, as of July 2014, of the activity budget of the year. As the result, disbursement for the mobilization of government officers as well as the government's own initiative in construction of permanent weir have also been hindered. In Northern province, in particular, 215,000ZMK was budgeted for this project, which was to serve for the construction of two permanent weir schemes. Same is true with Luapula province. Notwithstanding, the counterpart agency has provided some physical properties for this project such as: 1) government-owned vehicles, 2) dumpy level, and 3) office space, all of which have contributed to the mobilization of provincial TSB officers for the supervision of the construction at remote areas.
		How many preparatory activities have been conducted for existing simple irrigation schemes which were developed in the previous study in 2009 to 2011 for upgrading to permanent schemes?	Degree of achievement	Information on farmer groups	Project records, DOA/TSB officials, extension officers and farmer groups staff	Document review, interview and discussion	Questionnaire survey was conducted and the data was compiled for a total of 423 simple irrigation schemes developed in the COBSI Study. It was then found that approximately 25% of the existing simple schemes maintain some potential for the upgrading to permanent schemes.
		How many TSB and other related personnel officers have acquired training experience and skills through design and construction of permanent irrigation facilities?	Degree of achievement	Information on the area covered by irrigation schemes			Document review, interview and discussion

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Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
Have the outputs been produced properly?		How many extension officers have acquired training experience and skills in smallholder irrigation farming and operation and maintenance of smallholder irrigation schemes?	Degree of achievement	Information on the technology dissemination to the extension officers and farmer groups	Training records, DOA/TSB officials, extension officers and farmer groups	Document review, interview and discussion	A total of 56 extension officers have acquired training experiences in smallholder irrigation farming and operation and maintenance of smallholder irrigation schemes through the Kick-off Training and 52 extension officers through Mid-term training. The number of extension officers who participate in the trainings is reduced according to the modified scope of work that focuses on the construction of permanent weirs.
		What percent of trained extension officers disseminate techniques in smallholder irrigation farming and operation and maintenance of smallholder irrigation schemes to farmer groups in their respective areas?	Degree of achievement	Information on the technology dissemination to the farmers groups	Project records, DOA/TSB officials, extension officers	Document review, interview and discussion	Among 56 extension officers, 40 officers have submitted a "site profile" of their target areas and are recognized to have disseminated technologies concerned to farmer groups, which accounts for approximately 70%, according to the annual evaluation workshop held in November 2014.
		What percent of farmer groups in the developed schemes apply at least one of the irrigated farming technologies disseminated by the trained extension officers?	Degree of achievement	Information of farmer activities	Project records, DOA/TSB officials, extension officers, farmer groups	Document review, interview and discussion	No information is obtained yet. It will be studied during the remaining period of the Project. However, 56% of farmers who use simple weirs developed by the Project have applied at least one (1) technology disseminated by the trained officers.
Is the Project Purpose likely to be achieved?		How many farmer groups in the target area are engaged in improved irrigated farming with community-based smallholder irrigation schemes?	Degree of achievement	Information of farmer activities	Project records, DOA/TSB officials, extension officers, farmer groups	Document review, interview and discussion	No information is obtained yet, since permanent weirs are still under construction. It will be studied during the remaining cooperation period of the project. It should be noted, however, that construction sites were selected from such schemes where irrigated agriculture is already well practiced, which indicates high possibility of introducing improved irrigated farming with community-based smallholder irrigation schemes.

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Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
	be achieved?	How many hectares are covered by the community-based smallholder irrigation schemes?	Degree of achievement	Information of farmer activities	Project records, DOA/TSB officials, extension officers, farmer groups	Document review, interview and discussion	The number of sites developed by JICA's budget is seven (7). The size of the irrigated area is yet to be confirmed, since permanent weirs are still under construction. The Project plans to measure the actual size that is covered by the community-based smallholder irrigation schemes during the remaining period of the Project.
Implementation processes	Have the activities been implemented as scheduled?	Has the decision making mechanism of the Project been functional?	Existence of problems and countermeasures	Information on the JCC and other decision making mechanisms	Project personnel, Project records	Interview, discussion with Project staff	Joint Coordination Committee has a decision-making function and was held in July 2013. In addition, Project Implementation Unit (PIU) was established in each of three provinces: Northern, Muchinga and Luapula.
		Has the communication among JICA HQ, JICA country Office, DOA been smooth?	Existence of problems and countermeasures	Ways and contents of the regular transactions	Officers in charge at JICA HQ and JICA Zambia Office, Staff of DOA/TSB, Project personnel, Project	Interview, discussion with Project staff	No problem reported
Have there been any problem related to the management of		Has the communication among the Project personnel (Japanese experts, C/Ps, extension officers and farmer groups) been smooth?	Existence of problems and countermeasures	Ways and contents of the daily and regular transactions among the Project personnel	Project personnel, Project records	Interview, discussion with Project staff	No problem reported
		Have there been any specific problems encountered in the course of Project implementation so far?	Existence of problems and countermeasures	Information on the managerial problems so far and countermeasures taken by the Project	Project personnel, Project records	Interview, discussion with Project staff	i) Less human resources have been available than expected for constructions of permanent weirs, ii) locations where farmers obtain construction materials are generally distant, iii) the disbursement of budget by MAL has not been sufficient, which has affected the activities of extension and district officers.
		What are special measures taken in terms of the managerial aspects of the Project, if any?	Existence of problems and countermeasures	Information on the managerial measures taken by the Project	Project personnel, Project records	Interview, discussion with Project staff	A cascade-like process of technology transfer was introduced, whose approach is; from the project team to TSB and extension officers, and from the TSB and extension officers to peers and farmers.

