ヨルダン・日本・イスラエル三角協力：
第2フェーズ　ヨルダン乾燥地域における
先進農業技術の導入計画
終了時評価調査報告書

平成27年8月
(2015年)

独立行政法人国際協力機構
ヨルダン事務所

ヨル事
CR(10)
15-001

ヨルダン・日本・イスラエル三角協力：
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序　　文

2008 年 6 月、ヨルダン・日本・イスラエル三角協力：第 1 フェーズ「ヨルダン乾燥地域における先進農業技術の導入計画」プロジェクトは、ヨルダンとイスラエル両国間の信頼を醸成し、わが国が主導する「平和と繁栄の回廊」構想に貢献するため、NCARE をヨルダン側実施機関とし、イスラエル外務省国際協力局とイスラエル農業国際開発協力局をイスラエル側のカウンターパートとして開始された。同プロジェクトの実施期間中、NCARE 研究者、普及員のイスラエルでの研修事業、ヨルダン内における地元農家へのワークショップやセミナーを通じた技術移転、普及活動等が実施され、初期の目的を達成して 2012 年 8 月末にプロジェクトは終了した。

さらにプロジェクトの成果を発展させ、広くその技術・技法の普及を図ることを目的に、ヨルダン・日本・イスラエル三角協力：第 2 フェーズ「ヨルダン乾燥地域における先進農業技術の導入計画」（以下、本プロジェクト）の実施が要請され、「養殖」、「熱帯果樹栽培」、「節水技術」と、これらを対象地域の農家に効果的に普及を行うための「普及のためのマスメディア」を入れた 4 つのコンポーネントを柱とした技術移転活動の実施を行うことで合意がなされ、2012 年 12 月から 2015 年 11 月までの 3 年間の予定で本プロジェクトが開始された。

2015 年 11 月に本プロジェクトが終了するにあたり、これまでのプロジェクトの実績及び実施プロセスを確認し、評価 5 項目の観点から終了時評価を実施し、プロジェクト目標達成に必要な対応につき提言を行うとともに類似プロジェクトへの教訓を取りまとめ、合同評価者の間で協議を行い、その結果を協議議事録（M/M）に取りまとめ、署名した。

ここに本プロジェクト実施及び本調査の実施にあたり、ご協力を頂いた内外の関係者の皆様に深謝するとともに、引き続き一層のご支援をお願いする次第である。

平成 27 年 8 月
ヨルダン事務所長
坂田　章吉

目　次

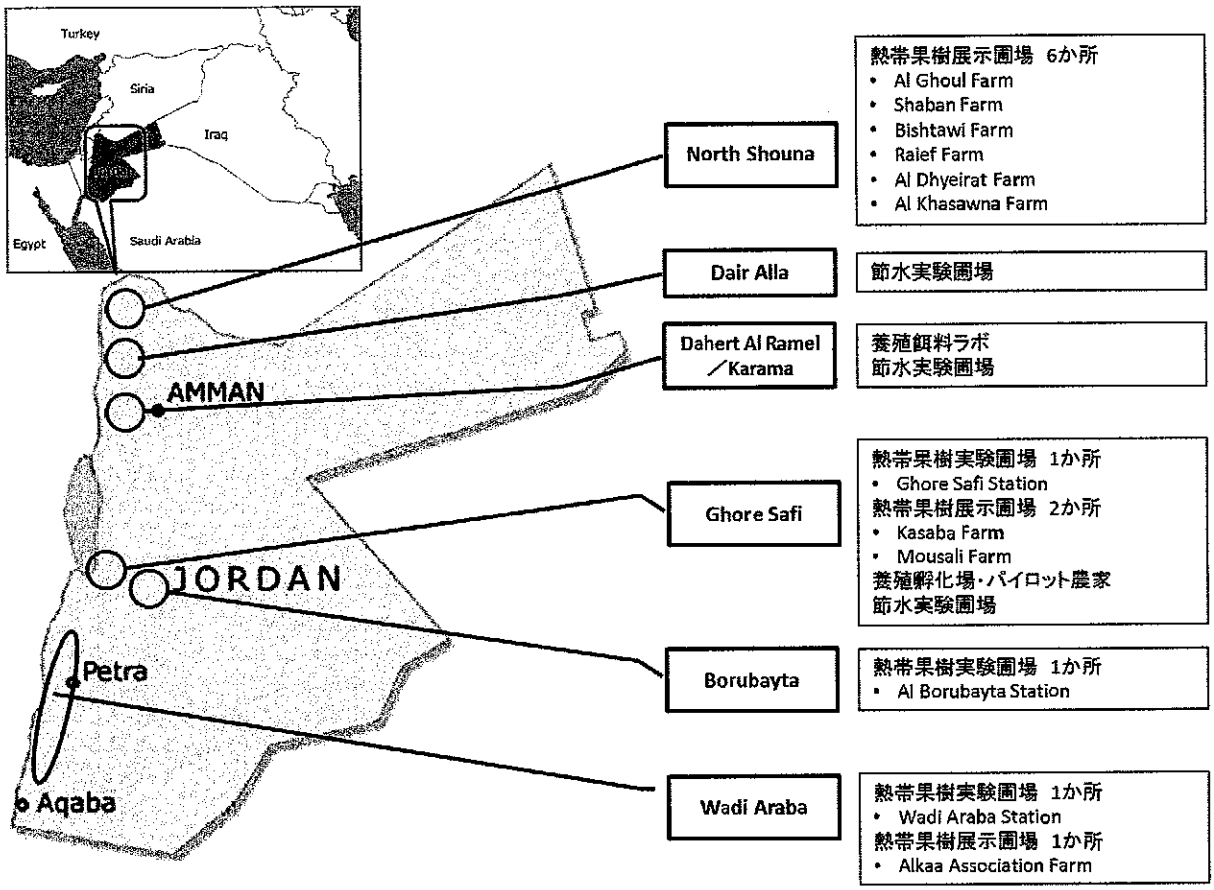
目次 i
略語表 ii
プロジェクトサイト概略図 iii
調査写真 iv
小規模案件用「終了時評価表」 viii
1. 終了時評価調査の概要 1
1.1 調査団派遣の目的 1
1.2 調査団の構成 1
1.3 調査日程 1
2. プロジェクトの概要 2
2.1 プロジェクトの背景 2
2.2 プロジェクトの要約 2
3. 評価調査の手法 3
3.1 調査手順 3
3.2 評価項目 4
4. プロジェクトの実績と実施プロセス 5
4.1 投入 5
4.2 成果 7
4.3 プロジェクト目標の達成状況 10
4.4 上位目標の達成見込み 10
4.5 実施プロセス 11
5. 評価5項目による分析 12
5.1 妥当性 12
5.2 有効性 12
5.3 効率性 13
5.4 インパクト 13
5.5 持続性 13
6. 結論 14
7. 提言と教訓 14
7.1 提言 14
7.2 教訓 15

添付資料

略語表

略語	英文	和文
CINADCO	Center for International Agricultural Development Cooperation, Ministry of Agriculture and Rural Development, Israel	イスラエル国農業・地方開発省国際農業開発協力局
EDP	Executive Development Program (2011 - 2013)	実行開発計画
GDP	Gross Domestic Product	国内総生産
JICA	Japan International Cooperation Agency	（独）国際協力機構
MASHAV	Israel's Agency for International Development Cooperation, Ministry of Foreign Affairs, Israel	イスラエル国外務省国際協力局
MOA	Ministry of Agriculture, Jordan	ヨルダン国農業省
MOPIC	Ministry of Planning and International Cooperation	ヨルダン国計画国際協力省
NCARE	National Center for Agricultural Research and Extension, Ministry of Agriculture, Jordan	ヨルダン国農業省農業研究普及センター
PDM	Project Design Matrix	プロジェクト設計概要表
PO	Plan of Operation	活動計画

プロジェクトサイト概略図



出所：プロジェクト、2015 年 8 月

調査写真



Borubayta 熱帯果樹実験圃場



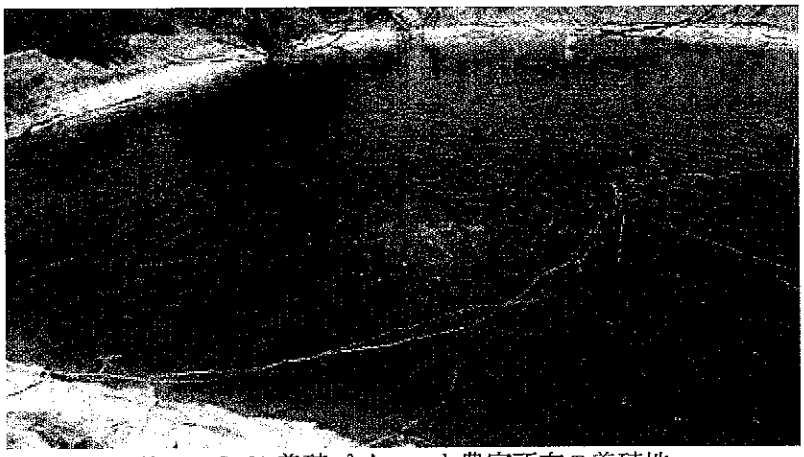
Borubayta 熱帯果樹実験圃場



Wadi Araba 熱帯果樹展示圃場（マンゴーの結実）



Wadi Araba 熱帯果樹実験圃場（防風柵）



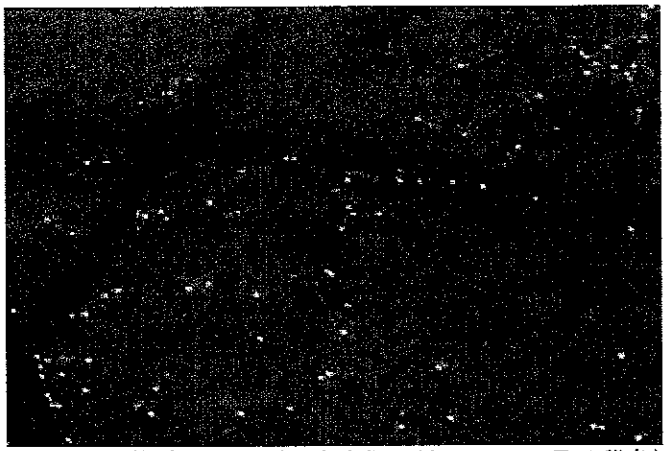
Ghore Safi 養殖パイロット農家所有の養殖地



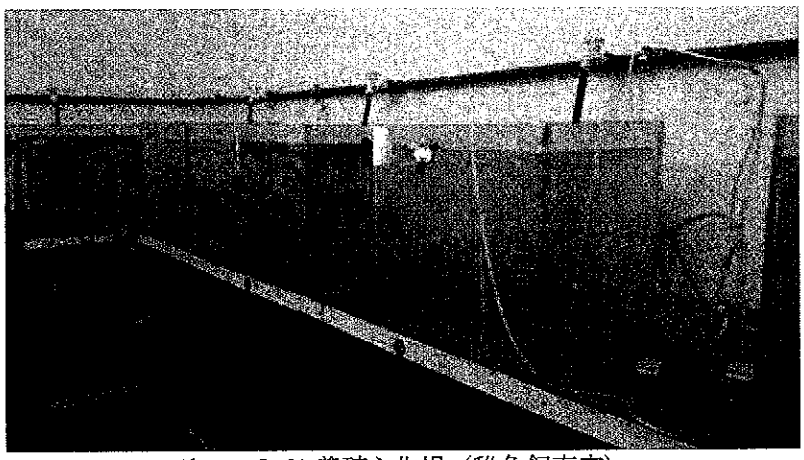
Ghore Safi, ”Numirah Agricultural Association”の養殖事業



Ghore Safi 養殖ふ化場（自然ふ化用増設施設）



Ghore Safi 養殖ふ化場（同上素掘り池の一つに見る稚魚）



Ghore Safi 養殖ふ化場（稚魚飼育室）



North Shouna 熱帯果樹展示圃場（その 1）



North Shouna 熱帯果樹展示圃場（その 2）



同上展示圃場アボガドの結実

小規模案件用「終了時評価表」

1．案件の概要		
国名：ヨルダン国		案件名：ヨルダン・日本・イスラエル三角協力：第 2 フェーズ　ヨルダン乾燥地域における先進農業技術の導入計画
分野：農業開発/農村開発		援助形態：技術協力プロジェクト
所轄部署：ヨルダン事務所		協力金額（評価時点）：1.2 億円
協力期間	R/D：2012 年 12 月～2015 年 11 月（3 年間）	先方関係機関：農業省農業研究普及センター（NCARE）等
		日本側協力機関：国内支援員会

1－1　協力の背景と概要

ヨルダンの農業部門は GDP 全体の 28%を占め、雇用確保、食糧供給、地域開発などで重要な役割を果たしているが、これら農業の担い手は多くが小規模農家であり、先進の施設や技術、十分な資金も無く、先進的農業から取り残されてきた。ヨルダン政府は、こうした小規模農家への支援の取り組みに力を入れるため、農業省傘下の農業省国立農業研究普及センター（National Center for Agricultural Research and Extension；以降、「NCARE」と省略）の組織・能力強化を目指すとともに、類似した乾燥気候下での先進農業技術を有するイスラエルから、その知識と技術を NCARE 研究者と普及員に習得させ、ヨルダン農民に普及することを企図して、日本政府にヨルダン・日本・イスラエルの三角協力による技術協力プロジェクトの実施を要請した。

ヨルダンの求める知識と技術、ノウハウをイスラエルと協調して提供していくことにより、ヨルダンとイスラエル両国間の信頼を醸成し、わが国が主導する「平和と繁栄の回廊」構想に貢献することが期待される中で、NCARE をヨルダン側実施機関とし、イスラエル外務省国際協力局（MASHAV）とイスラエル農業国際開発協力局（CINADCO）をイスラエル側のカウンターパートとして、2008 年 6 月、「ヨルダン乾燥地域における先進農業技術の導入計画」が開始された。同プロジェクトの実施期間中、NCARE 研究者、普及員のイスラエルでの研修事業、ヨルダン内における地元農家へのワークショップやセミナーを通じた技術移転、普及活動等が実施され、初期の目的を達成して 2012 年 8 月末にプロジェクトは終了した。

さらにプロジェクトの成果を発展させ、広くその技術・技法の普及を図ることを目的に、ヨルダン・日本・イスラエル三角協力：第 2 フェーズ「ヨルダン乾燥地域における先進農業技術の導入計画」（以下、本プロジェクト）の実施が要請され、「養殖」、「熱帯果樹栽培」、「節水技術」と、これらを対象地域の農家に効果的に普及を行うための「普及のためのマスメディア」を入れた 4 つのコンポーネントを柱とした技術移転活動の実施を行うことで合意がなされ、2012 年 12 月から 2015 年 11 月までの 3 年間の予定で本プロジェクトが開始された。

1－2 協力内容

（1）上位目標

先進農業技術がターゲット地域の農民に導入される。

（2）プロジェクト目標

先進農業技術を農民へ享受、普及させる為に必要な NCARE 職員の技術・能力がターゲット地域における研究所及びパイロット農家での野外実験を通じて向上される。

（3）成果

1) 養殖技術がターゲット地域での野外実験を通じて NCARE 職員に習得される
2) 熱帯・亜熱帯果樹の生産技術がターゲット地域での野外実験を通じて NCARE 職員に習得される
3) 現地の状況に適した節水農業技術がターゲット地域での野外実験を通じて NCARE 職員に習得される

4) 先進農業技術がターゲット地域の農民に発信される

（4）投入（評価時点現在）

日本：総投入額　1.2 億円
専門家派遣　長期 1 名、短期 2 名　機材供与　約 43 千 US$
ローカルコスト負担　約 440 千 US$
研修員経費負担　約 39 千 US$
イスラエル：
専門家派遣　プロジェクトサイトへの派遣実績なし（調査時点）
研修経費負担　約 59 千 US$
研修員受入　イスラエル研修 30 名（終了時までの予定 2 回分を含む）

ヨルダン：
カウンターパート配置 28 名（管理要員 4 名を含む）
対象地域においてふ化場建物、実験圃場、専門家執務室等の提供

2. 評価調査団の概要

調査者	（担当分野、氏名） 団長　中林　一夫　JICA パレスチナ事務所企画調査員 協力企画　海老澤　陽子　JICA ヨルダン事務所企画調査員 評価分析　寺尾　豊光　水産エンジニアリング株式会社	
調査期間	2015 年 7 月 26 日～2015 年 8 月 7 日	評価種類：終了時評価

3. 評価結果の概要

3－1　実績の確認

(1) 成果

成果1：養殖技術がターゲット地域での野外実験を通じてNCARE職員に習得される

成果 1 は部分的達成。技術的課題をチーム内で種苗生産と餌料開発を分担し、グループ内で情報を共有し、新しい技術に取り組んでいる。2015 年 2 月の養殖専門家訪問を契機として種苗生産が進捗した。2015 年 6 月実施のイスラエルでの孵化場の演習研修後、すぐにその成果を NCARE のふ化場の活動に迅速に反映できた。しかしながら養殖活動の収支情報、安定的な種苗生産体制等にまだ不足が見られる。

成果2：熱帯・亜熱帯果樹の生産技術がターゲット地域での野外実験を通じてNCARE職員に習得される

成果 2 はほぼ達成されたが普及に不安がある。異なった環境下にある 9 戸の農家、3 つの NCARE 地域センターの計 12 か所にて、マンゴ 4 種、アボカド 3 種、グアバ 2 種の実験圃場が設置され、適性品種の選定が進んだ。実験圃場において果樹管理のためのデータと土壌水質のモニタリングが定期的に実施されている。

成果 3：現地の状況に適した節水農業技術がターゲット地域での野外実験を通じて NCARE 職員に習得される

成果 3 は半分程度達成された。イスラエル研修が 1 回実施され、7 名が参加した。その内 2 名が専門家としての技術を習得したと言えるが、残りの 5 名については更なる研修及び実験を通じた技術習得が必要な状況。一方、関係ステーションで不足灌漑・作物用水量に関する実験が実施され研究報告書等に結実している。

成果 4：先進農業技術がターゲット地域の農民に発信される

成果４はプロジェクト終了時までに達成見込み。技術コンポーネント３件を紹介するリーフレット２種、養殖技術紹介ビデオ、Ghore Safi ふ化場及び熱帯果樹実験圃場の紹介ビデオ、熱帯果樹育成及び管理活動ビデオ、養殖マニュアル等）が作成済みである。2015 年 10 月までに 3 種類の熱帯果樹（マンゴ、アボカド、グアバ）の紹介パンフレットが作成される予定。