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Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
	management of the Project?	Do the DOA and TSB understand the objectives and approaches of the Project?	Levels of understanding	Information on the understanding of the Project purpose, discussion & meeting records	Project personnel, Project records	Interview, discussion with Project staff	According to interview made to TSB officers, they have a proper understanding on the objectives and approaches of the project, particularly the advantages of upgrading of irrigation schemes from simple to permanent ones.
		Have appropriate counterpart personnel been assigned?	Suitability of their expertise	Information on the qualification / background / experiences of the assigned personnel	Project personnel, Project records	Interview, discussion with Project staff	Besides 9 C/Ps from MAL, appropriate counterpart personnel, including TSB officers and extension officers, have been assigned in order to carry out activities.
		Have the counterpart personnel been committed and involved actively in the Project activities?	Degree of participation	Examples of the activities that were mainly conducted by the counterpart personnel	Project personnel, Project records	Interview, discussion with Project staff	According to Japanese experts, the above-mentioned personnel have been committed and involved actively in the Project activities and there is no particular problem reported in this term.
	Are the DOA/TSB committed and well aware of the Project?	Have TSB well recognize the Project activities?	Levels of understanding	Information on their understanding of the Project, records of explanatory efforts made by the Project	Project personnel, Project records, extension officers and farmer groups staff	Interview, discussion	According to the interview made to TSB officers, they clearly understand the project activities such as a series of trainings, monitoring systems, and construction procedure of the permanent schemes.
		Have the the extension officers and farmer groups participated actively in the Project activities?	Degree of participation	Information on their participation in the Project activities	Project personnel, Project records, extension officers and farmer groups staff	Interview, discussion	Extension officers, who are in charge of periodical visits to the construction sites for supervision, and farmers have been fully engaged in gathering materials and construction works.
	Were there any special measures taken to ensure the smooth implementation of the Project?	Have there been any special measures taken in terms of implementation mechanism?	Measures for the smooth implementation of the Project	Information on the measures taken by the Project	Project personnel, Project records	Interview, discussion with Project staff	Mechanism of the Project includes a cascade-like process of technology transfer: from the project team to TSB and extension officers, and from the TSB and extension officers to peers and farmers.
		Have there been any special consideration given in terms of dealing with the TSB and extension officers and farmer groups?	Measures for the smooth implementation of the Project	Information on the measures taken by the Project	Project personnel, Project records	Interview, discussion with Project staff	Concerning the technical level of participants, basic training contents were provided for extension officers, while TSB officers were trained on more technical aspects. In addition, fuel was provided for extension officers in charge of permanent scheme construction, 40 liter per month.

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Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
Relevance	Does the Project address the needs of the target area and the extension officers and farmer groups?	Is the Project still in the line with the needs of the TSB, extension officers and farmer groups?	Response from the extension officers and farmer groups	Baseline information, opinion of Project personnel and target beneficiaries	Project reports and personnel, extension officers and farmer groups staff	Document review, interviews	Duties of TSB officers and extension officers include provision of instructions for farmers. The Project train such officers to be able to instruct farmers in constructing weirs, crop marketing, etc.
		Is the Project still consistent with the development plans of Zambia's Government?	Existence of the consistent stipulation in the document	Development plans and programmes of Zambian government	Policy documents	Document review	The Project is consistent with the development plans of Zambia's Government, such as National Irrigation Policy (NIP).
		Is the Project still consistent with the plans and programs in irrigation and community-based smallholder irrigation sectors?	Consistent stipulation in the document	Policies & programs related to the irrigation and agriculture	Policy documents	Document review Interview	National Irrigation Policy 2004-2015, established in line with National Agriculture Plan, aims at i) utilization of improved irrigation technologies/services, ii) strengthening of productivity and stability of irrigation agriculture, and iii) promotion of use of irrigations for sustainable agricultural development. Therefore, it is considered to be consistent. (NIP is expected to be modified with the support of the World Bank.)
		Is the Project relevant to the Japan's Aid Policies?	Existence of the consistent stipulation in the document	Priority directions in Japan's Aid Program	Japan's Foreign Assistance Policy	Document review Interview	The Project is in line with the Japan's Aid Policies for Zambia, which emphasizes i) the enhancement of irrigated area and diversification of crops.
	Has the Project still been in line with the priorities in the development	Does the Project properly address the needs and context of DOA/TSB/extension officers and farmer groups?	Existence of the consistent stipulation in the document	Plans and program of DOA/TSB	Policy documents	Document review	TSB and extension officers are expected to train farmers. The project has provided them with necessary skills and knowledge, such as construction of weirs and marketing, in order to train farmers. Also, in the target area, livelihood improvement through irrigation development responds to the center of their needs. In the areas, irrigation development has not been made much progress and therefore, the needs for irrigation constructions are quite high.

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Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
	plans and program of Zambia and the sector ?	Does the Project appropriately address the issues of community-based smallholder irrigation sectors?	Existence of the consistent stipulation in the document	National policies & programs related to the local government and water sector	Policy documents	Document review	In the target areas, more than 85% of the population live in rural agricultural villages and practice farming, which largely relies on rainfall. The areas have high potentials for the development of irrigations, since they have relatively high annual precipitation and have rivers whose quantities of flow are, to a certain extent, stable. Irrigation development, however, has not been made much progress and therefore, the needs for irrigation constructions are quite high
		Have there been any synergy effects through cooperation with JICA's Projects and other donors'?	Positive response from the extension officers and farmer groups	Baseline information, opinion of stakeholders	Project reports and personnel, DOA/TSB officials	Document review, interviews	The Project shared the training courses with RESCAP and FoDis-R. Program for Luapla Agricultural and Rural Development II (PLAD II) of the Finish Government provides fuel (20litters) for extension officers, however, there is no direct cooperation with T-COBSI. It should also be noted that a JOCV cooperated with the Project by conducting a lecture regarding marketing in the course of the Project's training.
	Has the Project been adequate means to address the development issues in the country and the sector?	Has the number of the extension officers and farmer groups been appropriate?		No. and area of coverage, No. of beneficiaries	Project personnel, statistics, other secondary documents	Document review, interviews	The number of extension officers who participate in the trainings is reduced according to the modified scope of work that focuses on the construction of permanent weirs. Thus, the number of extension officer trained so far is limited, compared to 300 spsified in PDM.
		Has the Project equitably brought about the benefit?	Distribution of the Project benefits	Project benefits enjoyed by different starata of extension officers and farmer groups	Project records and personnel, DOA/TSB officials	Document review, interviews	Allmost all the farmers who constructed a weir have equal access to the water. However, it is reported in Nselka that water does not reach to farmers who live in far end from the weir, though they have participated in the construction .
		Has the cost been equally shared by the extension officers and farmer groups members?	Information on cost sharing	Expenditure and source of funds	Project records and personnel	Document review, interviews	Farmers concerned provide labor to construct a weir and no complaints are reported in this sense..

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Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
	Is the selection of extension officers and farmer groups appropriate?	Is there any advantage of Japanese technologies / experiences?		Technologies transferred through the Project	Project personnel, Project records	Document review, interviews	Permanent weirs with international standard is designed to cope with excessive flood water during the rainy season, which contributes to a longer lifespan of the facilities.
		Have there been any changes in the social, political and other conditions compared to before the commencement of the Project?		Information on the environment of the Project	Project personnel, Project records	Document review, interviews	According to farmers, the ties among community people have been strengthened through joint activities conducted by the Project. In addition, women who participated in constructing a weir will be allocated a farmland.
	Is the prospect of achieving the Project purpose considered to be high?	Is the Project Purpose likely to be achieved, considering the current level of progress of Outputs?	Comparison of the actual achievement with the original plan	Information on the results of activities that indicate the cause-effect relationship	Project personnel, Project records	Interview, discussion with Project staff	It is difficult to assess the degree of achievement of the Project Purpose, since 7 permanent weirs are still under construction and also the target figures of objectively verifiable indicators are not set at the time of the Mid-term Review.
	Have there been any factors that have affected the achievement of the Project?	Have there been any factors contributing to the achievement of the Project Purpose other than the outputs?	Factors that positively affect the Project	Information on the related events, programs/projects by other organizations in the target area	Project personnel, Project records, relevant documents	Interview, field visit, discussion with Project staff	Experience of developing simple weirs during COBSI Study contributes to the construction of permanent weirs and therefore to the achievement of the Project Purpose.
	Have the outputs been appropriate to achieve the Project purpose?	The degree of contribution of 3 Outputs to the achievement of the Project Purpose	Relation between the outcomes of the activities and outputs	Progress of Outputs and levels of achievements	Project personnel, Project records	Interview, discussion with Project staff	Three (3) Outputs specified in PDM are the basic concepts/components of the Project's approach, which is "a cascade-like process of technology transfer: from the project team to extension officers, and from the extension officers to peers and farmers". They are considered to be necessary and sufficient conditions to produce the Project Purpose. In particular, training consisting of theoretical and practical elements are highly appreciated by trainees. Some TSB officers stated, however, that they need more practical training, including the construction of weirs.
	Is the logical sequence between Outputs and Project Purpose logical?	Is the sequence between Outputs and Project Purpose proper?	Relation between the outcomes of the activities and outputs	Logical sequence between Outputs and the Project Purpose	PDM, Project personnel, Project records	Interview, discussion with Project staff	It is considered to be logical. Refer to the above.

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Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
	Has there been any influence by important assumptions?	Are the important assumptions adequate and realistic?	Satisfaction level of Important Assumptions	Information on negative incidence, conflicts and fund	PDM, Project personnel, Project records	Document review, interviews	One of the Important Assumption "Funds for construction of permanent weirs are provided" is not satisfied. Funds have not been provided by MAL.
Efficiency	Is the prospect of achieving Outputs considered to be high?	Is the Outputs likely to be achieved, considering the level of progress og activities?	Comparison with the planned figures	Records on Japanese experts	Project records	Document review, interviews	Refer to the Achievement of Outputs in the Grid.
	Have the activities been appropriate to produce the outputs?	Is it necessary to add or delete any activities?	Appropriateness of activities	Information on the current activities	Project records Experts and C/Ps	Document review, interviews	The Team recommends to incorporate the construction of simple weirs into the official framework of the cooperation.
	Have the inputs been appropriate to procude the outputs?	Were the physical facilities sufficient to implement the Project activities?	Comparison with the planned figures	information on the facilities	Project records, opinions of experts	Interviews, site visit	MAL provided the project team with an enough size of office space.
		Has the scale of Project output been appropriate for the planned inputs?	Comparison with the input costs	Inputs by both Japanese and Zambian side	Project record and personnel, JICA staff	Interview, discussion with Project personnel and JICA staff	Inputs have been necessary and sufficient to generate Outputs. Provision of fuel for motorbikes, for instance, has made it possible for extension officers to make regular visit to the simple and permanent irrigation facilities, which is an essential activity/requirement of counterpart officers. In addition, cement, which is necessary to construct a permanent weir but is quite expensive, is efficiently utilized by farmers.
	Is it expectable to obtain enough project achievements to compensate the input	Comparison with the input costs	Inputs by both Japanese and Zambian side	Project record and personnel, JICA staff	Interview, discussion with Project personnel and JICA staff	Considering the benefits brought about by the Project, enough achievements are expected, though clear indication is yet to be clear.	
	Are there any outputs that were realized by cooperation with other JICA schemes or other donors?	Other donors' activities	Information from the Project	Project record and personnel, JICA staff	Interview, discussion with Project personnel and JICA staff	None.	