(2)プロジェクト目標

目標：先進農業技術を農民へ享受、普及させる為に必要な NCARE 職員の技術・能力がターゲット地域における研究所及びパイロット農家での野外実験を通じて向上される。

各技術コンポーネントとも４名から７名の NCARE 職員がイスラエル研修を受け、基本的な知識は概ねイスラエル研修にて習得された。また、39 農家及び８つの試験圃場による実際の生産が行われ、実経験の習得も進んでいる。しかし、3 件の技術コンポーネントの内、特に養殖及び熱帯・亜熱帯果樹生産技術については、実践研修の進捗の遅れから、農家に普及するために必要な経験・技術が不足している状況である。

３－２　評価結果の要約

（１）　妥当性：　高い

本プロジェクトはヨルダン渓谷の農業地帯及び貧困地帯を対象に農業開発を通じて農家の収支改善や地方開発を図るもので、国家開発計画（2011 年～2013 年）との整合性は高い。

（２）　有効性：中程度

期間中専門家の現地指導が限定的であったので、技術移転の効果発現は不十分。各技術を農家に普及する為に必要な NCARE 職員の経験・技術が不足している。

（３）　効率性：高い

予定どおり投入を実現することができなかったが、成果 4 件の内、半数の成果がほぼ達成できた。これは限定された投入が効率的に活用された結果と言える。

（４）　インパクト：中程度（予想）

現段階では上位目標が達成される見込みはないものの、本プロジェクトからインパクトを受け、既に農業組合がひとつ、自己資金による養殖事業を 2015 年 5 月より開始している。

（５）　持続性：高い（予想）

農業分野の国家政策には、第 2 フェーズ開始よりこの間大きな変更はない。プロジェクトが支出していた圃場施設運営の労賃の新たな予算措置が必要となるが、大きな負担とはならない見込み。

３-３　効果発現に貢献した要因

（１）　計画内容に関すること

特になし。

（２）実施プロセスに関すること

特になし。

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

プロジェクト当初の PDM の目標及び成果では、農家への各技術の導入が目指された。しかし、まずその前に、各技術のヨルダンでの適応化のための応用研究と、同技術についての実経験が殆どない NCARE 職員の技術向上を図る必要があった。当初目標として計画された農家への各技術の導入は、3 年間で達成するには過大なものであったため、中間レビューにて PDM の適正化が行われ

た。

（2）実施プロセスに関すること
養殖技術については、同分野の実践活動が初めてである NCARE 職員が専門家の現場指導なしではふ化場の設計と運営を行うことは難しく、その一方安全保障上の理由によりイスラエル人専門家の派遣が困難であったこと、日本からの代替専門家の派遣がもっと早期になされるべきであったこと等から、技術移転が遅れた。熱帯・亜熱帯果樹生産技術については、苗木調達の遅れなど予期せぬ遅れが生じたこと等から、苗木の各成長過程に合わせた管理方法等の実践研修が遅れた。

3-5　結論
各技術コンポーネントに対しイスラエルでの研修が 1～3 回行われその結果基本技術の知識は得られた。PDM 改訂によりイスラエル人専門家のプロジェクトサイト派遣を予定回数より減少したがこれを実現できなかった。プロジェクト・マネージャのように人的資源の投入不足があり、実際に行われた技術移転活動は少ないものとなった。各技術コンポーネント 3 件とも実践経験がなお不足しており、これらを生産技術として農家に普及できるレベルには達していない。プロジェクト期間を延長することで技術不足を補うことは可能である。

3-6　提言

プロジェクト目標の達成と持続性の確保のために、合同評価調査団は 12 か月の延長を提言した。PDM の成果達成度から養殖が 12 か月、熱帯果樹と節水は 6 か月と判断した。各関係者への提言は以下のとおりとした。

(1) プロジェクト
1) 残りの 4 か月間に残された活動について、段階的な目標を立て達成に努める
2) 指名されるプロジェクト・マネージャへ定期的な報告システムを確立する
3) 普及員、農民へプロジェクトの活動成果を紹介するセミナーを開催する
4) 今後パイロットサイトを選ぶ際には選定基準を作る

(2) ヨルダン側
1) プロジェクト・マネージャを任命する、養殖を管理する常駐スタッフを指名する
2) 必要経費を記したアクションプランに従ってのみ支払いが可能なことを徹底する
3) 熱帯果樹、養殖、節水の農民への普及計画のために実施体制を強化する

(3) 日本側
1) 2015 年 11 月に各コンポーネントの成果を発表する技術セミナーを研修など活動に関与したイスラエル人専門家、日本人専門家を招いて死海近辺の会場で開催する
2) 延長期間にプロジェクト調整員を派遣する
3) 延長期間の活動に対する予算を準備する

(4) イスラエル側
1) 2015 年 8 月及び 10 月に予定されている苗畑管理研修と農家視察研修を実施する
2) イスラエル人専門家のプロジェクトサイトへの派遣の可能性を追求する
3) 延長期間に実践技術研修（熱帯果樹とふ化）を適期に行うこと

3-7　教訓
(1) 迅速な技術支援
プロジェクト開始時には、各コンポーネントに対する技術支援はイスラエル人専門家と国内支援委員によって行うことを計画し、イスラエル人専門家によるワークショップ参加（ヨルダンのホテルで開催）と技術支援委員会メンバーによるサイト訪問を得た。引き続き、パレスチナ事務所から農業専門家、日本から養殖専門家を派遣して技術支援を行ったが、プロジェクトからの要請

に敏速に対応できたとは言えない。3 年間と短期間のプロジェクトでは当初から日本より農業専門家を派遣していた方がよかった。

(2) 柔軟な対処措置
厳しい状況下、限られた投入であったが、本プロジェクトは柔軟な対処を講じることによって、一定の成果を達成することができた。

1. 終了時評価調査の概要

1.1 調査団派遣の目的

下記の4つの事項が終了時評価調査の目的である。

(1) これまでのプロジェクト活動について、実績と実施プロセスを検証する。
(2) PDM に基づき、プロジェクトの実績（投入、活動、成果、プロジェクト目標達成状況等）、実施プロセス及び評価 5 項目（妥当性、有効性、効率性、インパクト、持続性）ごとの調査項目とデータ収集方法調査方法を検討し、評価グリッドを作成する。
(3) 既存の資料、質問票・関係者からのヒアリングを実施して得られた情報を分析し、カウンターパート機関、イスラエル側関係機関等とともに、評価 5 項目の観点から評価を行う。
(4) 以上をとりまとめて、合同終了時評価調査報告書を作成し、ヨルダン及びイスラエル側と協議の上、合意内容を協議議事録（Minutes of Meetings： M/M）に取りまとめ署名交換する。

1.2 調査団の構成

(1) 日本側調査団

氏名	担当	職位・所属
中林　一夫	団長	JICA パレスチナ事務所企画調査員
海老澤　陽子	協力企画	JICA ヨルダン事務所企画調査員
寺尾　豊光	評価分析	水産エンジニアリング（株）

(2) ヨルダン側評価者

氏名	職位・所属
Dr. Muien Qaryouti	Assistant Director General, NCARE

(3) イスラエル側評価者

氏名	職位・所属
Ms. Shuli Kurzon van Gelder	Director, Planning, Information and Evaluation, MASHAV

1.3 調査日程

本終了時評価調査は 2015 年 7 月 26 日から 8 月 7 日の間に実施された。調査日程の詳細を添付資料 1 に示す。

2. プロジェクトの概要

2.1 プロジェクトの背景

ヨルダンの農業部門は GDP 全体の 28%を占め、雇用確保、食糧供給、地域開発などで重要な役割を果たしているが、これら農業の担い手は多くが小規模農家であり、先進の施設や技術、十分な資金も無く、先進的農業から取り残されてきた。ヨルダン政府は、こうした小規模農家への支援の取り組みに力を入れるため、農業省傘下の農業省国立農業研究普及センター（National Center for Agricultural Research and Extension；以降、「NCARE」と省略）の組織・能力強化を目指すとともに、類似した乾燥気候下での先進農業技術を有するイスラエルから、その知識と技術を NCARE 研究者と普及員に習得させ、ヨルダン農民に普及することを企図して、日本政府にヨルダン・日本・イスラエルの三角協力による技術協力プロジェクトの実施を要請した。

ヨルダンの求める知識と技術、ノウハウをイスラエルと協調して提供していくことにより、ヨルダンとイスラエル両国間の信頼を醸成し、わが国が主導する「平和と繁栄の回廊」構想に貢献することが期待される中で、NCARE をヨルダン側実施機関とし、イスラエル外務省国際協力局（Agency for International Development Cooperation in Ministry of Foreign Affairs；以降、「MASHAV」と省略）とイスラエル農業国際開発協力局（Center for International Agricultural Development Cooperation；以降、「CINADCO」と省略）をイスラエル側のカウンターパートとして、2008 年 6 月、「ヨルダン乾燥地域における先進農業技術の導入計画」が開始された。同プロジェクトの実施期間中、NCARE 研究者、普及員のイスラエルでの研修事業、ヨルダン内における地元農家へのワークショップやセミナーを通じた技術移転、普及活動等が実施され、初期の目的を達成して 2012 年 8 月末にプロジェクトは終了した。

さらにプロジェクトの成果を発展させ、広くその技術・技法の普及を図ることを目的に、ヨルダン・日本・イスラエル三角協力：第 2 フェーズ「ヨルダン乾燥地域における先進農業技術の導入計画」（以下、本プロジェクト）の実施が要請され、「養殖」、「熱帯果樹栽培」、「節水技術」と、これらを対象地域の農家に効果的に普及を行うための「普及のためのマスメディア」を入れた 4 つのコンポーネントを柱とした技術移転活動の実施を行うことで合意がなされ、2012 年 12 月から 2015 年 11 月までの 3 年間の予定で本プロジェクトが開始された。

2.2 プロジェクトの要約

PDM ver. 1（2014 年 12 月 8 日）等に従ってプロジェクトを要約すると以下に示すとおりとなる。

案件名
ヨルダン・日本・イスラエル三角協力：第 2 フェーズ「ヨルダン乾燥地域における先進農業技術の導入計画」

協力期間
2012 年 12 月 01 日～2015 年 11 月 30 日 (3 年間)

協力相手先機関
ヨルダン国農業省農業研究普及センター：National Center for Agricultural Research and Extension, Ministry of Agriculture, the Hashemite Kingdom of Jordan

プロジェクト対象地域
ヨルダン渓谷及びその近傍

対象グループ
NCARE：プロジェクト参加職員
対象地域の農家（間接的）

上位目標
先進農業技術がターゲット地域の農民に導入される。

プロジェクト目標
先進農業技術を農民へ享受、普及させる為に必要な NCARE 職員の技術・能力がターゲット地域における研究所及びパイロット農家での野外実験を通じて向上される。

成果

1．養殖技術がターゲット地域での野外実験を通じて NCARE 職員に習得される
2．熱帯・亜熱帯果樹の生産技術がターゲット地域での野外実験を通じて NCARE 職員に習得される
3．現地の状況に適した節水農業技術がターゲット地域での野外実験を通じて NCARE 職員に習得される
4．先進農業技術がターゲット地域の農民に発信される

3. 評価調査の手法

3.1 調査手順

終了時評価調査には、プロジェクト実績資料の確認、現地調査、カウンターパート要員・専門家、受益者等の関係者とのインタビューが含まれた。以上の結果を踏まえ、OECD 開発

援助委員会（DAC）の評価５項目に基づく評価分析を行った。

3.2 評価項目

評価項目は以下のプロジェクトの実績、実施プロセス及び評価５項目から構成される。

プロジェクトの実績
PDM の達成指標等の内容及び PO に照らし合わせて投入、成果及びプロジェクト目標についてプロジェクトの達成状況を検討した。

実施プロセス
PO で計画された工程に沿って活動が実施されたか、プロジェクトが適切に管理されたか、プロジェクトの実施を促進・阻害した要因として何が挙げられるか等を検討するため、本プロジェクトの実施プロセスを確認した。

評価５項目
本プロジェクトの評価に適用される評価 5 項目の各項目の定義は、以下の表 3-1 のとおりである。

表 3-1 評価５項目の定義

妥当性	プロジェクトの上位目標や目標に、相手国や日本側の政策との整合性はあるか、受益者の課題の解決になるか等、援助事業の正当性・必要性を問う視点。
有効性	プロジェクトの実施により、プロジェクトの目標が達成され、受益者もしくは社会への便益や課題が解決されたか（あるいはされ得るのか）を問う視点。
効率性	主にプロジェクトのコスト及び成果の関係に着目し、投入資源が有効に活用されているか、プロジェクト運営は的確になされたかを問う視点。
インパクト	プロジェクトの実施によりもたらされる、より長期的、間接的効果や対象地 域外への波及効果（上位目標を含む）をみる視点。予期しなかった正.負の効果・影響も含む。
持続性	プロジェクトが終了しても、プロジェクトで発現した効果が持続する見込みはあるかを問う視点。

4. プロジェクトの実績と実施プロセス

4.1 投入

2012 年 12 月以降のプロジェクト実施期間中に日本、イスラエル及びヨルダンによる投入を以下に要約するとおりである。投入の詳細内訳は巻末添付資料の合同評価報告書付属資料 2～4 に示す。

4.1.1 日本側の投入

(1) 専門家派遣

業務調整及び人材育成分野で長期専門家 1 名が派遣された。加えて園芸・普及及びティラピア養殖の分野で 2 人の短期専門家が派遣された。以上の他に、プロジェクト活動の管理のため、JICA パレスチナ事務所の企画調整員 1 名がパイロットサイトに 6 回出張した。技術面での運営指導のため、国内支援委員会の委員がプロジェクトサイトに出張した。以上の詳細を合同評価報告書付属資料 2 に示す。

(2) 機材供与

プロジェクト活動において使用する機材として、コンピュータ、印刷機、ソフトウエア、各種計測機器等が供与された。供与機材金額は供与予定の機材を含み 30,392 JD（ヨルダン・ディナール、約 43 千 US$、換算率 1JD=1.42US$を適用）である。

(3) 現地業務費の支出

プロジェクトの活動に伴って支出された現地業務費の金額は表 4-1 に示すとおりで、2015 年度 6 月現在で 309,888 JD（ヨルダン・ディナール、約 440 千 US$）が支出されている。現地業務費には上記の機材費は含まない。

表 4-1 現地業務費の支出

日本会計年度	金額（JD）
2012	3,900
2013	87,504
2014	186,352
2015	32,132*
合計	309,888

備考： 2015 年度は同年 6 月までの支出を示す。

4.1.2 イスラエル側の投入

(1) イスラエルにおける研修

プロジェクト開始以降計 30 人のカウンターパート要員がイスラエルで行われた 9 件の研修コースを受講した（内 2 件は計画段階のもので 2015 年 10 月までに実施予定）。講師・

受講者の氏名と研修コース名を合同評価報告書付属資料2に示す。

(2) 専門家派遣

2014年12月のPO改訂版によれば、イスラエル人専門家によるプロジェクトサイトでの技術指導は5回計画されていた。しかしながら2015年8月時点までの段階ではイスラエル人専門家の派遣は実現を見ていない。またプロジェクト終了時点までに派遣が実現する見込みも得られていない。

(3) 研修費用の分担

過去7回実施されたイスラエルでの研修に係るMASHAVとJICAによる費用分担は次表に示すとおりである。

表4-2 イスラエルでの研修の費用分担

MASHAV	JICA
59,235.86US$	38,946.51US$

4.1.3 ヨルダン側の投入

(1) カウンターパート要員の配置

実施機関NCARE及び農業省によりプロジェクトの管理及び活動実施のため配置されたカウンターパート要員は28人である。管理要員としてプロジェクト・ディレクター及び3人の管理担当者が置かれた。プロジェクト・マネージャとして機能すべき管理要員は未配置のままであった。他に24人の研究職員と技術担当職員が配置された。

(2) 建物・施設及び関連コストの負担

プロジェクト活動に必要な施設・土地がNCAREにより供与された。通信費、交通輸送費、光熱水費、安全経費等の負担がなされた。また専門家の執務スペースとしてアンマンのNCARE敷地内に事務室と付帯施設が供与された。

表4-3 NCAREにより供与された建物・施設

番号	供与施設・建物
1	熱帯・亜熱帯果樹実験圃場用の土地(計10.5 donum)として、Ghore Safi (5 donum)、Wadi Araba(2.5 donum)及びTafyla (3 donum)
2	人工ふ化場用の建物一式
3	半人工ふ化場用土地(1 donum)
4	節水実験圃場用の農地(計14 donum)として、Ghore Safi (2 donums)及びDair Alla (12 donum)
5	ビニールハウス一式

備考：土地面積 “donum”一単位は 約0.1 haに相当。

4.2 成果

PDM に示される規定の達成指標と本終了時評価調査で行ったサイト調査の結果に基づいて、成果 4 件の達成状況の程度を確認した。その結果を以下に要約する。

4.2.1 成果 1 の達成状況

成果 1	養殖技術がターゲット地域での野外実験を通じて NCARE 職員に習得される
指標	1-1 NCARE 職員 5 人が養殖技術の専門家として訓練される。 1-2 対象地域 20 戸以上のパイロット農家において NCARE 職員により養殖技術の実験がなされる。 1-3 NCARE 職員によりふ化場が運営される。 1-4 魚類餌料に可能な成分として二種類以上の農業副産物が NCARE 職員により実験される。

成果 1 の達成は部分的である。

技術的課題をチーム内で種苗生産と餌料開発を分担し、グループ内で情報を共有し、新しい技術に取り組んでいる。2015 年 2 月の養殖専門家訪問を契機として種苗生産が進捗した。2015 年 6 月実施のイスラエルでの孵化場の演習研修後、すぐにその成果を Dahert Al Ramel のふ化場の活動に迅速に反映できた。以下に PDM に示される達成指標の検討結果を取りまとめる。

指標 1-1：未達成。イスラエル研修がこれまで 3 回実施され、4 名が参加。養殖分野の基本的な知識はいくつかの分野（魚病、市場出荷、人工ふ化等）を除き、習得された。NCARE では同分野の担当職員が不足しており、特にふ化場の運営を継続的に行う人材が不可欠であると考えられる。

指標 1-2：ほぼ達成。2013 年、2014 年の 2 回のパイロット養殖を実施し、30 の農家で灌漑用ため池を利用したティラピア養殖が行われた。同パイロット養殖を通じ、種苗のサイズ、運搬方法、飼育方法、収穫時期についての知識が習得された。収穫時のデータはパイロット農家からの聞き取りに頼り、データの信憑性が不透明であったため、養殖活動の収益性に係る情報が不足している。