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Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
<p>Have there been any factors that affect the efficiency?</p>		Has there been any influence by important assumptions?	Satisfaction level of Important Assumptions	Information on the continuation of trained officers in the target areas	Project personnel, Project records	Interview, discussion with Project staff	There is one (1) important assumptions at the Activity level, which is "trained officers continue their services in the target areas". Officers are sometimes unexpectedly transferred or go on leave; consequently, at some construction sites, few extension activities were not conducted on the ground despite the provision of series of training courses. Those personnel were already replaced by other officers.
		Have there been any other factors affecting the efficiency?	Positive and negative influence on the Efficiency	Information on any relevant events in the course of Project implementation	Project personnel, Project records	Interview, discussion with Project staff	Although the constructions were planned to be completed by the end of November 2014, they are slightly delayed. Main reasons of this include less human resources than expected and distant locations where farmers obtain construction materials.
	Have there been any factors hindering or contributing to the efficiency of the Project?	Are there any possible factors that hinder or contribute to the achievement of the Outputs?	Activities affecting Efficiency	Information on any relevant events in the course of Project implementation	Project personnel, Project records	Document review, interviews	Positive factors include the experiences of developing simple weirs before constructing permanent ones. Regarding negative factors, refer to the above.
<p>Is the prospect of achieving the</p>		Are methods or mechanism suggested to achieve the overall goal?	Implication of COBSI experience	Future plan of the government, opinion of the Project staff	Staff of the DOA/TSB, Project personnel	Document review, interviews, discussion	It was found out that farmers there presently enjoy improved living conditions by enhanced income at the location of the pilot scheme of COBSI. It is expected that similar events would happen in the target areas of T-COBSI.
		Is the Overall Goal likely to be achieved, considering the level of progress of Project Purpose?	Confirmation on the logical sequence	Information on the results of activities that indicate the cause-effect relationship	Project personnel, Project records	Interview, discussion with Project staff	Detailed figure for the objectively verifiable indicator for the overall goal is not yet set at the time of the Mid-term Review. It is reported at some construction sites that crop management is not properly carried out and needs to be improved. Also, some scheme sites are far from the market and transportation cost is quite high (Nselka)..

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Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
Impacts	overall goal assumed to be high?	Are the important assumptions adequate and realistic?	Influence of surrounding factors on the Project implementation	Information on the relevant factors surrounding the Project	Project personnel, Project records	Interview, discussion	No drastic climate change as well as no drastic change of prices of agricultural production and agro-inputs are specified as important assumptions in PDM. They are considered to be adequate.
		Has there been any effect beyond the intended extension officers and farmer groups?	Social changes in the target area	Information on the sample cases in target area and other areas	Project personnel, Project records	Document review, interviews	According to farmers, the ties among community people have been strengthened through joint activities conducted by the Project. Besides, many farmers plan to have a fish pond to raise breams and tilapia by making use of water from permanent weirs especially in Luapula.
		Has there been any unexpected effect on the policies and programs of DOA/TSB?	Policy changes	Information on the relevant policies	Relevant documents, Project personnel, Project records	Document review, interviews	Not reported at the time of Mid-term Review.
	Have there been any unexpected effects?	Has there been any change or formulation in terms of relevant organization, laws, rules and regulations?		Information on the changes and new setup	Project personnel, Relevant documents	Document review, interviews	Not reported at the time of Mid-term Review.
		Has there been any unexpected change in technical and/or methodological aspects of the training?		Information on the changes that took place	Project personnel, Project records	Document review, interviews	Not reported at the time of Mid-term Review.
	Have there been any other ripple effects?	Has there been any unexpected effect in terms of gender, human rights, ethnics, and poverty level?		Information on the cases of relevant events	Project personnel, Project records	Document review, interviews	There are farmers who got out of the poverty line as a result of the Project implementation. In addition, women who construct weirs are allocated a farming land.
		Has there been any unexpected effect on environmental concerns in the target areas?		Information on the cases of relevant events	Project personnel, Project records	Document review, interviews	There is no major negative impact reported. (In the case of Soume simple weir, it is reported that dirt flows into the weir after the construction.)
	Will the policy of improving and expanding community-	Is the possibility of continuation of the policies of smallholder irrigation sector high?	Policy commitment	Current program, future plan of the government, opinion of the Project staff	Policy documents, Project personnel	Interview, discussion with relevant staff, document review	The project activities are in line with National Irrigation Policy 2004-2015 (NIP) and policy supports are expected.