指標 1-3：未達成。ふ化場が 2014 年 5 月に Ghore Safi ステーションに設置された。人工ふ化と自然ふ化の両方が試行されている。日本人専門家が追加投入され、技術指導とともに問題指摘と対処方法の提言がされた。自然ふ化に切り替えた種苗生産実験が 2015 年 4 月より開始され、2015 年 7 月に至る 2 か月間で 4 か月サイズの稚魚 5 万尾が生産され試行的に配布された。ただし生産計画に基づいて安定的な生産体制が行えるようになったとは言い難い。

指標 1-4：達成。２つの自生植物（Doom 及び Salam）を用いた代替餌料の実験が行われ、これまでの輸入飼料よりも安価な餌料を使って養殖できることが期待される。実施可能性調査（F/S 調査）等、今後の開発実験はなお必要とされる。また農業副産物の代替餌料としての実験を行い、Ghore Safi ステーションのふ化場における種苗生産等での実証実験を行う予定。

4.2.2 成果 2 の達成状況

成果 2	熱帯・亜熱帯果樹の生産技術がターゲット地域での野外実験を通じて NCARE 職員に習得される
指標	2-1 NCARE 職員 5 人が熱帯・亜熱帯果樹栽培技術の専門家として訓練される。 2-2 対象地域の条件に沿って熱帯・亜熱帯果樹の適正品種が選定される。 2-3 主幹直径や葉面積など果樹管理のためのデータが NCARE[職員によりモニターされる。 2-4 NCARE 職員により土壌水質のモニタリングが定期的になされる。

成果 2 はほぼ達成されたが普及に不安がある。

指標 2-1：未達成。これまでイスラエル研修が 2 回実施され、5 名が参加した。今後の予定として、苗木生産に関するイスラエル研修が 2015 年 8 月に予定されている。基礎的な知識は一部の分野（環境管理、育成管理、収穫前後の管理及び繁殖等）を除き習得されたものの、実験圃場の設置等がほぼ 1 年遅れたため、現場の経験と実践研修が不足している。

指標 2-2：ほぼ達成。異なった環境下にある 9 戸の農家、３つの NCARE 地域センターの計 12 か所にて、マンゴ 4 種、アボカド 3 種、グアバ 2 種の実験圃場が設置された。この内、マンゴについては植樹された 12 か所のうち 1 か所については適さない、アボガドについては計 9 か所のうち 2 か所については適さないことが判明したと報告されている。マンゴ、アボカドのその他のサイトとグアバの全サイトについては、引き続き経過を観察した上で、各果樹の生育に適した地域であるかどうかを判断されることとなる。

指標 2-3 及び 2-4：これら二つの指標は達成されている。上記の実験圃場において土壌、水質、主幹直径及び葉面積拡大についてのモニタリングが実施されている。

4.2.3 成果 3 の達成状況

成果 3	現地の状況に適した節水農業技術がターゲット地域での野外実験を通じて NCARE 職員に習得される
指標	3-1 NCARE 職員 5 人が節水農業技術の専門家として訓練される。 3-2 地域センター及び研究ステーションにおいて NCARE 職員により少なくとも 2 件の節水技術（不足灌漑及び作物用水量）の実験がなされる。

成果 3 は半分程度達成された。

指標 3-1：未達成。これまでイスラエル研修が 1 回実施され、7 名が参加した。自己評価ではうち 2 名が専門家としての技術を習得したと言えるが、残りの 5 名については更なる研修及び実験を通じた技術習得が必要と回答している。

指標 3-2：達成。不足灌漑に関する実験が Ghore Safi と Karama ステーションにおいて実施され、一部の実験分析に係る研究報告書案が提出された。作物用水量に関する実験が Dair Alla 地域センターにて実施され、実験結果のデータがプロジェクトに提出された。

4.2.4 成果 4 の達成状況 4

成果 4	先進農業技術がターゲット地域の農民に発信される
指標	4-1 技術コンポーネント 3 件のための普及メディアが 6 件開発される。 4.2 技術コンポーネント 3 件から得られた知識が対象地域の農家 200 人に広報される。 4-3 NCARE 図書室に先進農業技術関連のメディアが補充される。

成果 4 はプロジェクト終了時までに達成されると見込まれる。

指標 4-1：達成。6 種の教材（技術コンポーネント 3 件を紹介するリーフレット 2 種、養殖技術紹介ビデオ、Ghore Safi ふ化場及び熱帯果樹実験圃場の紹介ビデオ、熱帯果樹育成及び管理活動ビデオ、養殖マニュアル等）が作成済みである。2015 年 10 月までに 3 種類の熱帯果樹（マンゴ、アボカド、グアバ）の紹介パンフレットが作成される予定。

指標 4-2：達成。次表に示されるように、対象地域においてワークショップ、フィールド・デー等が実施され、延べ 364 名の農家に各技術の情報が発信された。

表 4-4 対象地域におけるワークショップ等の開催実績

コンポーネント	開催数（回）	参加員数（人）
養殖	4	155
熱帯亜熱帯果樹	2	49
節水	4	44
その他*)	1	116
合計	11	364

備考：*) 「Ghore Safi ステーション」におけるふ化場・熱帯果樹園の開設セレモニー及びセミナー

指標 4-3：2015 年 10 月までに達成見込み。NCARE 図書館で各技術に関する情報を提供するための、デジタルアーカイブ・システム及びソフトウエアの開発を行った。今後関連データの入力を 10 月までに行い、稼働させる予定とされる。

4.3 プロジェクト目標の達成状況

プロジェクト目標	先進農業技術を農民へ享受、普及させる為に必要な NCARE 職員の技術・能力がターゲット地域における研究所及びパイロット農家での野外実験を通じて向上される。
指標	1. 養殖、熱帯・亜熱帯果樹、節水の各技術コンポーネントで NCARE 職員5人以上がイスラエルでの研修及びヨルダンでの現地研修を受講する。 2. パイロット農家及び研究ステーションの 30 カ所において先進農業技術の圃場実験が実施される。

終了時までにプロジェクト目標を達成するには相当な努力が求められる。

各技術コンポーネントとも 4 名から 7 名の NCARE 職員がイスラエル研修を受け、基本的な知識は概ねイスラエル研修にて習得された。また、39 農家及び 8 つの試験圃場による実際の生産が行われ、実経験の習得も進んでいる。しかし、3 件の技術コンポーネントの内、特に養殖及び熱帯・亜熱帯果樹生産技術については、実践研修の進捗の遅れから、農家に普及するために必要な経験・技術が不足している状況である。

養殖分野の技術・経験不足の理由には、実践活動が初めてである NCARE 職員が専門家の現場指導なしではふ化場の設計と運営を行うことができず、その一方では安全保障上の理由によりイスラエル人専門家の派遣が困難であったこと、また日本からの代替専門家の派遣がもっと早期になされるべきであったこと等が挙げられる。熱帯・亜熱帯果樹生産技術については、苗木調達の遅れなど予期せぬ遅れが生じ、苗木の各成長過程に合わせた管理方法等の実践研修が遅れたこと等が理由として挙げられる。

4.4 上位目標の達成見込み

上位目標	先進農業技術がターゲット地域の農民に導入される。
指標	2018 年までに、300 戸の農家に対して養殖、熱帯・亜熱帯果樹栽培、節水の技術が導入される。

本終了時評価調査を通じて行われた合同評価調査団内の討議の結果、プロジェクト終了後に上位目標が達成されるために必要な条件として、以下の事項が挙げられた。

(1) 対象農家のプロファイルの全容を調査すること、また対象地域毎に営農の特徴を特定することが求められる。特に農家経営の規模を把握するために、以上の調査が必要である。農業普及の方法は営農規模に大きく依存すると考えられ、どのような普及方法を取ることが適切か、NCARE は特定することが求められる。
(2) 農業普及には、「貧困緩和」向けまたは「経済成長」向けと、二つの方向があること

について、援助機関は考慮を払うことが求められる。このような普及の方向の違いは対象地域によって生じ得ると考える。

(3) NCARE の普及事業を行う職員の能力向上が必要である（注：合同評価報告書付属資料 3-1 に示されるように、本プロジェクトのカウンターパート要員である NCARE の職員は、ほとんど研究部門または地域センターに所属する研究職員であり、普及部門に所属する普及員は含まれていない）。

(4) 特に節水農業に係る先進農業技術について農家の意識向上が求められる。

4.5 実施プロセス

4.5.1 PDM の改訂

プロジェクト当初の PDM の目標及び成果では、農家への各技術の導入が目指された。しかし、まずその前に、各技術のヨルダンでの適応化のための応用研究と、同技術についての実経験が殆どない NCARE 職員の技術向上を図る必要があった。農家への各技術の導入は、3 年間で達成可能な目標あるいは成果ではなかった。この観点から、2014 年 12 月の PDM 改訂により、計画内容を NCARE 職員の技術向上に軽量化したことは妥当であった。

なお、以上の PDM 改訂内容には、養殖技術における具体的な改善案が提示できなかったが、2015 年 2 月末～3 月上旬に派遣された日本人専門家により、種苗方法について、これまでの人工孵化から自然孵化へ大幅な技術転換が提案された。

4.5.2 活動報告システムの未設置

活動の現場から専門家への情報フローを確立するための定期的な報告がなされなかった（注：各技術コンポーネントから定期報告の提出を督促する努力は続けられたが実現できなかったとの報告がある）。活動報告を定期的に行うことにより、事後の活動計画が改善されまた課題の特定も可能となる。以上は、プロジェクトの目標達成に貢献し、さらには持続性にも影響すると言える。

4.5.3 イスラエル人専門家のヨルダン派遣の未実施

本プロジェクトの技術移転に係る主な投入として、イスラエルでの研修と、イスラエル人専門家による現地技術指導が各コンポーネントで 2-3 回計画されていた。しかし、2014 年半ばに、イスラエル人専門家のヨルダン出張は、同国外務省によりホテル以外のフィールド視察が認められなくなったことが MASHAV/CINADCO から通知された。この状況のため、これまで一度もパイロットサイトでの技術指導が実施されなかった。上記を踏まえ、代替手段としてホテルでのワークショップや TV 会議等による技術指導の他に、日本から養殖短期専門家を招いて技術指導を行うことで対応がなされた。特にこれまで成果が出なかったふ化場の運営について、養殖短期専門家により自然ふ化による方法が提案され、これが実践されたことで養殖分野の活動が大きく進展した。しかし、活動が進展したのが 2015

年4月以降であったため、実践訓練の未実施を取り戻すものとはならなかった。

4.5.4 プロジェクト・マネージャの未配置

NCARE 職員数が全体的に減少傾向にあることも背景に、各コンポーネントを円滑に実施する為に必要な人材が不足している。当初想定されていたプロジェクト・マネージャが国外に移動となったため、同ポストが不在のままプロジェクトが進行し、節水コンポーネントについては、チームリーダーがプロジェクト開始以降 3 回変更になり、プロジェクト進捗に影響を及ぼした。NCARE では他の政府機関同様、予算削減の為に、離職した職員の補充を行うことができない状況があった。

5. 評価5項目による分析

5.1 妥当性

→高い

国家開発計画（Executive Development Program）2011 年－2013 年では、持続的な農業開発を推進することを目指し、「農業生産及び質の改善を促進する」、また「家庭レベルでの食糧安全保障を実現し、貧困と失業を緩和する」との政策課題を掲げている。また国立農業研究普及センター（NCARE）では、自身が進める農業開発の一つの指針として地方開発を通じた貧困緩和を挙げている。本プロジェクトの上位目標はヨルダン渓谷の農業地帯及び貧困地帯を対象に農業開発を通じて農家の収支改善や地方開発を図るものであり、整合性は高い。

第一フェーズに引き続き本プロジェクトを三角協力アプローチによって行うことの意義は高い。イスラエルからの技術移転の妥当性については、おもに気候・地域的類似性、またイスラエルの半乾燥地農業に関する国際的な先進技術が引き続き認識されており、同様の農業条件を持つヨルダンにおいて上記技術を導入することに高い意義がある。

5.2 有効性

→中程度

第二フェーズでは対象作物を特定し農業技術の移転が図られた。種々の困難があり、2014 年 12 月に PDM が改訂され、プロジェクト目標から普及活動を除外し、プロジェクトの軽量化が図られた。これに伴い、投入の主力要素の一つであるイスラエル人専門家の派遣を、果樹では3回から1回に、節水では2回から1回に減らした。養殖では当初予定の3回を維持した。このように派遣回数を減らしたが、イスラエル人専門家のパイロットサイト派遣は 1 回も実施されていない。そのため、技術移転の効果発現は不十分な結果となった。他にも不足した人的資源があった。NCARE のプロジェクト・マネージャ等である。これら複数の要因により、各技術を農家に普及する為に必要な NCARE 職員の経験・技術が不足している。このため、本プロジェクトの有効性は低減された。

5.3 効率性

→高い

当初計画から回数を低減したものの、なお予定どおり専門家派遣の計画を達成することができなかった。そのような状況の中で、成果 4 件の内、半数の成果がほぼ達成できた。これは限定された投入が効率的に活用された結果と言える。イスラエル研修を予定どおり実施できているので、養殖・熱帯果樹・節水分野の基本的な技術知識は得られた。2015 年 3 月の養殖短期専門家の事例を除くと、ふ化場や果樹園圃場など、現地での技術指導がなされなかった。このようにプロジェクトサイトにおける技術指導が不足していることにより実践経験が不足したことが成果の達成が不十分となった原因である。

5.4 インパクト

→中程度と見込まれる

現段階では上位目標が達成される見込みはない。しかしながら、プロジェクトの養殖に関するワークショップに参加した農業組合”Numirah Agricultural Association”が、自己資金による養殖プロジェクトを 2015 年 5 月より開始している。この組合は 2012 年設置、組合員数 53 人である。自己資金により、多数の養殖池を造成し、配管材、種苗及び餌料等を調達した。造成した池には面積 1800 ㎡の池 10 面が含まれる。目下の課題は餌料費（JD40/日）を低減することである。この事例は本プロジェクトのインパクトの一つとして位置付けられる。このような民間セクターの事例に対する NCARE 職員による技術指導やフォローアップを可能とするためにも本プロジェクトの便益（NCARE 職員の能力向上）が持続することが必要である。

5.5 持続性

→高いと見込まれる

(1) 政策・組織面

農業開発に係る国家政策は、第 2 フェーズ開始よりこの間大きな変更は確認されていない。また NCARE は、農業省傘下の普及研究センターとして、ヨルダンにおける農業分野の研究・普及活動を担う政府機関であり、NCARE の組織や活動が今後も継続していくことは確実である。すなわち本プロジェクトが目指す特定作物に係る NCARE 職員の技術能力の向上に関する政策・組織面の持続性は確保されていると考えられる。

(2) 技術・財務面

NCARE 職員の技術・能力に関しては、特に実践分野において経験を蓄積する活動が実施されることで、継続的に事業を実施するための能力は維持・向上される見込みである。プロジェクトにより設立された圃場施設（養殖施設、ふ化施設、実験果樹園、節水灌漑試験圃等）の維持運営に必要な光熱水費などの経費は NCARE により負担されている。プロジェクトが負担していた維持作業に掛かる労賃については新たな予算措置が必要となる。種苗生産や結実など事業成果の実質的な発現が見られることから、事業継続のため予算措置は維持されると期待できる。

6. 結論

各技術コンポーネントに対しイスラエルでの研修が 1～3 回行われその結果基本技術の知識は得られた。PDM 改訂によりイスラエル人専門家のプロジェクトサイト派遣を予定回数より減少したがこれを実現できなかった。プロジェクト・マネージャのように人的資源の投入不足があり、実際に行われた技術移転活動は少ないものとなった。各技術コンポーネント 3 件とも実践経験がなお不足しており、これらを生産技術として農家に普及できるレベルには達していない。プロジェクト期間を延長することで技術不足を補うことは可能である。

7. 提言と教訓

7.1 提言

プロジェクト目標の達成と持続性の確保のために、合同評価調査団は 12 か月の延長を提言した。PDM の成果達成度から、延長期間は養殖が 12 か月、熱帯果樹と節水は 6 か月と判断した。各関係者への提言は以下のとおりである。

7.1.1 プロジェクトに対して

1) 2015 年 11 月までの残りの 4 か月間に残された活動について、段階的な目標を立てその達成に努める。以下の提言 7.1.2 により配置されることとなるプロジェクト・マネージャに活動計画を提出する。

2) 配置が予定されるプロジェクト・マネージャに対する定期的な報告システムを確立する。プロジェクト・マネージャはイスラエル及び日本の業務調整員に月例報告書を配布する。

3) 高地での節水農業や養殖の代替餌料など、この間に得られたプロジェクトの活動実績を NCARE の普及員及び農家へ紹介するセミナーを開催する。このような新規技術導入に係るセミナーのような普及事業をステーションあるいはプロジェクトサイトで実施した後は（個々の圃場における）技術指導など農家へのフォローアップを行う。

延長期間の活動に対して：
4) 今後、地域ステーションであれ農家圃場であれ、パイロットサイトを選ぶ際には必要に応じて選定基準を作る。選定に先立ち普及活動とモニタリングの利便について綿密な調査を行う。

7.1.2 ヨルダン側に対して

1) プロジェクトの開始段階から欠員となっていたプロジェクト・マネージャを配置する。

また、NCARE 職員の中から養殖を管理する常駐スタッフを指名する（注：これまでのプロジェクト実施期間中は、プロジェクトが雇用する非常勤スタッフが日常的な維持作業に従事していた)。

2) 必要経費を記した活動計画に従ってのみプロジェクトが負担する支出が可能なことを徹底する。経費の支出と清算は、配置されるプロジェクト・マネージャを通す場合に限って行う。

延長期間中の活動に対して：
3) 熱帯果樹、養殖、節水の農家への普及計画のために実施体制を強化する。

7.1.3 日本側に対して

1) 研修事業などプロジェクト活動に従事したイスラエル人専門家、日本人専門家を招いて、2015 年 11 月に各コンポーネントの成果を発表する技術セミナーを死海近辺の会場で開催する

延長期間中の活動に対して：
2) プロジェクト期間の延長に応じて業務調整員を派遣する。

3) プロジェクトにより作成される延長期間中の活動計画と予算案を審査し延長期間の活動に対する予算を準備する。

4) イスラエルに専門家派遣の要請を行う。あるいは必要に応じて日本または第三国から専門家を派遣する。

7.1.4 イスラエル側に対して

1) 2015 年 8 月 9 日及び 10 月 20 日にそれぞれ開始が予定されている苗畑管理研修と農家視察研修を実施する

2) 公的機関に所属するイスラエル人専門家のプロジェクトサイトへの派遣の可能性を追求する。

延長期間中の活動に対して：
3) 延長期間中にイスラエルでの実践技術研修を適期に行うこと。研修課題は熱帯果樹とふ化技術で、イスラエル人専門家の提言によれば熱帯果樹の研修は 5 月が適期とされる。