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Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results	
	Main question	Sub question						
Sustainability	Community based smallholder irrigation continue ?	Is it still important and ongoing trends to assist to the agricultural sector and to establish the irrigation system?	Policy commitment	Current program, future plan of the government, opinion of the Project staff	Policy documents, Project personnel	Interview, discussion with relevant staff, document review	In addition to the above, potential irrigation area in the entire Zambia is estimated to be up to 2,700,000ha, however, only 200,000ha are irrigated at present. GRZ intends to develop irrigated area of as large as 6,000ha annually.	
	Will the necessary budget be allotted to continuously?	Are the necessary budget allotted for the continuous provision to construct irrigations, training, monitoring and evaluation activities?	Budget allocation, planned volume	Budget plan of DOA/TSB	Relevant staff of DOA/TSB, budget documents	Interview, confirmation of documents	As mentioned, MAL has been facing a challenge in 2014 as the budget disbursement remains allegedly 15%-20% of the activity budget of the year as of July 2014. Fuel and spare parts for moterbikes are not provided due to this insufficient disbursement. Future prospects are not certain at the time of the Mid-term Review. At the farmers' level, an Irrigation committee was established at the time of the previous Study and collects fee for the maintenance of the weir in Nselka.	
	Will the technologies and methodologies introduced by the Project continuously be utilized?	Are transferred technologies well understood and utilized by target personnel?	Utilization of transferred knowledge and skills at relevant agencies		Information on the cases of relevant events	Project personnel, Project records, sample beneficiaries	Interview, discussion	The level of technologies for simple weir schemes is kept very easy, while that associated with irrigation engineering for permanent weir construction, especially "designing" is still challenging for many of the TSB officers.
		Will trained C/Ps stay with the same positions/duties? Are there any countermeasures against personnel changes?			Information related to the inputs	Project personnel, Project records & documents	Interview, discussion	Some C/Ps were transferred, which has not largely affected the Project so far.
		Is there a mechanism to extend the technique transferred by the Project to other areas and other officers?			Information related to the process of implementation of the activities	Project personnel, Project records & documents	Interview, discussion	The mechanism for dissemination of technology, skills and knowledge, the smallholder irrigation can be developed through the existing agricultural extension system. The Project's approach includes the technology transfer from the TSB and extension officers to peers and farmers.

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Evaluation Criteria	Evaluation question		Basis of judgement	Data needed	Data source	Data collection method	Results
	Main question	Sub question					
Identification of the Necessary measures to be taken	How the presumed conditions at the time of the commencement of the Project been changed and addressed?	Is there any necessary change in terms of outputs and their target indicators of the Project?			Project personnel, staff of the DOA/TSB	Discussion with stakeholders and among the evaluation team	Three Outputs specified in PDM are the basic concepts/components of the Project's approach and they do not have to be modified. At the time of the Mid-term Review, numerical targets are not set for some indicators and need to be clarified.
		Is there any necessary change in terms of the Project purpose and its target indicators?			Project personnel, staff of the DOA/TSB	Discussion with stakeholders and among the evaluation team	The Team recommends the clarification of Indicators at the Project Purpose level as well as Outputs and Overall Goal levels.
		Is there any necessary change in terms of the implementation mechanism of the Project?			Project personnel, staff of the DOA/TSB	Discussion with stakeholders and among the evaluation team	It is suggested that development of simple weirs be incorporated into the official framework of the Project.
		What are the other possible measures to further facilitate the Project implementation?			Project personnel, Project records	Interview, discussion	Disbursement of the government budget with appropriate amount at the right timing would better facilitate the project implementation. In order to complement each others' activities, the Project should consider collaboration with other stakeholders at operation level to achieve synergy effects Involvement of more technical officers who have engineering background would maximize the effects of the Project. Training of water management, marketing and crop management shall be strengthened through the cooperation with other departments of MAL.

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**ANNEX 5: Dispatch of Japanese Expert**

Name	Field	Assignment Duration	Affiliation
Tatsuya Iizumi (Mr.)	Team Leader/ Irrigation Planning and Management	May 7 – Jun.2, 2013 (27 days)	SCI
		Apr 26 – Sep 14, 2014 (142 days)	
		Oct 15 – Dec 6, 2014 (68 days)	
Hideaki Hiruta (Mr.)	Co-Team Leader/ Farming System/ Training Design	May 7 – Jun 12, 2013 (37 days)	SCI
		Aug 26 – Oct 22, 2013 (58 days)	
		Jan 21 – Mar 5, 2014 (44 days)	
		Apr 26 – Jun 19, 2014 (55 days)	
		Jul 18 – Sep 12, 2014 (57 days)	
Nobuaki Chiba (Mr.)	Irrigation Facility Design/ Construction Control	Oct 13 – Dec 15, 2014 (64 days)	SCI
		May 7 – Jun 12, 2013 (37 days)	
		Aug 26 – Nov 16, 2013 (83 days)	
		Apr 26 – Sep 20, 2014 (148 days)	
Yoshihiro Sagawa (Mr.)	Water Management/ Irrigation Facility Design/ Construction Control (2)	Nov 5 – Dec 21, 2014 (47 days)	SCI
		Aug 7 – Oct 22, 2014 (77 days)	
Masaya Fukumoto (Mr.)	Agricultural Marketing	Nov 1 – Dec 15, 2013 (45 days) May 29 – Jul 27, 2014 (60 days)	SCI
Makiko Yamamoto (Ms.)	Rural Society/ Farmers Organization/ Gender	May 7 – Jun 12, 2013 (37 days)	SCI
		Oct 1 – Dec 14, 2013 (75 days)	
		Jan 21 – Mar 5, 2014 (44 days)	
		Apr 26 – Jun 29, 2014 (65 days)	
		Sep 23 – Dec 15, 2014 (84 days)	
Shokohifard Gholamhossein (Dr.)	Environmental and Social Considerations	April 26 – May 25, 2014 (30 days)	SCI
Ritsuko Hara (Ms.)	Farming System (2)/ Rural Society (2)	Aug 13 – Sep 12, 2014 (31 days)	SCI
		Oct 26 – Dec 9, 2014 (45 days)	

Note: Assignment Schedule includes the period dispatched by the consultants' own expenses.