7.2 教訓

7.2.1 迅速な技術支援

本プロジェクトでは、各コンポーネント代表者からの活動提案を技術的に確認し、必要に応じ指導・助言する専門家が欠けていた。このため、各コンポーネントのカウンターパートが外部専門家の助言に頼らず活動を進めた事例もあった。例えば、パイロット農家の十分な選定基準を欠いた状態でパイロット事業が設計された。

プロジェクトの当初段階では、必要な技術支援はイスラエル人専門家及び日本で設けられた技術支援委員会から得られると考えられた。技術指導のため、イスラエル人専門家によるワークショップ参加（ヨルダンのホテルで開催）や技術支援委員会メンバーによるパイロットサイト訪問を得た。また後には JICA パレスチナ事務所の農業専門家と養殖の JICA 短期専門家がパイロットサイトに派遣された。しかしながらプロジェクトからの要請に迅速に反応することは必ずしもできなかった。

プロジェクト活動を 3 年と言う限られた時間内で全て達成するには、プロジェクト開始段階で（プロジェクト全体を総括する）農業専門家を派遣する必要があった。

7.2.2 柔軟な対処措置

いかなるプロジェクトにあっても状況に応じて柔軟な対処策を講ずることが必要である。柔軟に対処することで、困難な状況の下、限定された投入であったが、本プロジェクトは一定の成果を挙げることができた。

添付資料

1. 調査日程
2. 主要面談者一覧表
3. 英文終了時評価調査結果要約表
4. 第4回 JSC ミニッツ
5. 英文合同評価調査報告書（含む PDM）
6. 上記 5. の正誤表
7. 評価グリッド
8. 質問票及び回答一覧表

添付資料1 調査日程

月日	曜日	時刻	調査	調査団員・被面談者
7月25日	Sat		日本出国(コンサルタント)	
26日	日			
		14:30-15:30	NCARE	Dr. Fawzy Al-Sheyab Dr. Muien Qaryouti
		16:00	JICAヨルダン事務所打合せ	
27日	月	10:00-11:00	MASHAV/CINADCOビデオ会議	Ambassador Mattanya Cohen (MASHAV) Ms. Irit Shavit (MASHAV) Ms. Galit Aber (CINADCO)
		11:30-12:00	MOPIC	Ms. Samar Nayif Jmyaan
		12:30-13:00	MOA	Mr. Omar Bashir Allahham
28日	火	10:00-11:00	NCAREカウンターパート要員(熱帯果樹)	Eng. Hani Ganaim Eng. Raed Lutfi Eng. Hisham Ali Eng. Mazen Al-Kilani Eng. Qusai Al Amiriyin
		11:00-12:00	NCAREカウンターパート要員(節水)	Eng. Osama Owaneh Eng. Mohammad Al Kharabsheh Eng. Mai Diab
		12:00-13:00	NCAREカウンターパート要員(マスメディア)	Mr. Shaban Banat Mr. Majed Deebajeh
29日	水	7:30-9:30	AmmanからBorubayta移動	Dr. Qaryouti, Dr. Bulad, 寺尾, Mr. Hani, 高柳
		9:30-10:00	NCAREカウンターパート要員 (Borubayta/Tafila)	Eng. Ahmad Al Sharaide
		10:00-12:00	BorubaytaからGhore Safi移動	
		12:00-13:00	パイロット農家 (Ghor Safi, Aquaculture)	グループ面談
		13:00-14:00	NCAREカウンターパート要員 (Ghor Safi)	Eng. Nael Kawalit Eng. Wesam Al Nawalit Dr. Shareef Alrawashdeh
		14:00-15:00	パイロット農家 (Ghor Safi, Tropical Fruit)	農家1軒 (Mousali farm)
		15:00-17:00	Ghore SafiからAqaba移動	
30日	木	8:30-9:30	AqabaからWadi Araba Regional Ceter移動	Dr. Qaryouti, Dr. Bulad, 寺尾, Mr. Hani, 高柳
		9:30-10:30	NCAREカウンターパート要員 (Wadi Araba)	Eng. Jamile Hassaera, Eng. Qusai
		11:00-11:30	パイロット農家 (Wadi Araba, Tropical Fruit)	Kaa Association Farm
		11:30-13:30	Wadi ArabaからGhore Mazra移動	Dr. Qaryouti, Dr. Bulad, 寺尾, Mr. Hani, 高柳
		13:30-14:00	Pilot Farmers (Gore Mazra, 熱帯果樹)	農家1軒 (Ghore Mazra, Kassasba farm)
31日	金		資料整理	
8月1日	土		資料整理	
2日	日	10:00-11:00	NCAREカウンターパート要員 (Dahred el Ramel、養殖)	Eng. Ahmad Khraisat Eng. Bashar Al Rahaleh
3日	月		資料整理	
4日	火		ミニュッツ案協議	
5日	水	9:30-11:00	JCC会議準備	
		11:00-15:30	JCC会議、評価結果報告	
6日	木	10:30-13:00	AmmanからNorth Shouna移動	中林、海老澤、寺尾, 高柳, Dr. Bulad
		13:00-15:00	パイロット農家 (North Shouna, 熱帯果樹)	農家2軒
		15:00-17:30	North ShounaからAmman移動	
7日	金		Amman出国	
8日	土		日本帰国(コンサルタント)	

添付資料２　主要面談者一覧表

所属	氏名	所属・職位
NCARE	Dr. Fawzy Al-Sheyab	センター所長（Director General）
	Dr. Muien Qaryouti	研究担当次長
MOPIC	Ms. Samar Nayif Jmyaan	計画国際協力省
MOA	Mr. Omar Bashir Allahham	農業省
NCARE	Eng. Hani Ganaim	熱帯・亜熱帯果樹グループリーダ
	Eng. Raed Lutfi	熱帯・亜熱帯果樹グループ
	Eng. Osama Owaneh	節水農業グループリーダ
	Eng. Mohammad Al Kharabsheh	節水農業グループ
	Mr. Shaban Banat	マスメディア・グループリーダ
	Mr. Majed Deebajeh	マスメディア・グループ
	Mr. Shaban Banat	養殖グループリーダ
	Eng. Bashar Al Rahaleh	養殖グループ
MASHAV	Ambassador Mattanya Cohen	イスラエル国際開発協力庁
	Ms. Irit Shavit	
CINADCO	Ms. Galit Aber	イスラエル農業開発協力センター

備考

MOPIC: Ministry of Planning and International Cooperation

MASHAV: Israel's Agency for International Development Cooperation

CINADCO: Center for International Agricultural Development Cooperation

添付資料 3 英文評価調査結果要約表

I. Outline of the Project		
Country: Jordan		Project title: The 2nd Phase of the Tri-lateral Technical Cooperation Project: Jordan - Japan – Israel for "Introduction of Advanced Agricultural Technology in Dry land Area"
Issue/Sector: Agriculture Development		Cooperation scheme: Technical cooperation
Division in charge : Jordan Office		Total cost: 120 million Yen
Period of Cooperation	R/D: December 2012 to November 2015 (3 years)	Implementation Organization: National Center for Agricultural Research and Extension, Ministry of agriculture (NCARE)
		Supporting Organization in Japan: Technical Advisory Committee
Related Cooperation: None		

1. Background of the Project

Agriculture is one of the most important pillar industries in Jordan, which accounts for 28% of the total GDP of the country. And it can be said that the national economy depends large on the agriculture. A decade ago, the Government of Jordan opened its market to European countries and only limited numbers of farmers who had modern facilities, knowledge, and technology could increase their competitiveness of the agricultural products and improved their standard of living. However, the majority of the farmers who had no tools of reaching such means and opportunities were remained as they had been.

JICA implemented a technical cooperation project titled "Introduction of Advanced Agricultural Technology in Dry land Area" which started in May 2008 and ended successfully in August 2012 including one year extension period with expected outputs. And in order to further develop the outputs of the Phase 1 stage and expand the outputs to more people in wider area of Jordan Valley, implementation of the Phase 2 stage was proposed and requested by Jordan Government, and agreed upon by all the concerned parties, Japan, Jordan and Israel. The Project Phase 2 is also a part of Japanese Government's initiative of the Program "The Corridor for Peace and Prosperity".

2. Project Overview

(1) Overall Goal

Advanced agricultural techniques are introduced to the farmers in the target area.

(2) Project Purpose

Skills and capacity of NCARE staff are enhanced for training and extending advanced agricultural techniques to farmers through field trials in research stations and pilot farms in the target areas.

(3) Outputs

1) Aquaculture techniques are obtained by NCARE staff through field trials in the target area
2) Production techniques of tropical and subtropical fruits are obtained by NCARE staff through field trials in the target area
3) Water saving agriculture techniques adapted to local conditions are obtained by NCARE staff through field trials in the target area
4) Advanced agricultural techniques are disseminated by NCARE staff to farmers in the target areas

(4) Inputs

Japanese contribution:

Expert: long-term one person, short-term 2 persons in total Equipment: 43 thousand US$
Local cost: 440 thousand US$
Shared cost for training: 39 thousand US$

Israeli contribution:

Expert: There were no short-term experts dispatched to the project sites in Jordan.

Shared cost for training: 59 thousand US$
Trainees received in Israel: 30 persons

Jordanian contribution:
Counterpart: 28 persons in total
Land and Facilities: Land for experimental plots, hatchery, office and others

II. Evaluation Team

Members of Evaluation Team	Leader: Kazuo Nakabayashi, Project Formulation Advisor, Palestine Office, JICA Cooperation Planning: Yoko Ebisawa, Project Formulation Advisor, Jordan Office, JICA Evaluation Analysis: Toyomitsu Terao, Fisheries Engineering Co., Ltd	
Study period	26 July 2015 to 7 August 2015	Type of Evaluation : Terminal evaluation

III. Results of Evaluation

1. Summary of Evaluation Results

(1) Relevance: high
The Executive Development Program (2011 -2013) was aimed at the sustainable development of the agriculture sector, and had objectives to execute the promotion of agriculture production and quality improvement of products; materialization of food security at household level; and alleviation of poverty and unemployment. The NCARE has aimed at poverty alleviation through the rural development as one of its development policies for the agriculture sector. In a level of the Overall Goal, the Project is aimed at improvement of farmer's income and rural development at the agriculture belts and the poverty areas of the Jordan Valley. Thus, the Project is relevant to the government policies.

(2) Effectiveness: moderate
Because of some difficulties caused in a course of the Project, the PDM was revised in February 2015 and a scope of the Project Purpose has been scaled down by removing the extension component from the project design. Accompanied with this, the plan for the field visits by Israeli experts reduced from 3 times to one time in case of the tropical fruit trees, and from 2 times to one time in case of water saving, while the field visits in case of aquaculture was kept 3 times as originally planned. However, despite of the decreased times, still the field visits by Israeli experts could not be materialized. Due to such decreased inputs of the human resources, a considerable part of the project activities could not be smoothly implemented or had been delayed.

(3) Efficiency: high
Accompanied with scaling down of the scope of the Project Purpose, the planned inputs were also reduced. However, despite of such reduction, still the inputs of the experts could not be attained. Under such situation, it should be noted that as results of efficiently utilizing rather limited inputs, a half or more number of the outputs could be achieved. Contrasted with the input of the experts, the training in Israel could be conducted as planned. The basic knowledge for aquaculture, tropical fruit trees and water saving has been thus obtained by the participants.

(4) Impacts: moderate (prospective)
At present, it is difficult to expect that the Overall Goal is achieved after the termination of the Project. However, it was noted that "Numirah Agricultural Association" in Ghore Safi has operated the tilapia aquaculture since May 2015. The members of the association participated in one of the aquaculture workshop conducted by the Project and this workshop gave them an incentive for an aquaculture project. This case is deemed as a positive and unexpected impact of the Project.

(5) Sustainability: moderate (prospective)
Policy aspect: The NCARE is a government organization responsible for the research and extension for the agriculture sector. The institution and operation of the NCARE as a national center for the agriculture research and extension will certainly continue to the future.

Financial aspect: Since tilapia seeds and some tropical fruits, as well as various and substantial outcomes of the research, have come to be produced by these facilities, it can be expected that the necessary operation costs will be budgeted for the activities after the termination of the Project as well.

2. Factors that promoted materialization of effects

N.A.

3. Factors that impeded materialization of effects

(1) Factor related to project design:
In the original PDM, the project purpose was aimed to introduce the advanced technologies to the farmers in the target area. However, it was noted at the initial stage of the Project that the capacity of the NCARE officers needed to be developed first, because at that time the NCARE had no experiences in adaptation or application of the cultivation technologies of the target crops. Materialization of the extension service for the technologies was beyond a project purpose that could be attained with three years. Thus, the PDM was scaled down in December 2014.

(2) Factor related to implementation process
The technical transfer was delayed especially in the Aquaculture and Tropical Fruit Tree Component. In case of the Aquaculture Component, since the technologies of fish farming were quite new and its actual trials were not experienced before, it was difficult for the NCARE to design and use hatchery facilities without on-site technical instruction by the expert. Meanwhile, the Israeli experts could not visit the sites due to the security requirements; and the substitutional on-site instruction by using the resources from Japan should have been conducted in earlier timing. In case of the Tropical Fruit Trees Component, unexpected delay was caused in purchase of the seedlings, and thus the stepwise training for tree management was delayed.

4. Conclusion

For each of the technical component, the basic technical knowledge was obtained through the trainings in Israel that were conducted one to three times. Although the times of the field visits of Israeli experts were reduced from the original plan, the technique instructions on site could not be implemented or still difficult. Lack of the input of human resources such as Project Manager was also noted. These caused much less activities for technology transfer even than those planned in the revised PDM/PO. Such unmaterialized activities had resulted in the insufficient technique and experience of the NCARE officers necessary for extending the techniques of the three components to the farmers in the project areas. It is possible to supplement a shortage of the technique by conducting the training through extension of the project term.

5. Recommendations

In order to achieve the project purpose and assure the sustainability of the Project, the Joint Evaluation Team recommended the Project is to be extended for 12 months (12 months for aquaculture and 6 months for tropical fruits and water-saving components).

(1) To the Project

1) The step-wise targets should be determined and the action plans of the remaining 4 months to the end of November, 2015 should be formulated.
2) To establish the regular reporting system to the Project Manager to be assigned for sharing the progress of activities.
3) To provide opportunities to disseminate the project achievement (results of trials) to NCARE extension agents and farmers (For example, water-saving seminar in the high lands and cost saving by alternative feed of aquaculture).

During the extension period:
4) To set up the criteria to select the pilot sites (station or pilot farmers) if necessary.

(2) To the Jordanian side

1) To assign one Project Manager (the post has been vacant since the initial stage) and to nominate

one permanent staff to take care of aquaculture from NCARE
2) To confirm all the counterparts that the payment should be approved only according to the expenditure plan shown in the action plan. The payment and settlement should be made only through the Project Manager to be assigned.

During the extension period:
3) To strengthen the implementation system for preparing the extension plan of tropical fruits, aquaculture and water-saving during the extension period.

(3) To the Japanese side

1) To hold a technical seminar to present the achieved technologies in each technical component in November, 2015. The seminar will be held at Dead Sea and Israeli and Japanese experts who were engaged in the training in Israel or in the site.

During the extension period:
2) To appoint one Project Coordinator for the extension period.
3) To prepare the budget after reviewing and approving the action plan with estimated expenditure of the extension period that prepared by the Project.
4) To request the dispatch of the Israeli expert. Otherwise, the expert from Japan or the third country should be dispatched if necessary.

(4) To the Israeli side

1) To conduct the training courses (Nursery management and Farmers visit) scheduled to begin on August 9th and October 20th, 2015, respectively.
2) To seek the possibility to send official Israeli experts to the pilot sites in Jordan.

During the extension period:
3) To conduct the practical training in Israel, taking into consideration seasonal aspects (tropical fruits in May and hatchery according to recommendations made by the Israeli experts) during the extension period.

6. Lessons Learnt

(1) Prompt technical inputs
It was planned at the beginning that the necessary technical support could be done by Israeli experts and by Technical Advisory Committees in Japan. At first Israeli expert and Japanese professors visited Jordan afterwards an agriculture expert from JICA Palestine Office as well as a short-term JICA expert of aquaculture visited to the project sites in Jordan to follow the technical support. However, the requests of the Project were not always responded promptly. For performing all the project activities within a rather limited time of the three-year project term, an agriculture expert should have been assigned in the initial stage of the Project.

(2) Effect of flexible measures
In any project, the flexible measures have to be taken in response to situations. By the flexible measures, this project could achieve sufficiently within the limited inputs under the harsh situation.

MINUTES OF MEETING
ON
THE 4TH JOINT STEERING COMMITTEE FOR THE TERMINAL EVALUATION REPORT
FOR
THE 2ND PHASE OF THE TRI-LATERAL TECHNICAL COOPERATION PROJECT
JORDAN -JAPAN - ISRAEL
FOR
"INTRODUCTION OF ADVANCED AGRICULTURAL TECHNOLOGY IN DRYLAND AREA"

The Japanese Terminal Evaluation Team organized by Japan International Cooperation Agency (hereinafter referred to as "JICA") visited the Hashemite Kingdom of Jordan (hereinafter referred to as "Jordan") from July 26 to August 6, 2015 in order to conduct the Terminal Evaluation of the 2nd Phase of the Tri-lateral Technical Cooperation Project Jordan-Japan-Israel for "Introduction of Advanced Agricultural Technology in Dryland Area" (hereinafter referred to as "the Project).

The Joint Evaluation Team (hereinafter referred to as "the Team"), which consists of three members from JICA and one member from the National Center for Agricultural Research and Extension of Jordan (hereinafter referred as "NCARE") and one member from Israel's Agency for International Development Cooperation, Ministry of Foreign Affairs of Israel (hereinafter referred to as "MASHAV") was jointly organized for the purpose of conducting the terminal evaluation and preparation of necessary recommendations to the respective governments.

After intensive study, analysis, discussions of the activities and achievements of the Project, the Team prepared the Terminal Evaluation Report (hereinafter referred to as "the Report), which was presented to the Joint Steering Committee (hereinafter referred to as "the Committee").

The Committee discussed the major issued pointed out in the Report and agreed to recommend to the respective governments the matter attached hereto.

Dead Sea, August 5, 2015

Samar Jumean
Omar Allahham

Mr. Shokichi Sakata
Chief Representative
JICA Jordan Office
Japan International Cooperation Agency

Dr. Fawzi Al-Sheyab
Director General
National Center for Agricultural Research and Extension, Ministry of Agriculture
The Hashemite Kingdom of Jordan

Ms. Shuli Kurzon van Gelder
Director, Planning Information and Evaluation
Israel's Agency for International Development Cooperation
Ministry of Foreign Affairs of Israel

Ms. Samar Nayif Jmyaan
Senior Engineer, Project Department in Agriculture And Water
Ministry of Planning and International Cooperation
The Hashemite Kingdom of Jordan

Ms. Galit Aber,
Project Coordinator, Head of English Division
Center for International Agricultural Development Cooperation, Ministry of Agriculture and Rural Development of Israel

Mr. Omar Bashir Allahham
Head of Policies Division
Studies & Policies Department
Ministry of Agriculture
The Hashemite Kingdom of Jordan

Ms. Yuko Mitsui
Chief Representative,
JICA Palestine Office
Japan International Cooperation Agency

Attached Document

Major points of discussions and agreements in the Committee are as follows;

1. The Committee adopted the Report.

2. The Committee commented the followings;

- MASHAV announced to obtain a general approval of sending an Israeli expert to the field in Jordan for aquaculture. NCARE requested to send such an expert in the second week of September based on NCARE's needs. CINADCO will reflect the results of the field visit to the design of the coming trainings.
- MASHAV commented to consider sending an expert for tropical and sub-tropical fruit tree production to the field in Jordan.
- NCARE announced to nominate Project Manager as Dr. Jitan.
- Necessity of sound reporting system is confirmed by NCARE.
- NCARE will prepare the detailed work plan for the extension period before November 2015.

End

Annex: The Terminal Evaluation Report

Samer Jumean
Omar Allahham

FA

6.A

Joint Terminal Evaluation Report

on

Second Phase of Introduction of Advanced Agricultural Technology for Dryland Area Jordan under Trilateral Cooperation, Jordan-Japan-Israel

Dead Sea, Jordan
4 August 2015

Dr. Muien Qaryouti
Joint Evaluator
Assistant Director General, NCARE

Ms. Shuli Kurzon van Gelder
Joint Evaluator
Director, Planning, Information and Evaluation, MASHAV

中林一夫

Dr. Kazuo Nakabayashi
Team Leader
Project Formulation Advisor, Palestine Office, JICA

CONTENTS

List of Abbreviations

1. Introduction
    1.1 Objectives of the Terminal Evaluation
    1.2 Members of the Terminal Evaluation Team
    1.3 Schedule of the Terminal Evaluation
2. Outline of the Project
    2.1 Background of the Project
    2.2 Summary of the Project
3. Methodology of the Terminal Evaluation
    3.1 Procedure
    3.2 Items of Analysis
4. Project Performance and Implementation Process
    4.1 Achievement of the Inputs
    4.2 Achievement of the Outputs
    4.3 Achievement of the Project Purpose
    4.4 Prospect of achievement of the Overall Goal
    4.5 Implementation Process
5. Evaluation based on the five criteria
    5.1 Relevance
    5.2 Effectiveness
    5.3 Efficiency
    5.4 Impact
    5.5 Sustainability
6. Conclusion
7. Recommendations and Lessons learnt

ANNEXES

Appendix 1: Project Design Matrix and Plan of Operation
Appendix 2: Record of inputs by contribution of Japan
Appendix 3: Record of Inputs by contribution of Israel
Appendix 4: Record of inputs by contribution of Jordan

List of Abbreviations and Acronyms

Abbreviation	Full Name
CINADCO	Center for International Agricultural Development Cooperation, Ministry of Agriculture and Rural Development, Israel
EDP	Executive Development Program (2011 – 2013)
GDP	Gross Domestic Product
JICA	Japan International Cooperation Agency
MASHAV	Israel's Agency for International Development Cooperation, Ministry of Foreign Affairs, Israel
MOA	Ministry of Agriculture, Jordan
NCARE	National Center for Agricultural Research and Extension, Ministry of Agriculture, Jordan
PDM	Project Design Matrix
PO	Plan of Operation

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1. Introduction

1.1 Objectives of the Terminal Evaluation

Objectives of the Terminal Evaluation were as follows:

(1) To review the achievement and implementation process of the Project according to the Project Design Matrix (hereinafter referred to as the "PDM").

(2) To evaluate the Project according to the five evaluation criteria (relevance, effectiveness, efficiency, impact, and sustainability)

(3) To discuss the plan and issues for the remaining project period for both Jordan and Japanese sides.

(4) To draw lessons learnt from the Project by identifying the promoting and impeding factors of the Project

1.2 Members of the Terminal Evaluation Team

(1) Japanese Members

Table 1-1: Japanese Evaluation Team Members

Name	Job Title	Designation & Organization
Dr. Kazuo Nakabayashi	Team Leader	Project Formulation Advisor, Palestine Office, JICA
Ms. Yoko Ebisawa	Cooperation Planning	Project Formulation Advisor, Jordan Office, JICA
Mr. Toyomitsu Terao	Evaluation & Analysis	Consultant, Fisheries Engineering Co., Ltd.

(2) Israeli Members

Table 1-2: Israeli Evaluation Team Members

Name	Job Title	Designation & Organization
Ms. Shuli Kurzon van Gelder	Joint Evaluator	Director, Planning, Information and Evaluation, MASHAV

(3) Jordanian Members

Table 1-3: Jordanian Evaluation Team Members

Name	Job Title	Designation & Organization
Dr. Muien Qaryouti	Joint Evaluator	Assistant Director General, NCARE

1.3 Schedule of the Terminal Evaluation

The Terminal Evaluation is conducted from 26 July 2015 to 7 August 2015.

2. Outline of the Project

2.1 Background of the Project

Agriculture is one of the most important pillar industries in Jordan, which accounts for 28% of the total GDP of the country. And it can be said that the national economy depends large on the agriculture. A decade ago, the Government of Jordan opened its market to European countries and only limited numbers of farmers who had modern facilities, knowledge, and technology could increase their competitiveness of the agricultural products and improved their standard of living. However, the majority of the farmers who had no tools of reaching such means and opportunities were remained as they had been.

JICA implemented a technical cooperation project titled "Introduction of Advanced Agricultural Technology in Dry land Area" which started in May 2008 and ended successfully in August 2012 including one year extension period with expected outputs. And in order to further develop the outputs of the Phase 1 stage and expand the outputs to more people in wider area of Jordan Valley, implementation of the Phase 2 stage was proposed and requested by Jordan Government, and agreed upon by all the concerned parties, Japan, Jordan and Israel. The Project Phase 2 is also a part of Japanese Government's initiative of the Program "The Corridor for Peace and Prosperity".

2.2 Summary of the Project

According to the PDM ver.1 (attached as ANNEX 1) authorized by the Minutes of Meeting dated February 2015, the Project is summarized as follows.

Project Title

- The 2nd Phase of the Tri-lateral Technical Cooperation Project: Jordan - Japan – Israel for "Introduction of Advanced Agricultural Technology in Dry land Area"

Counterpart Organization

- National Center for Agricultural Research and Extension (NCARE)

Project Duration

- December 2012 to November 2015 (36 months)

Target Area

- Jordan Valley and neighbouring areas

Target Group

- NCARE Staff participating to the Project
- Farmers in the Target Areas (indirect)

Overall Goal:
Advanced agricultural techniques are introduced to the farmers in the target area

Project Purpose:
Skills and capacity of NCARE staff are enhanced for training and extending advanced agricultural techniques to farmers through field trials in research stations and pilot farms in the target areas

Output:
(1) Aquaculture techniques are obtained by NCARE staff through field trials in the target area
(2) Production techniques of tropical and subtropical fruits are obtained by NCARE staff through field trials in the target area
(3) Water saving agriculture techniques adapted to local conditions are obtained by NCARE staff through field trials in the target area
(4) Advanced agricultural techniques are disseminated by NCARE staff to farmers in the target areas

3. Methodology of the Terminal Evaluation

3.1 Procedure

Means of the Terminal Evaluation included analysis of documents, field survey and interview with stakeholders such as counterpart personnel, JICA expert, and so forth, while applying the PDM. At the same time, Evaluation Grid which includes "Actual Project Achievement and Implementation Process" and "Five Evaluation Criteria" was prepared for the Evaluation.

3.2 Items of Analysis

Items of Analysis are (1) Project Achievement, (2) Implementation Process and (3) Five Evaluation Criteria.

(1) Project Achievement
Project achievement was measured in terms of Input, Output and Project Purpose in comparison with Objectively Verifiable Indicators of PDM as well as Plan of Operation (PO).

(2) Implementation Process
Implementation process of the Project was reviewed to see if activities had been implemented according to the schedule delineated in the PO, to see if the Project had been managed properly and to identify obstacles and/or facilitating factors that had affected the implementation process.

(3) Five Evaluation Criteria

Definition of the Five Evaluation Criteria is described below.

Table 3-1: Definition of Five Evaluation Criteria

Relevance	Relevance refers to the validity of the Project Purpose and the Overall Goal in connection with development policy of the Government of Jordans as well as the needs of beneficiaries, and policy of Japanese Official Development Assistance.
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.
Efficiency	Efficiency refers to the productivity of the implementation process, examining if the inputs of the Project have been efficiently converted into the outputs.
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.
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.

4. Project Performance and Implementation Process

4.1 Inputs

Since the beginning of the Project in December 2012, the inputs have been made by contributions from Japan, Israel and Jordan. These are summarized as following sections. Detailed list of the inputs from these countries is shown in ANNEX 2 to 4.

4.1.1 Japanese Contribution

(1) Assignment of Experts

One long-term expert (Project Coordinator/Training Planning) has been assigned and dispatched for the Project. In addition, two (2) short term experts have been assigned for the field of Horticulture /Extension and Tilapia Aquaculture. For the management of the Project activities, a Project Formulation Advisor of JICA Palestine Office visited the project sites frequently. For consultation in technical aspect, the members of the Technical Advisory Committee in Japan visited the project sites as well. The details of their visits are shown in ANNEX 2.

(2) Provision of Equipment

Equipment provided for the Project activity was personal computers, printers, software packages, measuring instruments, and others. Total cost of providing equipment was 30,390 US$.

(3) Operational Expenditure

The operational expenditure which includes a part of the local costs for implementing the project activities was borne by the Japanese side. Total operational expenditure for the Project by this time is 676,658 JD (around 967,000 US$) as shown in the following table.

Table 4-1 Operational expenditure by Japan

Year (JFY: Apr. to Mar.)	Amount (JD)
2012	3,900
2013	107,452
2014	196,796
2015	32,132*
Total	676,658

Remark: The 2015 covers the expenditure only until June 2015

4.1.2 Israeli Contribution

(1) Acceptance of Project Counterpart Personnel for Training in Israel

From the beginning to the end of the Project, a total of 30 counterparts are to participate in 9 training courses in Israel, which includes two courses under planning that are scheduled to conduct by

October 2015. Name of the training courses and number of participants are shown in Annex 3.

(2) Assignment of Experts

In the revised Plan of Operation in December 2014, the field visits in Jordan of Israeli experts were planned five times. However, the planned visits have not been able to implement so far and are not foreseen possible by the end of the Project.

(3) Shared cost for training

The costs for the past seven training courses were shared between MASHAV and JICA as shown in the table under;

Table 4-2 Shared Cost for Training in Israel

MASHAV	JICA
59,235.86US$	38,946.51US$

4.1.3 Jordanian Contribution

(1) Assignment of Counterpart Personnel

In the project activity, 28 officers have been assigned as the counterpart personnel of the Project from the implementation organizations – NCARE and Ministry of Agriculture. They are Project Director, Project Manager (vacant), three Administrations, and a total of 24 Researchers and Technical Officers.

(2) Necessary Facilities for the Operation of the Project

The NCARE has provides the facilities and land necessary for operating the Project and spent the costs for communications, transports, and maintaining the facilities such as security, water and electricity. The NCARE has also provided the office space and accompanied facilities for JICA Expert in Amman.

Table 4-3 Field Facilities Provided by NCARE

1	Land (10.5 donum) for tropical and subtropical fruit research orchard (5 donum for Ghor Safi, 2.5 donum for Wadi Araba, and 3 donum for Tafyla)
2	One full building for artificial hatchery
3	Land (1 donum) for semi artificial hatchery
4	Land (14 donum) for water saving experiments (2 donums for Ghor Safi, 12 donum for Dair Alla)
5	Plastic houses

Remarks: One donum is approximately 0.1 ha.

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4.2 Outputs

An extent of achievements for the four outputs was reviewed with the prescribed indicators and also with results of the site investigation of the Terminal Evaluation Study. The results of review were summarized as follows.

4.2.1 Achievement of Output 1

Output 1	Aquaculture techniques are obtained by NCARE staff through field trials in the target area
Indicators	1-1 Five NCARE staff are trained as specialists in aquaculture technique 1-2 Aquaculture techniques are experimented by NCARE staff at more than 20 pilot farms in the target area 1-3 Hatchery is operated by NCARE staff 1-4 More than two agricultural by-products are experimented for potential ingredients of fish feed by NCARE staff

The Output 1 has been achieved partially.

The Evaluation Team noted that that the technical subjects such as seed and feed production have been divided to members of the Component Team. The technical information is also shared among the team members. Thus, the members have been prepared for undertaking the rather new technologies of aquaculture. The visit of the aquaculture expert in March 2015 developed the seed production of the Project. Immediately after the practice training at a hatchery in Israel in June 2015, the techniques obtained from the training have been incorporated in the hatchery in Dahert Al Ramel. Results of assessment for the achievement indicators in the PDM are as follows.

Indicator 1-1: Not achieved yet. The training in Israel has been conducted three times so far and four (4) officers participated in total. The basic knowledge - except fish diseases, marketing and others - was trained to the participants. NCARE is in short on the human resources for the specific technical fields of fish diseases, hatching and marketing. Especially lack of the human resources for hatchery operation is critical for the aquaculture development.

Indicator 1-2: Mostly achieved. The pilot aquaculture was conducted two times in 2013 and 2014. In total 30 pilot farmers had been engaged in the experimental tilapia aquaculture by using their small reservoir for use of irrigation. The NCARE researchers have obtained knowledge and experience in appropriate size of seeds, transport methods, seed rearing and timing of harvesting. Meanwhile, since sampling of the harvesting data was depended only on

hearing from the pilot farmers, it was difficult to validate the data and hence information of the profitability of tilapia aquaculture production was insufficient.

Indicator 1-3: Not achieved yet. The hatchery was built at Ghore Safi Station in May 2014. Both of the methods for the artificial and natural incubation have been tried so far. Assisted by the JICA short-term expert, the experimental seed production by means of natural incubation has been begun since April 2015. In the last two months as of July 2015, around 50,000 seeds of 4 months size have been distributed in trial bases. However, the stable process of whole seed production based on a fixed working schedule has not been implemented yet.

Indicator 1-4: Achieved. Two natural plants – "Doom" and "Salam" were experimented for identifying the potential ingredients of fish feed. These two are expected to substitute the imported feeds as cheaper alternatives, though further development studies will be needed for clarifying the feasibility. The agriculture by-products are also in progress for developing substitutional feed and will be verified in seed production at Ghore Safi Station and others.

4.2.2 Achievement of Output 2

Output 2	Production techniques of tropical and subtropical fruits are obtained by NCARE staff through field trials in the target area
Indicators	2-1 Five NCARE staff are trained as specialists in tropical and subtropical fruit production techniques 2-2 Suitable tropical and subtropical fruit varieties are selected by NCARE staff in accordance with the conditions in the target areas 2-3 Tree growth is monitored by NCARE staff by collecting data such as thickness of main trunk, leaf area expansion 2-4 Soil and Water quality is periodically monitored by NCARE staff

The Output 2 has been achieved mostly.

Indicator 2-1: Not achieved yet. The training in Israel has been conducted two times so far and five (5) officers participated in total. The training for seedling in Israel is planned to conduct in August 2015. The basic knowledge –except for environment management, rearing, pre and postharvest, and propagation – was trained to the participants. However, due to almost a year delay of the preparation for the experimental plots, the filed practice and experience are still insufficient.

Indicator 2-2: Mostly achieved. In the 12 experimental or demonstration sites that include 9 farmers and 3 NCARE regional centers under the different environment conditions, 4 varieties of mango, 3 varieties of avocado and 2 varieties of guava were planted and their growth have

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been observed. It was found that one plot is not appropriate among 12 sites in case of mango, and two plots are not among 9 sites in case of avocado. The remaining sites including all the sites for guava will be kept under experiment or demonstration activities for further studies.

Indicator 2-3and 2-4: Achieved. In the above experimental plots, the soil conditions, water quality, and growth in main stem diameter and leaf area have been occasionally monitored by the NCARE staff.

4.2.3 Achievement of Output 3

Output 3	Water saving agriculture techniques adapted to local conditions are obtained by NCARE staff through field trials in the target area
Indicators	3-1 Five NCARE staff are trained as specialists in water saving agriculture techniques 3-2 At least 2 water saving techniques (deficit irrigation and actual crop water requirement) are experimented by NCARE staff in the regional center and research station

The Output 3 has been achieved to a half extent.

Indicator 3-1: Not achieved yet. The training in Israel has been conducted once, and seven (7) officers participated in total. According to the self-assessment based on their long time experiences as researcher, among 7 officers, two officers have obtained the techniques specialized in the water saving, but remaining 5 officers will have to receive further trainings and practices.

Indicator 3-2: Achieved. The experimental studies for deficit irrigation have been conducted in Ghore Safi and Karama Station. The draft research report was completed by using some of the observation data. The actual crop water requirement has been studied in Dair Alla Regional Center, and the results of data obtained were presented to the Project.

4.2.4 Achievement of Output 4

Output 4	Advanced agricultural techniques are disseminated by NCARE staff to farmers in the target areas
Indicators	4-1 6 materials of three technical components are produced 4.2 Knowledge obtained through the three technical components are disseminated to 200 farmers in the target areas 4-3 The NCARE library is enriched by the media on advanced agricultural techniques

The Output 4 will be achieved by the end of the Project.

Indicator 4-1: Achieved. Six (6) kinds of the dissemination materials have been developed. These include leaflet for introducing the project activities for the three components; video for introducing the aquaculture in general, video for demonstrating the Hatchery in Ghore Safi Station and orchard experimental plots, and for recording rearing and managing tropical fruit trees; and manuals for aquaculture. Furthermore, three kinds of leaflet for tropical fruits (mango, avocado and guava) are planned to develop by October 2015.

Indicator 4-2: Achieved. In the project target area, a series of workshops, field day and others have been conducted and technical information of the three components have been disseminated to the farmers in total of 364 persons.