SCI: Sanyu Consultants Inc.

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**ANNEX 6: Provision of Equipment**

1) List of Equipment Provided

No.	Purpose of Use	Arrival Date	Name of Machinery	Product No.	Maker	Price	Installation Place	Procurement Place	Current Condition
1	Office use	Sep 2013	Copy machine	IR 2520	Canon	KR26,293	Project office, Kasama, Northern province	Photocopy & Office Machines	Fine
2	Office use	Sep 2013	Color printer	i-SENSYS LBP7750CDN	Canon	KR5,313	Project office	Office Machine Services	Fine
3	Office use	Sep 2013	Printer	IR 1020	Canon	KR5,172	Project office	Photocopy & Office Machines	Fine
4	Office use	Sep 2013	Laptop computer (3)	Satelite L855	Toshiba	KR5,397*3 =16,191	Project office	Cosmic Computer Supplies	Fine
5	Office use	Sep 2013	Laptop computer (1)	Compaq 650	HP	KR5,397	Project Office	Cosmic Computer Supplies	Fine
6	Transportation	May 2013	Mitsubishi Pajero		Mitsubishi	N/A	Project Office	Procured by JICA Zambia	Fine
7	Transportation	May 2013	Mitsubishi Pajero		Mitsubishi	N/A	Project Office	Procured by JICA Zambia	Fine

Note: All the equipment listed above has not yet been handed over to the counterpart agency.

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**ANNEX 7: Assignments of Counterpart Personnel**

Institution	Name, Position	Area of Specialty	Assigned Period	Name of Expert in Charge	Employment Period in the Institution		Remarks: e.g. level of involvement in project
					From	To	
MAL	Kenneth Zulu, Senior Irrigation Engineer (N)	Irrigation engineering	May 2013 to present	All the experts as assigned	N/A	Present	Member of the PIU in Northern
MAL	Sifaya Mufalali, Senior Farm Power Mechanization Officer (N)	Irrigation/ Farm power mechanization	May 2013 to present	All the experts as assigned	N/A	Present	Member of the PIU in Northern
MAL	Ackson Mbewe, Senior Technical Officer (N)	Irrigation/ general agriculture	May 2013 to present	All the experts as assigned	N/A	Present	Member of the PIU in Northern
MAL	Kelvin M. Simukoko, Senior Technical Officer (N)	Irrigation/ general agriculture	May 2013 to present	All the experts as assigned	N/A	Present	Member of the PIU in Northern
MAL	Annie Bluaya Senior Technical Officer (N)	General agriculture	May 2013 to present	All the experts as assigned	N/A	Present	Part time in Northern
MAL	Nelson Phiri, Technical Officer (M)	Irrigation/ general agriculture	May 2013 to present	All the experts as assigned	N/A	Present	Member of the PIU in Muchinga
MAL	Mayson Saila, Acting Senior Irrigation Engineer (L)	Irrigation engineering	May 2013 to present	All the experts as assigned	N/A	Present	Member of the PIU in Luapula
MAL	Obed Chanda, Acting Senior Land Husbandry Officer (L)	Irrigation/ general agriculture	May 2013 to present	All the experts as assigned	N/A	Present	Member of the PIU in Luapula
MAL	Jonathan Sinkolongo, Principal Technical Officer (L)	General agriculture/ GIS	May 2013 to present	All the experts as assigned	N/A	Present	Member of the PIU in Luapula

MAL: the Ministry of Agriculture and Livestock/ PIU: Project Implementation Unit (established in each province)/ N: Northern Province, M: Muchinga Province, L: Luapula Province.

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### ANNEX 8: Training and Workshops

Year	Name of the Course	Date		No. of Participants	Target Participants	Remarks
		From	To			
2014	Training of Trainers (TOT) in Kasama, Northern province	May 5, 2014	May 7, 2014	11	Provincial TSB officers	For those who will be the trainers in the kick-off training
2014	Kick-off training in Kasama, Northern province	May 12, 2014	May 16, 2014	55	Provincial TSB officers District TSB officers Extension officers	For officers of Northern and Muchinga provinces
2014	Kick-off training in Mansa, Luapula province	May 27, 2014	May 31, 2014	38	Provincial TSB officers District TSB officers Extension officers	For officers of Luapula province
2014	Training of Trainers for the Mid-term Training	Jul 7, 2014	July 9, 2014	10		
2014	Mid-term training in Kasama, Northern province	Jul 14, 2014	Jul 17, 2014	51	Provincial TSB officers District TSB officers Extension officers	For officers of Northern and Muchinga provinces
2014	Mid-term training in Mansa, Luapula province	Jul 21, 2014	Jul 24, 2014	41	Provincial TSB officers District TSB officers Extension officers	For officers of Luaplula province
2014	Annual evaluation workshop in Kasama, Northern province	Nov 3, 2014	Nov 5, 2014	To be conducted	Provincial TSB officers District TSB officers Extension officers	For officers of Northern and Muchinga provinces
2014	Annual evaluation workshop in Mansa, Luapula province	Nov 10, 2014	Nov 12, 2014	To be conducted	Provincial TSB officers District TSB officers Extension officers	For officers of Luaplula province

Note: Annual evaluation workshop is to be conducted after the submission of this report.

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### ANNEX 9: Activities based on the Plan of Operation

Provide the following information. The Item Number, Activity Contents, and Objectives should be in line with the Plan of Operation.