Components	Times of workshop	No. of participants
Aquaculture	4	155
Tropical fruit tree	2	49
Water saving	4	44
Others*)	1	116
Total	11	364

Remark: *) Opening ceremony and seminar for hatchery and tropical fruit tree orchard in Ghore Safi Station

Indicator 4-3: Achieved by October 2015. For presenting information on the advanced agriculture techniques at the NCARE Library, the digital archive system and software have been developed. The necessary data are planned to be stored in the system and made available by October 2015.

4.3 Achievement of the Project Purpose

Project purpose	Skills and capacity of NCARE staff are enhanced for training and extending advanced agricultural techniques to farmers through field trials in research stations and pilot farms in the target areas
Indicators	1 Five or more NCARE experts in each component : aquaculture, production of tropical and subtropical fruit and water saving receive training in Israel and conduct local training in Jordan 2 Field experiments of the advanced agricultural techniques are conducted in 30 pilot farms and research stations

The considerable effort will be needed further to achieve the Project Purpose by the end of the Project.

For each of the technical component, 4 to 7 persons of the NCARE officers have received the

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training in Israel and obtained the basic knowledge mostly. The practical experience has also been accumulated to some extent through the occasional experiences gained at 39 pilot farmers and 8 experimental plots. However, among the three technical components, especially in the Component of the Aquaculture and Tropical Fruit Trees, it is noted that techniques necessary for the extension service for the farmers are still not enough.

This is due to a delay of the practical training. In case of the Aquaculture Component, since the technologies of fish farming were quite new and its actual trials were not experienced before, it was difficult for the NCARE to design and use hatchery facilities without on-site technical instruction by the expert. The Israeli experts could not visit the sites due to the security requirements; and the substitutional on-site instruction by using the resources from Japan should be conducted in earlier timing. In case of the Tropical Fruit Trees Component, unexpected delay was caused in purchase of the seedlings, and thus the stepwise training for tree management was delayed.

4.4 Prospect for attaining the Overall Goal

Overall goal	Advanced agricultural techniques are introduced to the farmers in the target area
Indicators	By 2018, techniques of aquaculture, production of tropical and subtropical fruit and water saving are introduced to 300 farms.

In a course of the Terminal Evaluation Study, the conditions necessary for attaining the Overall Goal after termination of the Project were discussed among the Team members, and following points were raised.

(1) Profile of the target farmers will have to be thoroughly studied and characters of farming be identified region by region, especially in terms of a scale of their farming system. The appropriate way of the extension services will have to be identified by NCARE that depends largely on a scale of the farming system.
(2) The donors will also have to pay due consideration to such ways of the extension that may be featured as both or either of the extension pro "poverty alleviation" and the extension pro "economic growth". The ways of the extension service may vary depending on the target arears.
(3) Further capacity building for the NCARE staff involved in the extension service will be needed.
(4) Awareness of the farmers of the advanced agriculture technologies, especially of the water saving techniques, will be needed to build more.

4.5 Implementation Process

4.5.1 Revision of Project Design Matrix (PDM)

In the original PDM, the project purpose was aimed to introduce the advanced technologies to the farms in the target area. However, it was noted at the initial stage of the Project that the capacity of the NCARE officers needed to be developed first, because at that time the NCARE had no experiences in adaptation or application in Jordan of the cultivation technologies of the target crops. It is reasonable to consider that both of the capacity building and the extension service could not be attained with three years. In this regard, the scale down of the PDM in December 2014 can be justified.

In the above revision of the PDM in December 2014, the improvement of the seed production technology was not proposed. In March 2015, the aquaculture short-term expert proposed the alternative plan for the seed production by the hatchery that changes the way of incubation from artificial to natural.

4.5.2 Lack of a structured reporting system

A reporting system should be established for the purpose of flow of information from the field to the experts. Such a system will improve the planning of future activities and the challenges will be addressed accordingly and will contribute to the Project. This is an important tool which will influence sustainability.

4.5.3 Lack of the field visits by the Israeli experts

The main inputs for technology transfer in the Project were a series of the training in Israel and the project site visits by the Israeli experts. The implementation of both was planned 2 to 3 times for each component. It was however notified by MASHAV/CINADCO in mid of 2014 that the filed visits in Jordan by Israeli experts had become not allowed through the Ministry of Foreign Affairs System (the possibility of hiring Israeli experts from the private sector was suggested). Thus, the technical guidance by the Israeli experts at the project sites has not been conducted so far since the beginning of the Project. Under such situation, as the substitutional measures, the workshop at hotel where the Israeli expert is allowed to visit, video conference, and dispatch of the Japanese short-term expert to Jordan have been implemented, especially for improving the seed production that was made enabled by introducing the natural incubation, though the measures were undertaken after April 2015 and not able to fully recover an absence of the practice training.

4.5.4 Assignment of the project management personnel by NCARE

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The total number of NCARE officers has continued to decrease in the recent years. Because of the current budget austerity by the government, NCARE could not manage to fill vacant posts after retirement of its officers and staff. Mainly because of the reduced work force, the human resources for some of the project components have been insufficient. After a candidate officer who was expected to be assigned to the Project Manager had left NCARE, the Project has been implemented without the Project Manager. The Component Leader for Water Saving has also been changed three times since beginning of the Project. These have apparently affected the progress of the project implementation.

5. Evaluation by Five Criteria

5.1 Relevance: High

The Executive Development Program (2011 -2013) was aimed at the sustainable development of the agriculture sector, and had objectives to execute the promotion of agriculture production and quality improvement of products; materialization of food security at household level; and alleviation of poverty and unemployment. The NCARE has aimed at poverty alleviation through the rural development as one of its development policies for the agriculture sector. In a level of the Overall Goal, the Project is aimed at improvement of farmer's income and rural development at the agriculture belts and the poverty areas of the Jordan Valley. Thus, the Project is relevant to the government policies.

Similarly to the Phase-1, the significance to implement the Phase-2 by the trilateral project approach is found mainly at the technical point. Israel has, as well as the highly advanced agriculture technologies that can meet the semi-arid environment, the climate and geographical conditions same as Jordan. Jordan is situated under the similar agriculture environment, and therefore the technology transfer from Israel can be highly justified.

5.2 Effectiveness: Moderate

In the Phase-2, the technology transfer was tried to undertake by focusing the activities on the specific crops. Because of some difficulties caused in a course of the Project, the PDM was revised in February 2015 and a scope of the Project Purpose has been scaled down by removing the extension component from the project design. Accompanied with this, the plan for the field visits by Israeli experts reduced from 3 times to one time in case of the tropical fruit trees, and from 2 times to one time in case of water saving, while the field visits in case of aquaculture was kept 3 times as originally planned. However, despite of the decreased times, still the field visits by Israeli experts could not be materialized. There were also other insufficient inputs of the human resources such as

the expert and the Project Manager. Due to such decreased inputs of the human resources, a considerable part of the project activities could not be smoothly implemented or had been delayed. Such unmaterialized activities had resulted in the insufficient technique and experience of the NCARE officers necessary for extending the three components to the farmers in the project area. An extent of the effectiveness of the Project has been thus decreased.

5.3 Efficiency: High

Accompanied with scaling down of the scope of the Project Purpose, the planned inputs were also reduced. However, despite of such reduction, still the inputs of the experts could not be attained. Under such situation, it should be noted that as results of efficiently utilizing rather limited inputs, a half or more number of the outputs could be achieved. Contrasted with the input of the experts, the training in Israel could be conducted as planned. The basic knowledge for aquaculture, tropical fruit trees and water saving has been thus obtained by the participants. The technical guidance at place of the hatchery and the plots of orchard has not been undertaken except a case of the Japanese aquaculture expert in March 2015. The lack of the practical training at the project sites has caused a shortage of the experiences in practice. By this reason, the Output 1 to 3 has not been fully achieved.

5.4 Impacts: Expected to be moderate

At present, it is difficult to expect that the Overall Goal is achieved after the termination of the Project. However, it was noted that "Numirah Agricultural Association" in Ghore Safi has operated the tilapia aquaculture since May 2015. The members of the association, which was established in 2012 and organized by 53 members, participated in one of the aquaculture workshop conducted by the Project and this workshop gave them an incentive for an aquaculture project. Necessary costs including construction of the ponds consisted of 10 units of 1,800 sq. meters; purchase of piping materials; seeds and feed have been mostly self-financed. The present challenges include reduction of the feed cost that needs JD40/day. This case is deemed as a positive and unexpected impact of the Project. Such a case of aquaculture project developed in the private sector will need the technical advices from the NCARE officers time to time in the future. For following up them, it should be noted that the Project benefits – enhanced capacity of the NCARE - need to be sustained.

5.5 Sustainability: Expected to be high

(1) Policy and institutional aspect

We have not seen the large revision in the development policies for the agriculture sector in Jordan since the beginning of the Phase-2 Project. The NCARE is a government organization responsible for the research and extension for the agriculture sector. The institution and operation of the NCARE

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as a national center for the agriculture research and extension will certainly continue to the future. The Project was aimed at enhancement of the NCARE capacity relative to the specific crops. Thus, the policy and institutional sustainability of the Project benefits are being ensured.

(2) Technical and financial aspect

As for the techniques and capacities of the NCARE officers involved in the Project, if further activities are allowed that can give more experiences in the practical fields, it is expected that the capacity will be enhanced for maintaining and developing the current pilot and relevant research. The NCARE has borne the operation costs of security, water and electricity charges necessary for operating the rearing ponds, hatchery, experimental orchard, and water saving experimental plots all of which were introduced by the Project. Since tilapia seeds and some tropical fruits, as well as various and substantial outcomes of the research, have come to be produced by these facilities, it can be expected that the necessary operation costs will be budgeted for the activities after the termination of the Project as well. However, the labour costs for maintaining the facilities have been expensed by the Project. The NCARE will have to newly allocate necessary budgets for them.

6. Conclusion

For each of the technical component, the basic technical knowledge was obtained through the trainings in Israel that were conducted one to three times. Although the times of the field visits of Israeli experts were reduced from the original plan, the technique instructions on site could not be implemented or still difficult. Lack of the input of human resources such as Project Manager was also noted. These caused much less activities for technology transfer even than those planned in the revised PDM/PO. Such unmaterialized activities had resulted in the insufficient technique and experience of the NCARE officers necessary for extending the techniques of the three components to the farmers in the project areas. It is possible to supplement a shortage of the technique by conducting the training through extension of the project term.

7. Recommendations and Lessons learnt

7.1 Recommendations

In order to achieve the project purpose and assure the sustainability of the Project, the Joint Evaluation Team recommended the Project is to be extended for 12 months (12 months for aquaculture and 6 months for tropical fruits and water-saving components).

During the remaining period of the current Project and the extension period, the respective parties should make efforts as follows;

7.1.1 To the Project

1) To make the efforts for achieving the remaining activities shown in the PDM. For the achievement, the step-wise targets should be determined and the action plans of the remaining 4 months to the end of November, 2015 should be formulated. The action plan of each component should be submitted to the Project Manager to be assigned.
2) To establish the regular reporting system to the Project Manager to be assigned for sharing the progress of activities. The Project Manager should distribute the monthly progress report to Israeli and Japanese coordinators.
3) To provide opportunities to disseminate the project achievement (results of trials) to NCARE extension agents and farmers (For example, water-saving seminar in the high lands and cost saving by alternative feed of aquaculture). When the extension activities for introduction of the new technology by farmers such as farmer seminars will be held at the station or pilot site, the follow-up activities (consultation to farmers) should be conducted.

[During the Extension Period]

4) To set up the criteria to select the pilot sites (station or pilot farmers) if necessary. The selection should be made according to the criteria after the careful survey on the advantageous for monitoring and extension to the farmers.

7.1.2 To the Jordanian Side

1) To assign one Project Manager (the post has been vacant since the initial stage) and to nominate one permanent staff to take care of aquaculture from NCARE
2) To confirm all the counterparts that the payment should be approved only according to the expenditure plan shown in the action plan. The payment and settlement should be made only through the Project Manager to be assigned.

[During the Extension Period]

3) To strengthen the implementation system for preparing the extension plan of tropical fruits, aquaculture and water-saving during the extension period.

7.1.3 To the Japanese Side

1) To hold a technical seminar to present the achieved technologies in each technical component in November, 2015. The seminar will be held at Dead Sea and Israeli and Japanese experts who were engaged in the training in Israel or in the site.

[During the Extension Period]

2) To appoint one Project Coordinator for the extension period.
3) To prepare the budget after reviewing and approving the action plan with estimated expenditure

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of the extension period that prepared by the Project.

4) To request the dispatch of the Israeli expert. Otherwise, the expert from Japan or the third country should be dispatched if necessary.

7.1.4 To the Israeli Side

1) To conduct the training courses (Nursery management and Farmers visit) scheduled to begin on August 9th and October 20th, 2015, respectively.
2) To seek the possibility to send official Israeli experts to the pilot sites in Jordan.

[During the Extension Period]

3) To conduct the practical training in Israel, taking into consideration seasonal aspects (tropical fruits in May and hatchery according to recommendations made by the Israeli experts) during the extension period.

7.2 Lessons Learnt

7.2.1 Prompt technical inputs

In this Project, an expert from Japan was not planned to send to Jordan. This resulted in lack of technical advises to assess the alternative activity plans requested by the Component Leaders and to propose the inputs of specific technical instructions where needed. In a course of implementation of the Project, without such technical advice nor the criteria for selection of the pilot farmers, the pilot farms had been designed.

It was planned at the beginning that the necessary technical support could be done by Israeli experts and by Technical Advisory Committees in Japan. At first Israeli expert and Japanese professors visited Jordan afterwards an agriculture expert from JICA Palestine Office as well as a short-term JICA expert of aquaculture visited to the project sites in Jordan to follow the technical support. However, the requests of the Project were not always responded promptly. For performing all the project activities within a rather limited time of the three-year project term, an agriculture expert should have been assigned in the initial stage of the Project.

7.2.2 Effect of flexible measures

In any project, the flexible measures have to be taken in response to situations. By the flexible measures, this project could achieve sufficiently within the limited inputs under the harsh situation.

Annex 1-1:Project Design Matrix (PDM)

Project Title:
The 2nd Phase of the Tri-lateral Technical Cooperation Project: Jordan - Japan - Israel for "Introduction of Advanced Agricultural Technology in Dry land Area"

Version No.1
Date: 8th December 2014

Project Term: December 2012 - November 2015

Target Area: Jordan Valley and neighboring areas

Target Group:
- NCARE Staff participating to the Project
- Farmers in the Target Areas (indirect)

	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal: Advanced agricultural techniques are introduced to the farmers in the target area	1. By 2018, techniques of aquaculture, production of tropical and subtropical fruit and water saving are introduced to 300 farms	NCARE Annual Report, field visits	Economic and climatic environment relating to agricultural production in Jordan will not change drastically.
Project Purpose: Skills and capacity of NCARE staff are enhanced for training and extending advanced agricultural techniques to farmers through field trials in research stations and pilot farms in the target areas	1 Five or more NCARE experts in each component : aquaculture, production of tropical and subtropical fruit and water saving receive training in Israel and conduct local training in Jordan 2 Field experiments of the advanced agricultural techniques are conducted in 30 pilot farms and research stations	NCARE Annual Report, project reports, field visits	
Output: 1. Aquaculture techniques are obtained by NCARE staff through field trials in the target area	1-1 Five NCARE staff are trained as specialists in aquaculture technique 1-2 Aquaculture techniques are experimented by NCARE staff at more than 20 pilot farms in the target area 1-3 Hatchery is operated by NCARE staff 1-4 More than two agricultural by-products are experimented for potential ingredients of fish feed by NCARE staff	NCARE Annual Report, project reports, field visits	Staff in NCARE in the capacity building programs will continue to work in NCARE.
2. Production techniques of tropical and subtropical fruits are obtained by NCARE staff through field trials in the target area	2-1 Five NCARE staff are trained as specialists in tropical and subtropical fruit production techniques 2-2 Suitable tropical and subtropical fruit varieties are selected by NCARE staff in accordance with the conditions in the target areas 2-3 Tree growth is monitored by NCARE staff by collecting data such as thickness of main trunk, leaf area expansion 2-4 Soil and Water quality is periodically monitored by NCARE staff	NCARE Annual Report, project reports, field visits	

3. Water saving agriculture techniques adapted to local conditions are obtained by NCARE staff through field trials in the target area	3-1 Five NCARE staff are trained as specialists in water saving agriculture techniques 3-2 At least 2 water saving techniques (dificit irrigation and actual crop water requirement) are experimented by NCARE staff in the regional center and research station	NCARE Annual Report, project reports, field visits	
4. Advanced agricultural techniques are disseminated by NCARE staff to farmers in the target areas	4-1 6 materials of three technical components are produced 4.2 Knowledge obtained through the three technical components are disseminated to 200 farmers in the target areas 4-3 The NCARE library is enriched by the media on advanced agricultural techniques	NCARE Annual Report, project reports. Medias (films, reports, pamphlets etc.) produced	
Activities: <u>1. Aquaculture component</u> 1-1 Conduct pilot tilapia farming in Ghor Safi 1-2 Establish a hatchery and conduct trial seed production in Gohr Safi station 1-3 Establish a fish nutrition laboratory and conduct research on nutritional properties of agricultural by-products for fish feed at Dahert Al Ramel station 1-4 Specialist training courses in Israel 1-5 Field visits and training of pilot farmers in Israel 1-6 Field visits and training by Israeli experts at NCARE stations and pilot farms in Jordan. <u>2 Tropical / Sub-tropical fruit tree component</u> 2-1 Establish 5 pilot farms in North Shona, Ghor Safi, and Wadi Araba areas 2-2 Establish 2 tropical fruits research orchards in Gohr Safi and Wadi Araba research stations 2-3 Specialist training courses in Israel. 2-4 Local trainings for NCARE extension officers and researchers 2-5 Field visits and training of pilot farmers in Israel 2-6 Field visits and training by Israeli experts at NCARE stations and pilot farms in Jordan	**Input:** <Japanese Side> 1. Expert a. Project Coordinator b. Short-term Experts c. Advisor to the Project Coordinator (Jordanian Local Consultant) 2. Other Personnel a. Secretary 3. Equipment a. Office supply and other necessary equipment b. Equipment and materials necessary for extension activities and trainings c. Equipments and materials necessary for facilities' establishment 4. Cost for Counterpart Trainings a. Trainings in Israel (cost-share) b. Israeli Experts visits to Jordan c. Jordanian Farmers' field visits in Israel (cost-share) d. Local Trainings, field days, workshops etc. 5. Other Expense related to the Project Activities <Israeli Side> 1. Expert a. Lecturers b. Experts		Political stability in the region will not be deteriorated and the regional cooperation scheme will be kept.