Activity Plans		Objective	Progress	Current Status*	Reasons for Delayed Completion	Plan for the future
Item #	Activity Contents					
0-1	Set up the project			4	N/A	N/A
0-2-1	Conduct follow-up monitoring of the pilot projects in the former Study on irrigation and agronomy, and revise the training materials, if necessities arise.	Preparatory activities are conducted for at least XX existing simple irrigation schemes which were developed in the previous study in 2009 to 2011 for upgrading to permanent schemes.	Questionnaire survey was conducted for a total of 423 simple irrigation schemes developed in the COBSI Study, which was summarized in the PR1 report.	4	N/A	N/A
0-2-2	Revise the training plan, if necessities arise.		Schedule of the trainings were adjusted and number of invitees were also modified according to the capacity of the venue.	4	N/A	N/A
1-1	Conduct group training for TSB officers on design, construction, operation, and maintenance (O&M) of smallholder irrigation schemes	At least 25 TSB staff acquire training experience and skills through design and construction of XX permanent irrigation facilities	Kick-off training and Mid-term training were conducted for TSB officers on design, construction, O&M of smallholder irrigation schemes, in which 34 TSB officers were trained. Also, construction of seven permanent irrigation schemes is being implemented where at least one district TSB officer and some provincial TSB officer periodically supervise as OJT.	4	N/A	It will be continuously conducted for another two years.
1-2	Train farmers on basic O&M of smallholder irrigation schemes through the on-the-job training for TSB officers.		Training on construction and basic O&M of smallholder irrigation schemes were provided to farmers by the extension officers who are supported by TSB officers.	3	Interface to farmers groups is mainly extension officers instead of TSB officers.	It will be continuously conducted for another two years.

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2-1	Conduct group training for extension officers on construction, O&M of smallholder irrigation schemes.	More than 300 extension officers acquire training experience and skills in smallholder irrigation farming and on operation and maintenance of smallholder irrigation schemes.	Kick-off training and Mid-term training were conducted for extension officers on design, construction, O&M of smallholder irrigation schemes, in which a total of 56 extension officers participated.	2	Operation plan was modified and the number of extension officers who participate in the trainings is reduced.	It will be continuously conducted for another two years.
3-1	Conduct group training for extension officers on the on-farm water management.	More than 90% of trained extension officers disseminate techniques in smallholder irrigation farming and	Kick-off training and Mid-term training were conducted for extension officers on on-farm water management.	4	N/A	It will be continuously conducted for another two years.
3-2	Disseminate knowledge and techniques of on-farm water management to the farmers in the target areas.	operation and maintenance of smallholder irrigation schemes to farmer groups in their respective areas.  More than 50% of farmer groups in the developed schemes apply at least one of the irrigated farming technologies disseminated by the trained officers.	Construction of intake facilities is still on going, thus no dissemination activities at permanent sites. On the other hand, knowledge and techniques of on-farm water management are being disseminated through the on-the-job training of extension officers in simple schemes.	3	Weir construction is still on going, thus no dissemination work.	It will be continuously conducted for another two years.
3-3	Conduct group training for extension officers on techniques of irrigated crop production.	More than 50% of farmer groups in the developed schemes apply at least one of the irrigated farming technologies disseminated by the trained officers.	Mid-term training was conducted for extension officers on techniques of irrigated crop production as appropriate technologies.	4	N/A	It will be continuously conducted for another two years.
3-4	Disseminate knowledge and techniques of irrigated crop production to the farmers in the target areas.		Construction of intake facilities is still on going, thus no dissemination activities at permanent sites. On the other hand, knowledge and techniques of irrigated crop production are being disseminated through the on-the-job training of extension officers in simple schemes.	3	Weir construction is still on going, thus no dissemination work at permanent sites.	It will be continuously conducted for another two years.

\* Status should be one of the following:

- 4 Completed
- 3 Nearly Completed
- 2 Partially Completed due to Notable Obstacles
- 1 No activity

Unless "4" (Completed) is selected, please fill out "Reason for Delayed Completion" column as well.

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**ANNEX 10: Project Design Matrix (PDM)**

**Version: 1**

Title of the Project: Technical Cooperation Project on Community-based Smallholder Irrigation (T-COBSI)

Project Period: From May 7 2013 to December 31 2016

Implementing Organization: Ministry of Agriculture and Livestock (MAL)

Target Areas: Districts where the pilot project was implemented under the Study for Capacity Building and Development for Community-based Smallholder Irrigation Schemes in Northern and Luapula Province in the Republic of Zambia in 2009 to 2011

Target Beneficiaries / Groups: Technical Staff from TSB, extension officers and smallholder farmers in the target areas

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<b>Overall Goal</b> 1. Irrigated agricultural production in the target areas is increased.	1. Production of crop by at least 700 farmer groups (Note 1) is increased in the target areas by March 2020.	* Annual reports of the districts	* Smallholder irrigation continues to be a focus area of the policies
<b>Project Purpose</b> To promote and increase irrigated land through the provision of irrigation infrastructure for smallholder farmers in the target areas.	1. More than 500 farmer groups (Note1) in the target areas are engaged in improved irrigated farming with community-based smallholder irrigation schemes. 2. The community-based smallholder irrigation schemes cover 700 ha (70 ha by permanent weir and 630 ha by simple weir) or more (Note 2 & 3) in target areas.  Apart from the above indicators, GRZ has set a target to construct 36 permanent weirs covering 180ha in the target areas. The GRZ target will be evaluated by the GRZ.	* Results of the Project's monitoring survey * Annual reports of the districts	* No drastic climate change to negatively affect the agricultural production takes place.  * Prices of agricultural produce and agro-inputs do not change drastically.
<b>Outputs</b> 1. Through hands-on experience, practical skills in design, construction, operation, and maintenance of simple and permanent irrigation facilities for smallholder irrigation schemes are transferred to Technical Staff from TSB.  2. Through hands-on experience, practical skills in construction, operation, and maintenance of simple and permanent irrigation weirs for smallholder irrigation weirs are transferred to MAL extension officers.	1.1 Preparatory activities are conducted for at least 400 existing simple irrigation weirs which were developed in the previous study in 2009 to 2011 for upgrading to permanent weirs. 1.2 At least 20 Technical Staff from TSB acquire training experience and skills through design and construction of 14 permanent irrigation weirs and 486 simple irrigation weirs. 1.3 At least 15 Technical Staff from TSB acquire training experience and skills on permanent weir construction for 36 permanent weirs (Note 4) to be constructed by GRZ.  2.1 More than 150 extension officers acquire training experience and skills in smallholder irrigation farming and on operation and maintenance of smallholder irrigation schemes. 2.2 More than 90% of trained extension officers disseminate techniques in smallholder irrigation farming and operation and maintenance of smallholder irrigation schemes to farmer groups in their respective areas.	* Project's training reports * Annual reports of the districts  * Project's training reports * Annual reports of the districts	* There is no drastic incidence to negatively affect the conditions of the sources of water for smallholder irrigation in the target areas.  * There is no serious conflict among the farmers in the target areas.  * Funds for upgrading of simple weirs to permanent weirs are provided.

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3. Knowledge and skills of farmers in irrigated farming and operation and maintenance of simple and upgraded permanent irrigation schemes are improved.	3.1 More than 50% of farmer groups in the developed weirs apply at least one of the irrigated farming technologies disseminated by the trained officers.	* Results of the Project's monitoring survey * Annual reports of the districts	
<p>Activities</p> <p>1.1 Conduct group training for Technical Staff from TSB on design, construction, operation, and maintenance (O&amp;M) of smallholder irrigation schemes.</p> <p>1.2 Train farmers on basic O&amp;M of smallholder irrigation schemes through the on-the-job training (OJT) for Technical Staff from TSB.</p> <hr/> <p>2.1 Conduct group training for extension officers on construction, O&amp;M of smallholder irrigation schemes.</p> <hr/> <p>3.1 Conduct group training for extension officers on the on-farm water management.</p> <p>3.2 Disseminate knowledge and techniques of on-farm water management to the farmers in the target areas.</p> <p>3.3 Conduct group training for extension officers on techniques of irrigated crop production.</p> <p>3.4 Disseminate knowledge and techniques of irrigated crop production to the farmers in the target areas.</p>	<p><u>Zambian Side</u></p> <ul style="list-style-type: none"> <li>- Assignment of Project personnel <ul style="list-style-type: none"> <li>a. Project Director</li> <li>b. Project Manager</li> <li>c. Counterpart personnel</li> </ul> </li> <li>- Assignment of supporting staff</li> <li>- Provision of office spaces at DOA headquarters and in each province</li> <li>- Provision of operational costs</li> </ul>	<p><u>Inputs</u></p> <p><u>Japanese Side</u></p> <ul style="list-style-type: none"> <li>- Dispatch of experts in the relevant fields such as: <ol style="list-style-type: none"> <li>1) Team Leader/ Irrigation Planning and Management</li> <li>2) Co-Team Leader/ Farming System/ Training Design</li> <li>3) Irrigation Facility Design and Construction Control</li> <li>4) Water Management/ Irrigation Facility Design and Construction Control (2)</li> <li>5) Agricultural Marketing</li> <li>6) Rural Society/ Farmers Organization/ Gender</li> <li>7) Environmental and Social Considerations</li> </ol> </li> <li>- Training of counterpart personnel in Japan and/or the 3<sup>rd</sup> country</li> <li>- Provision of machinery, equipment and materials for training activities</li> <li>- Supplemental operational cost as needs arise (as per rules and regulations of JICA's Technical Cooperation Projects)</li> </ul>	<p>* Trained officers continue their services in the target areas.</p> <hr/> <p>Preconditions</p> <ul style="list-style-type: none"> <li>* Peace and order situation in the target areas is stable</li> <li>* Rural communities in the target areas are willing to take part in the project activities</li> </ul>

\* Note 1: "Farmer groups" referred in the indicators are the groups of farmers in the targeted irrigation sites.

\* Note 2: Coverage area of permanent irrigation weirs is derived from calculation based on the average acreage of upgraded permanent irrigation weirs by the Pilot Phase.

\* Note 3: Coverage area of simple irrigation weirs is derived from calculation based on the data of Evaluation Workshop in 2014.

\*Note 4: GRZ has budgeted resources for 2015 specifically for T-COBSI.

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Activities	JFY2013		JFY2013				JFY2014				JFY2015				JFY2016				JFY2017			Responsibility		
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3			
	3-2-1 Inspect and give advices for extension officers to disseminate the management technologies.																							
<b>3-3 Conduct group training for extension officers on techniques of irrigated crop production.</b>																								BEOs/CEOs
3-3-1 Arrange and conduct training of trainers (TOT) course																								
3-3-2 Arrange and conduct kick-off training																								
3-3-3 Arrange and conduct follow up training (monitoring the performance)																								
3-3-4 Conduct total follow up training (total monitoring of the performance)																								
<b>3-4 Disseminate knowledge and techniques of irrigated crop production to the farmers in the target areas.</b>																								BEOs/CEOs
3-4-1 Inspect and give advices for extension officers to disseminate the management technologies.																								

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MAL: Ministry of Agriculture and Livestock    HQ: Headquarters    TSB: Technical Services Branch    BEOs: Block Extension Officers    CEOs: Camp Extension Officers

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