3 Water saving component 3-1 Conduct supplemental experiments on deficit irrigation techniques at Al Karama and Ghor Safi stations 3-2 Conduct study on actual crop water requirement using satellite data and lysimeter at Al Dair Alla regional center 3-3 Specialist training courses in Israel 3-4 Local trainings for NCARE extension officers and researchers 3-5 Field visits and training by Israeli experts at NCARE regional center and pilot farms in Jordan	2. Other Personnel a. Coordinator 3. Training a. Specialist Trainings in Israel b. Israeli Experts' visit to Jordan c. Farmers' Field visit 4. Facility a. Training Facilities 5. Expenses a. Cost-share for Trainings and Field visits <Jordanian Side>	
4 Media for extension activities component 4-1 Produce materials for extension activities 4-2 Organize and conduct field days, and workshops to the farmers in the target area to disseminate the information 4-3 Develop a section of NCARE library to store the project materials or journals	1. Counterpart Personnel a. Project Manager b. 4 Team Leaders c. Other Counterpart Staff including extension officers 2. Facilities a. Provision of Lands, Buildings and Other Necessary Facilities 3. Local Cost a. Local Running Expenses	**Pre Conditions:** Farmers in the Jordan valley have demands in introducing non-conventional agricultural technologies

ANNEX 2

Date: 8 Dec 2014

Project title: The 2nd Phase of the Tri-lateral Technical Cooperation Project: Jordan - Japan - Israel for "Introduction of Advanced Agricultural Technology in Dryland Area"

Activities	Implementation Period																																			
	Year 1												Year 2												Year 3											
	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11
Output 1 Aquaculture techniques are obtained by NCARE staff through field trials in the target area																																				
1-1 Conduct pilot aquacultures in Ghor Safi																																				
1-2 Establish one hatchery and conduct trial operation in Gohr Safi station																																				
1-3 Establish one fish nutrition laboratory and conduct research on agricultural by-product in Dahert Al Ramel station																																				
1-4 Specialist training courses in Israel																																				
1-5 Field visits and training of pilot farmers in Israel																																				
1-6 Field visits and training by Israeli experts at NCARE stations and pilot farms in Jordan																																				
Output 2 Production techniques of tropical and subtropical fruits are obtained by NCARE staff through field trials in the target area																																				
2-1 Establish 5 pilot farms in North Shona, Ghor Safi, and Wadi Araba areas																																				
2-2 Establish 2 tropical fruits research orchards in Gohr Safi and Wadi Araba research stations																																				
2-3 Specialist training courses in Israel																																				
2-4 Local trainings for NCARE extension officers and researchers																																				
2-5 Field visits and training of pilot farmers in Israel																																				
2-6 Field visits and training by Israeli experts at NCARE stations and pilot farms in Jordan.																																				
Output 3 Water saving agriculture techniques adapted to local conditions are obtained by NCARE staff through field trials in the target area																																				
3-1 Conduct supplemental experiments on deficit irrigation techniques at Al Karama and Ghor Safi stations																																				
3-2 Conduct study on actual crop water requirement using satellite data and lysimeter at Al Dair Alla regional center																																				
3-5 Specialist training courses in Israel																																				
3-6 Local trainings for NCARE extension officers and researchers																																				
3-9 Field visits and training by Israeli experts at NCARE regional center and pilot farms in Jordan																																				
Output4 Advanced aguricultural techniques are disseminated by NCARE staff to farmers in the target areas																																				
4-1 Produce materials for extension activities																																				
4-2 Organize and conduct field days and workshops to the farmers in the target area to disseminate the information																																				
4-3 Develop a section of NCARE library to store the project materials or journals																																				

Annex 2-1: DISPATCH OF JAPANESE EXPERT

1) LONG-TERM EXPERTS

No.	Name	Field	Period	
			From	To
1	Mr. Atsuhiko Takayanagi	Project Coordinator / Training Planning	2013/5/10	2015/11/30

2) SHORT-TERM EXPERTS (*) AND CONSULTATION VISIT BY TECHNICAL ADVISORY COMMITTEE MEMBERS

No.	Name	Field	Period	
			From	To
1	Prof. Fumio Tamura (*)	Horticulture, Extension	2014/3/19	2014/3/26
2	Dr. Kazuo Nakabayashi	Project Overall	2014/6/15	2014/6/19
3	Dr. Kazuo Nakabayashi	Project Overall	2014/10/19	2014/10/23
4	Prof. Atsushi Tsunekawa	Project Overall	2014/10/21	2014/10/22
5	Dr. Kazuo Nakabayashi	Project Overall	2014/11/9	2014/11/14
6	Dr. Kazuo Nakabayashi	Project Overall	2014/12/3	2014/12/11
7	Prof. Haruyuki Fujimaki	Water Saving	2014/12/20	2014/12/20
8	Mr. Hiroyuki Chagi (*)	Tilapia Aquaculture	2015/2/20	2015/3/5
9	Prof. Atsushi Tsunekawa	Project Overall	2015/3/25	2015/3/30
10	Dr. Kazuo Nakabayashi	Project Overall	2015/4/26	2015/5/6
11	Dr. Kazuo Nakabayashi	Project Overall	2015/6/21	2015/6/25

Annex 2-2: Provision/Procurement/Maintenance of the Equipment

Note:

R/P:Route of Procurement (J: From Japan,L: Local,E: With Expert)
Frequency of Use (A: Always B: Often C: Sometimes)
Condition (A: Good B: Fair C: Bad)

Item No.	Date of Arrival	Description			R/P	Qty	Cost (JD)	Location	Frequency of Use	Condition
		Item	Manufacture	Model Number						
13-1-001149	2/25/2014	Camera	Nikon	D5100	L	1	539.000	NCARE HQ	A	A
13-1-001150	3/10/2014	Desktop Computer	HP	Elite 7500PC	L	1	1800.000	NCARE HQ	A	A
13-1-001151	3/10/2014	Printer	Brother	MFC-8510DN	L	1	350.000	NCARE HQ	A	A
13-1-001152	3/10/2014	Desktop Computer	HP	Pro 3500PC	L	1	830.000	Project site (Ghore Safi)	A	A
13-1-001343	3/17/2014	Desktop Computer	HP Compaq	Elite 8300 Microtower PC	L	1	850.000	NCARE HQ	A	A
13-1-001344	3/17/2014	Desktop Computer	HP Compaq	Elite 8300 Microtower PC	L	1	850.000	NCARE HQ	A	A
13-1-001345	3/17/2014	Desktop Computer	HP Compaq	Elite 8300 Microtower PC	L	1	850.000	NCARE HQ	A	A
13-1-001346	3/17/2014	Desktop Computer	HP Compaq	Elite 8300 Microtower PC	L	1	850.000	NCARE HQ	A	A
13-1-001347	8/1/2013	Laptop Computer / Office Software 3 pac	HP	Spectra XT Ultrabook13-2110ee	L	1	2134.400	Expert Location	A	C
13-1-001348	10/6/2013	Desktop Computer	HP	Pro 3500PC	L	1	750.000	NCARE HQ	A	A
13-1-001349	10/6/2013	Printer	HP	LaserJet Pro Color M175a300	L	1	300.000	NCARE HQ	A	A
13-1-001350	1/21/2014	Desktop Computer	HP	Elite 7500 Microtower	L	1	910.000	NCARE HQ	A	A
13-1-001351	3/17/2014	Laptop Computer	HP	ProBook 450 Notebook PC	L	1	798.000	NCARE HQ	A	A
13-1-001352	3/17/2014	Laptop Computer	HP	ProBook 450 Notebook PC	L	1	798.000	NCARE HQ	A	A
13-1-001353	3/17/2014	Laptop Computer	HP	ProBook 450 Notebook PC	L	1	798.000	NCARE HQ	A	A
13-1-001354	3/17/2014	Laptop Computer	HP	ProBook 450 Notebook PC	L	1	798.000	NCARE HQ	A	A
13-1-001355	3/17/2014	Laptop Computer	HP	ProBook 450 Notebook PC	L	1	798.000	NCARE HQ	A	A
13-1-001356	3/17/2014	Laptop Computer	HP	ProBook 450 Notebook PC	L	1	798.000	NCARE HQ	A	A
13-1-001357	3/17/2014	Laptop Computer	HP	ProBook 450 Notebook PC	L	1	798.000			
13-1-001358	3/17/2014	Laptop Computer	HP	ProBook 450 Notebook PC	L	1	798.000			
13-1-001359	3/17/2014	Desktop Computer	HP Compaq	Elite 8300 Microtower PC	L	1	850.000	NCARE HQ	A	A
13-1-001360	3/17/2014	Desktop Computer	HP Compaq	Elite 8300 Microtower PC	L	1	850.000	NCARE HQ		
13-1-001361	3/17/2014	Desktop Computer	HP Compaq	Elite 8300 Microtower PC	L	1	850.000	NCARE HQ		
14-1-000990	4/27/2014	Printer	Ricoh	MP-4500	L	1	1000.000	Expert location	A	A
14-1-000991	5/7/2014	Desktop Computer	HP	ProDesk 400GI	L	1	825.000	Project site(Ghore Safi)	A	A
14-1-000992	6/19/2014	Measuring Instrument	Hatch Lange	HQ30D	L	1	991.379	Project site (Ghore Safi)	A	A
14-1-000993	6/19/2014	Measuring Instrument	Hatch Lange	LD010101	L	1	413.793	Project site (Ghore Safi)	A	B
14-1-000994	6/19/2014	Switching Board	n/a		L	1	850.000	Project site(Ghore Safi)	A	A
14-1-000995	11/12/2014	Measuring Instrument	Hatch Lange	ISENH318101	L	1	603.000	Project site (Ghore Safi)	A	A
14-1-000996	11/12/2014	Measuring Instrument	Hatch Lange	ISENO3181101	L	1	711.000	Project site (Ghore Safi)	A	B
14-1-000997	12/24/2014	Cargo Cover	Alpha Rooms		L	1	1200.000	NCARE HQ	A	A
14-1-000998	2/5/2015	Desktop Computer	HP	ProDesk400	L	1	1300.000	NCARE HQ Library	A	A
14-1-002080	2/4/2015	Roadcell for Lysimeter	SM-10-522		L	1	800.000	Project site (Dair Alla)	B	A
14-1-002081	3/12/2015	Air brower for Hatchery	FPZ	IE2-34	L	1	1000.000	Project site (Ghore Safi)	A	C
14-1-002082	3/12/2015	Water Pump for Hatchery	Fujian Temco	IS50-32-200A	L	1	750.000	Project site (Ghore Safi)	A	A

Annex 2-3/Annex 4-2: Record of trainings in Israel

No.	Activity	No.	From	To	Theme	Participants	No. of participatns	Place
1	**Scientific Vislt**	1	17-Feb-13	22-Feb-13	Scientific Visit in the fields of Aquaculture, Tropical Fruit and Water Saving	NCARE Staff	3	MASHAV/CINADOCO international agricultural training center
							3	
2	**Aquaculture**	2	28-May-13	6-Jun-13	Tilapia Culture and Hatchery Practice	NCARE Staff	4	MASHAV/CINADOCO international agricultural training center
		3	12-Jan-14	23-Jan-14	Advanced Fish Farming Technologies	NCARE Staff	4	MASHAV/CINADOCO international agricultural training center
		4	1-Jun-15	5-Jun-15	Hatchery Training	NCARE Staff	2	MASHAV/CINADOCO international agricultural training center
							10	
3	**Tropical Fruit**	5	18-Aug-13	25-Aug-13	Advanced Technologies in Growing Tropical Fruit Trees	NCARE Staff	6	MASHAV/CINADOCO international agricultural training center
		6	12-May-14	20-May-14	Subtropical Fruit Trees	NCARE Staff	4	MASHAV/CINADOCO international agricultural training center
		7	9-Aug-15	13-Aug-15	Nursery of Subtropical Fruit Trees (Planning)	NCARE Staff		
							10	
4	**Water Saving**	8	22-Mar-15	27-Mar-15	Deficit Irrigation	NCARE Staff and Extension Agents	7	MASHAV/CINADOCO international agricultural training center
							7	
5	**Farmers' Visit**	9	20-Oct-15	23-Oct-15	Farmers' visit for aquaculture and tropical fruit trees (Planning)	Farmers		
	Total						**30**	

Annex 2-4: Record of results of local trainings and workshops

No.	Activity	No.	From	To	Theme	Participants	No. of participatns				Place
							Farmers	NCARE/ Others	Staff	Total	
2	Aquaculture	1	17-Jun-13	18-Jun-13	Aquaculture Training (before 1st Pilot)	Farmers	47	0	13	60	Ghor Safi
		2	18-Sep-13	19-Sep-13	Gender Training	Farmers	17	0	5	22	Ghor Safi
		3	5-Mar-14	6-Mar-14	Aquaculture Training (before 2nd Pilot)	Farmers	53	0	7	60	Ghor Safi
		4	19-Nov-14	5-Jun-15	Gender Training	Farmers	38	0	12	50	Ghor Safi
							155	0	37	192	
3	Tropical Fruit	5	18-Nov-14	20-Nov-14	Introduction of Tropical Fruit	Farmers, NCARE Extension Agents, Researchers	27	43	13	83	North Shouna
		6	22-Dec-15	23-Dec-15	Introduction of Tropical Fruit	Farmers, NCARE Extension Agents, Researchers	22	17	12	51	Wadi Araba, Ghor Safi
							49	**60**	25	134	
4	Water Saving	7	12-Nov-13		Deficit Irrigation	Farmers	6	0	0	6	Mafraq
		8	1-Apr-14		Deficit Irrigation	Farmers	6	0	0	6	Ghor Safi
		9	31-Aug-14	4-Sep-14	Actual Crop Water Requirment	NCARE Researchers, Extention Agents	0	26	9	35	NCARE HQ and Ghor Safi
		10	17-Mar-15		Deficit Irrigation Field Day	Farmers, NCARE Extension Agents, Researchers	17	17	6	40	Ghor Safi
		11	1-Apr-15		Deficit Irrigation Field Day	Farmers, NCARE Extension Agents, Researchers, Ministry of Agriculture, Public sectors, etc	15	24	9	48	Karama
							44	**67**	24	135	
5	Farmers' Visit	12	11-Jun-14		Opening Ceremony of Hatchery and Tropical Fruit Experimental Orchard	Farmers	116	0	34	150	Ghor Safi
							116	0	34	150	
						Total	**364**	**127**	120	611	

Annex 2-5 Local operation cost borne by JICA

Unit: JD

No	Category	JFY2012	JFY2013	JFY2014	JFY2015	Total
1	General	3,900.000	75,024.334	127,414.814	13,071.050	434,920.396
2	Air Fare	–	–	–	–	–
3	Travel Allowance	–	12,708.100	9,456.930	1,652.000	47,634.060
4	Fee and Honorarium	–	16,306.200	56,666.020	17,408.600	180,761.640
5	Meeting Expense	–	3,412.926	3,258.180	–	13,342.212
Total		JOD 3,900.00	JOD 107,451.56	JOD 196,795.94	JOD 32,131.65	676,658.308

* Amount spended until Jun 2015

Annex 3-1 Assignment of Counterpart / Project Coordination

No.	Name of Counterpart	Field	Present Post	Employment	Period of Assignment as a Counterpart	
			Post at assignment time	status*	From	To
1	Dr.Fawzi Al-Sheyab	Project Director/Manager	General Director of NCARE	T	Dec. 2012	current
2	Dr. Muien M. Qaryouti	Administration	Assistant Director General for Research, NCARE / Al-Baqaa	P	Dec. 2012	current
3	Eng. Ouhawd Al-Hoaran	Administration (Ghor Safi)	Head of Ghour Al-Safi Station	P	Jun 2014	Nov. 2014
4	Dr Sherif Al-Rawashdea	Administration (Ghor Safi)	Head of Ghour Al-Safi Station	P	Nov. 2014	current

Assignment of Research Staff / Aquaculture

No.	Name of Counterpart	Field	Present Post	Employment	Period of Assignment as a Counterpart	
			Post at assignment time	status*	From	To
5	Eng. Ahmad Khraisat	Aquaculture Team Leader (Dec. 2012-May 2013, Feb 2015 until current) /Main Researcher	Researcher, Dair Alla Regional Center	P	Dec. 2012	current
6	Eng. Bashar Al Rahaleh	Aquaculture Team Leader (Jun 2013 to Jan 2015) /Main Researcher	Research Assistant, Dair Alla Regional Center	P	Dec. 2012	current
7	Eng.Nayel Al-Kawalit	Aquaculture team (Pilot Farming/hatchery in Ghor Safi)	Dir.of Projects Directorate / South Valley Agricultural Directerate/Min. of Agriculture	P (MOA)	Jan.2013	current
8	Eng. Wessam Al-Nawayseh	Researcher (Pilot Farming/Hatchery in Ghor Safi)	Researcher, Al-Raba Regional Center	P	Jan. 2014	current
9	Eng. Mustafa Shediefat	Aquaculture team (Pilot Farming)	Research Assistant, Al-Mafrak Regional Center/Kanasri Stat.	P	Dec. 2012	Jan. 2014
10	Eng. Khaled Tawerah	Aquaculture team (Pilot Farming)	Research Assistant, Al-Raba Regional Center	P	Dec. 2012	Jan. 2014
11	Eng. Safwan Hawamdeh	Aquaculture team (Pilot Farming)	Research assistant / Al-Tafyla Regional Center	P	Dec. 2012	Jan. 2014

Assignment of Research Staff / Tropical and Subtropical Fruit Tree Production

12	Eng. Hani Dauod Ghnaim	Team Leader/Main Researcher	Researcher, NCARE / Al-Baqaa	P	Dec. 2012	current
13	Eng. Raed Lutfi Ahmad	Researcher	Researcher, NCARE / Al-Baqaa	P	Dec. 2012	current
14	Eng. Hisham Mohammad Ali	Researcher (North Shouna)	Extension, Ajloun Extension Unit	P	Dec. 2012	current
15	Eng. Mazen Al-Kilani	Researcher (North Shouna)	Extension, Al-Tayba	P	Dec. 2012	current
16	Eng. Qousiy Aleamarean	Researcher (Wadi Araba)	Extension, Wadi Araba Regional Center	P	Dec. 2012	current
17	Dr. Mustafa Rawashdeh	Research Assistant	Post Harvest Specialist, NCARE / Al-Baqaa	P	Dec. 2012	current
18	Eng. Emad Al-Shnaikat	Technical Assistant	Researcher, NCARE / Dair Alla Regional Center	P	Dec. 2012	current
19	Eng. Osman Al-Shoal	Researcher (Borbeta)	Director, Al-Tafyla Regional Center	P	Dec. 2012	Dec.2014
20	Eng. Ahmad Al-Sharayda	Researcher (Borbeta)	Director, Al-Tafyla Regional Center	P	Dec.2014	current

Assignment of Research Staff /Water Sasving

21	Dr. Muhammad Jitan	Team Leader/Main Researcher	Researcher, NCARE / Al-Baqaa	P	Dec. 2012	Mar. 2013
22	Eng. Muhammad Mudaber	Team Leader/Main Researcher	Director of Water, Soil and Environment Dept, NCARE / Al-Baqaa	P	Mar. 2013	Jul. 2013
23	Dr. Sireen Na'oum	Team Leader/Main Researcher	Researcher, NCARE / Al-Baqaa	P	Aug. 2013	Jun. 2014
24	Eng Osama Al-Owaneh	Team Leader/Main Researcher	Researcher, Deir Alla Regional Center	P	Jun 2014	current
25	Dr. Luna Al-Hadidy	Researcher (from Mar to Jul 2013)	Researcher, NCARE / Al-Baqaa	P	Mar. 2013	Jul. 2013
26	Eng Muhammad Al-karabsha	Researcher	Researcher, Deir Alla Regional Center	P	Jun 2014	current

Assignment of Research Staff /Mass Media

27	Mr. Shaban Banat	Team Leader	Head of Mass Media Section, NCARE / Al-Baqaa	P	Dec. 2012	current
28	Mr. Majed Deebajeh	Assistant of Team Leader	Extension Dept, NCARE / Al-Baqaa	P	Dec. 2012	current

*Note: Permanent (P) or Temporary (T)

Annex 4-1 Assignment of Lecturer and Staff for Trainings in Israel

No.	Name of lecturer	Course title	Post at assignment time	Coure Preriod From	Coure Preriod To
14	Ms. Ayana Bennet	Scientific visit	Head of DOR Research Station, Ministry of Agriculture	17/2/2013	22/2/2013
15	Mr. Yonni Gal	Scientific visit	Regional Extension Officer - Field service Dep.Ministry of Agriculture	17/2/2013	22/2/2013
16	Mr. Yunis Mogira	Scientific visit	Regional Extension Officer – Orchards Dep. Ministry of Agriculture	17/2/2013	22/2/2013
17	Mr. Erez Keddem	Scientific visit	Private Nursery Owner	17/2/2013	22/2/2013
18	COMPOST OR Ltd. Mr. Eyal Ben Nevet	Scientific visit	Agronomist	17/2/2013	22/2/2013
19	Kibbutz Nir David Fisheries Mr. Eran Lahav	Scientific visit	Manager, Regional R&D Station	17/2/2013	22/2/2013
20	Israeli Fish Breeders Association Mr. Yosi Yaish	Scientific visit	General Secretary	17/2/2013	22/2/2013
21	LivinGreen Eco-Systems Mr. Motti Cohen	Scientific visit	Marketing Manager	17/2/2013	22/2/2013
22	Ráanan Fish Feed Mr. Omri Lev	Scientific visit	Marketing Manager	17/2/2013	22/2/2013
23	Ms. Galit Aber	Scientific visit	Head of the English courses and project coordinator, CINADCO	17/2/2013	22/2/2013
24	Ms. Rachel Brown	Scientific visit	Course coordinator, CINADCO	17/2/2013	22/2/2013
25	Ms. Ayana Bennet	Tilapia Culture and Hatchery Practice	Head of DOR Research Station, Ministry of Agriculture	28/5/2013	6/6/2013
26	Mr. Nir Froiman	Tilapia Culture and Hatchery Practice	Head of Aquaculture Dep. Ministry of Agriculture	28/5/2013	6/6/2013
27	Mr. Alon Naor	Tilapia Culture and Hatchery Practice	Manager of Aquaculture Research Facilities and activities	28/5/2013	6/6/2013
28	Mr. Achikam Gissis	Tilapia Culture and Hatchery Practice	Instructor of Aquaculture and fish reproduction Projects	28/5/2013	6/6/2013
29	Dr. Nadav Davidovitch	Tilapia Culture and Hatchery Practice	Central laboratory of fish health	28/5/2013	6/6/2013
30	Mr. Haled Sharkawi	Tilapia Culture and Hatchery Practice	Research technician, reproduction	28/5/2013	6/6/2013
31	Mr. Rhaga Abed	Tilapia Culture and Hatchery Practice	Research technician Aquaculture farming	28/5/2013	6/6/2013
32	Mr. Salim Abu Amar	Tilapia Culture and Hatchery Practice	Research technician Aquaculture farming	28/5/2013	6/6/2013
33	Mr. Toufiq Husein	Tilapia Culture and Hatchery Practice	Research technician Aquaculture farming	28/5/2013	6/6/2013
34	Mr. Yuval Elazar	Tilapia Culture and Hatchery Practice	Course coordinator, CINADCO	28/5/2013	6/6/2013
35	Mr. Yonatan Gal	Advanced technologies in growing of tropical fruit trees	Ministry of Agriculture and Rural Development	18/8/2013	25/8/2013
36	Mr. Mojayra Younis	Advanced technologies in growing of tropical fruit trees	Central regional office, Ministry of Agriculture	18/8/2013	25/8/2013
37	Mr. Cliff Love	Advanced technologies in growing of tropical fruit trees	Ministry of Agriculture and Rural Development, Extension Service	18/8/2013	25/8/2013
38	Mr. Miki Noy	Advanced technologies in growing of tropical fruit trees	Ministry of Agriculture and Rural Development	18/8/2013	25/8/2013
39	Mr. Jony Ajamiya	Advanced technologies in growing of tropical fruit trees	Agriculture of Kibbutz Matzuba	18/8/2013	25/8/2013
40	Mr. Udi Gafni	Advanced technologies in growing of tropical fruit trees	GRANOT	18/8/2013	25/8/2013
41	Mr. Basam Naser	Advanced technologies in growing of tropical fruit trees	Nursery owner	18/8/2013	25/8/2013
42	Mr. Ihiel Shalom	Advanced technologies in growing of tropical fruit trees	Farmer	18/8/2013	25/8/2013
43	Dr. Yuri Uziranskey	Advanced technologies in growing of tropical fruit trees	Course coordinator	18/8/2014	25/8/2014
44	Ms. Alina Dumchik	Advanced technologies in growing of tropical fruit trees	Course Coordinator	18/8/2015	25/8/2015
45	Mr. Nir Froiman	Advanced Fish Farming Technologies	Head of Aquaculture Dep. Ministry of Agriculture	12/1/2014	23/1/2014
46	Ms. Ayana Bennet	Advanced Fish Farming Technologies	Head of DOR Research Station, Ministry of Agriculture	12/1/2014	23/1/2014
47	Dr. Rama Falk	Advanced Fish Farming Technologies	Head Fish health laboratory	12/1/2014	23/1/2014
48	Mr. Andrei Chisinevschi	Advanced Fish Farming Technologies	Director	12/1/2014	23/1/2014
49	Dr. Eran Hadas	Advanced Fish Farming Technologies	Aquaculture feed specialist	12/1/2014	23/1/2014
50	Mr. Moti Cohen	Advanced Fish Farming Technologies	CEO	12/1/2014	23/1/2014
51	Mr. Haled Sharkawi	Advanced Fish Farming Technologies	Research technician, reproduction	12/1/2014	23/1/2014
52	Mr. Rhaga Abed	Advanced Fish Farming Technologies	Research technician Aquaculture farming	12/1/2014	23/1/2014
53	Dr. Nadav Davidovitch	Advanced Fish Farming Technologies	Central laboratory of fish health	12/1/2014	23/1/2014
54	Dr. Timor Bader	Advanced Fish Farming Technologies	Veterinarian, Veterinary Division, Ministry of Health	12/1/2014	23/1/2014
55	Mr. Michel Isaak	Advanced Fish Farming Technologies	Private consultant	12/1/2014	23/1/2014
56	Mr. Igal Magen	Advanced Fish Farming Technologies	Private consultant	12/1/2014	23/1/2014
57	Mr. Cobi Levnon	Advanced Fish Farming Technologies	Private consultant	12/1/2014	23/1/2014
58	Mr. Yunis Mogira	Subtropical Fruit Trees	Regional Extension Officer – Orchards Dep., Ministry of Agriculture	12/5/2014	20/5/2014

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59	NaanDanJain Irrigation Company Mr. Eliyahu Ram	Subtropical Fruit Trees	Marketing	12/5/2014	20/5/2014
60	Dr. Vered Irihimovitch	Subtropical Fruit Trees	Researcher, Avocado, Fruit Tree Dep., Institute of plant Science	12/5/2014	20/5/2014
61	Dr. Yuval Cohen	Subtropical Fruit Trees	Researcher, Mango, Fruit Tree Dep., Institute of plant Science	12/5/2014	20/5/2014
62	Mr. Michael Noy	Subtropical Fruit Trees	National Extension Officer, Subtropical Trees	12/5/2014	20/5/2014
63	Ms. Reuma Lambez	Subtropical Fruit Trees	Professional coordinator for fruit tree breeding and nursery management, Ministry of Agriculture	12/5/2014	20/5/2014
64	Dr. Shaul Ben Yehuda	Subtropical Fruit Trees	Plant Protection in Fruit Trees, Senior National Extension Officer	12/5/2014	20/5/2014
65	Mr. Roberto Nathan	Subtropical Fruit Trees	Irrigation and Fertigation of Fruit Trees, Regional Extension Officer	12/5/2014	20/5/2014
66	Ms. Timna Shuer	Subtropical Fruit Trees	Agronomist	12/5/2014	20/5/2014
67	Ms. Galit Aber	Subtropical Fruit Trees	Head of the English courses and project coordinator, CINADCO	12/5/2014	20/5/2014
68	Ms. Rachel Brown	Subtropical Fruit Trees	Course coordinator, CINADCO	12/5/2014	20/5/2014
69	Ms. Mollie Sacks	Deficient Irrigation	Regional Extension Officer – Irrigation Dep.	22/3/2015	27/3/2015
70	Dr. Alon Ben Gal	Deficient Irrigation	Ministry of Agriculture	22/3/2015	27/3/2015
71	Mr. Isaac Zipori	Deficient Irrigation	Researcher	22/3/2015	27/3/2015
72	Mr. Asher Eizencot	Deficient Irrigation	Gilat research centre	22/3/2015	27/3/2015
73	Mr. Mohammed Abu Tuama	Deficient Irrigation	Researcher	22/3/2015	27/3/2015
74	Netafim Irrigation Company Mr. Issam Gabara	Deficient Irrigation	Marketing manager	22/3/2015	27/3/2015
75	Netafim Irrigation Company Mr. Dubi Segal	Deficient Irrigation	Technical consultant	22/3/2015	27/3/2015
76	Ms. Galit Aber	Deficient Irrigation	Project Coordinator, CINADCO	22/3/2015	27/3/2015
77	Ms. Sigal Parson	Deficient Irrigation	Course Director R&D Dep. CINADCO	22/3/2015	27/3/2015
78	Ms. Ayana Benet Pereiberg	Aquaculture Hatchery and Nutrition Training	Director of Dor Aquaculture research station, Fisheries department	1/6/2015	5/6/2015
79	Mr. Nir Froiman	Aquaculture Hatchery and Nutrition Training	Head of Aquaculture	1/6/2015	5/6/2015
80	Mr. Alon Naor	Aquaculture Hatchery and Nutrition Training	Manager of Aquaculture Research Facilities and activities	1/6/2015	5/6/2015
81	Dr. Eran Hadas	Aquaculture Hatchery and Nutrition Training	Aquaculture feed specialist	1/6/2015	5/6/2015
82	Mr. Haled Sharkawi	Aquaculture Hatchery and Nutrition Training	Research technician, reproduction	1/6/2015	5/6/2015
83	Mr. Rhaga Abed	Aquaculture Hatchery and Nutrition Training	Research technician Aquaculture farming	1/6/2015	5/6/2015
84	Mr. Yuval Elazar	Aquaculture Hatchery and Nutrition Training	Course coordinator	1/6/2015	5/6/2015
85	Ms. Galit Aber	Aquaculture Hatchery and Nutrition Training	Head of the English courses and project coordinator, CINADCO	1/6/2015	5/6/2015

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Annex 4-2 List of Trainings in Israel and Shared Cost

Unit: USD

No.	Component	Date	Training Title	MOFA Share	JICA Share
1	Sientific Visit	Feb 17 - 22, 2013	Scientific Visit	5,852.24	4,510.23
2	Aquaculture	May 28 - Jun 6, 2013	Tilapia Culture and Hatchery Practice	10,126.38	7,147.36
3	Aquaculture	Jan 12 - 23, 2014	Advanced Fish Farming Technologies	11,482.32	7,857.49
4	Aquaculture	Jun 1 - 5, 2015	Hatchery Training		
5	Tropical Fruit	Aug 18 - 25, 2013	Advanced technologies in growing tropical fruit trees	12,531.13	9,515.77
6	Tropical Fruit	May 12 - 20, 2014	Subtropical Fruit Trees	10,545.38	9,915.66
8	Water Saving	Mar 22 - 27, 2015	Deficient Irrigation	8,698.41	
Total				59,235.86	38,946.51

添付6. 英文合同評価調査報告書　正誤表

List of Errata in Joint Terminal Evaluation Report on Second Phase of Introduction of Advanced Agricultural Technology for Dryland Area Jordan under Trilateral Cooperation, Jordan-Japan-Israel, 4 August 2015

The corrections are highlighted in **bold face**.

1　Page 8, (2) Provision of Equipment

<Error>

Equipment provided for the Project activity was personal computers, printers, software packages, measuring instruments, and others. Total cost of providing equipment was **30,390 US$**.

<Correct>

Equipment provided for the Project activity was personal computers, printers, software packages, measuring instruments, and others. Total cost of providing equipment was **30,392 JD (around 43,000 US$).**

2　Page 8, (3) Operational Expenditure

<Error>

The operational expenditure which includes a part of the local costs for implementing the project activities was borne by the Japanese side. Total operational expenditure for the Project by this time is **676,658 JD (around 967,000 US$)** as shown in the following table.

<Correct>

The operational expenditure which includes a part of the local costs for implementing the project activities was borne by the Japanese side. Total operational expenditure for the Project by this time is **309,888 JD (around 440,000 US$)** as shown in the following table, **which does not include costs for the above equipment.**

3　Page 8, Table 4-1

<Error>

Year (JFY: Apr. to Mar.)	Amount (JD)
2012	3,900
2013	**107,452**
2014	**196,796**
2015	32,132*
Total	**676,658**

<Correct>

Year (JFY: Apr. to Mar.)	Amount (JD)
2012	3,900
2013	**87,504**
2014	**186,352**
2015	32,132*
Total	**309,888**

4　Annex 2-5 Local operation cost borne by JICA

<Error>

No.	Category	JFY2012	JFY2013	JFY2014	JFY2015*	Total
1	General	3,900.000	**75,024.334**	**127,414.814**	13,071.050	**434,920.396**
2	Air Fare	-	-	-	-	-
3	Travel Allowance	-	12,708.100	9,456.930	1,652.000	**47,634.060**
4	Fee and Honorarium	-	16,306.200	56,666.020	17,408.600	**180,761.640**
5	Meeting Expense	-	3,412.926	3,258.180	-	**13,342.212**
Total		JOD 3,900.00	**JOD 107,451.56**	**JOD 196,795.94**	JOD 32,131.65	**676,658.308**

<Correct>

No.	Category	JFY2012	JFY2013	JFY2014	JFY2015*	Total
1	General	3,900.00	**55,076.93**	**116,970.64**	13,071.05	**189,018.63**
2	Air Fare	0.00	0.00	0.00	0.00	0.00
3	Travel Allowance	0.00	12,708.10	9,456.93	1,652.00	**23,817.03**
4	Fee and Honorarium	0.00	16,306.20	56,666.02	17,408.60	**90,380.82**
5	Meeting Expense	0.00	3,412.93	3,258.18	0.00	**6,671.11**
Total		JOD 3,900.00	**JOD 87,504.16**	**JOD 186,351.77**	JOD 32,131.65	**309,887.58**

添付資料7 評価グリッド(1)

A. Actual Project Achievement and Project Implementation Process

1. Project Achievement

Evaluation Questions		Information/indicators
Questions (as subject)	Sub-questions	
1-1 Achievement of Overall Goal	1-1-1 Will the indicator for Overall Goal be attained?	By 2018, techniques of aquaculture, production of tropical and subtropical fruit and water saving are introduced to 300 farms.
1-2 Achievement of Project Purpose	1-2-1 Has the indicator for Project Purpose been attained or possible to be by the end of the	1 Five or more NCARE experts in each component : aquaculture, production of tropical and subtropical fruit and water saving receive training in Israel and conduct local training in Jordan.
		2 Field experiments of the advanced agricultural techniques are conducted in 30 pilot farms and research stations.
1-3 Production of Outputs	1-3-1 Has Output 1 been produced?	1-1 Five NCARE staff are trained as specialists in aquaculture technique.
		1-2 Aquaculture techniques are experimented by NCARE staff at more than 20 pilot farms in the target area.
		1-3 Hatchery is operated by NCARE staff.
		1-4 More than two agricultural by-products are experimented for potential ingredients of fish feed by NCARE staff.
	1-3-2 Has Output 2 been produced?	2-1 Five NCARE staff are trained as specialists in tropical and subtropical fruit production techniques
		2-2 Suitable tropical and subtropical fruit varieties are selected by NCARE staff in accordance with the conditions in the target areas
		2-3 Tree growth is monitored by NCARE staff by collecting data such as thickness of main trunk, leaf area expansion
		2-4 Soil and Water quality is periodically monitored by NCARE staff
	1-3-3 Has Output 3 been produced?	3-1 Five NCARE staff are trained as specialists in water saving agriculture techniques
		3-2 At least 2 water saving techniques (deficit irrigation and actual crop water requirement) are experimented by NCARE staff in the regional center and research station
	1-3-4 Has Output 4 been produced?	4-1 6 materials of three technical components are produced
		4.2 Knowledge obtained through the three technical components are disseminated to 200 farmers in the target areas
		4-3 The NCARE library is enriched by the media on advanced agricultural techniques
1-4 Records of Inputs	1-4-1Inputs from Japan	1. Expert: a. Project Coordinator, b. Short-term Experts, c. Advisor to the Project Coordinator (Jordanian Local Consultant)
		2. Other Personnel: a. Secretary
		3. Equipment: a. Office supply and other necessary equipment, b. Equipment and materials necessary for extension activities and trainings, c. Equipment and materials necessary for facilities' establishment
		4. Cost for Counterpart Trainings: a. Trainings in Israel (cost-share), b. Israeli Experts visits to Jordan, c. Jordanian Farmers' field visits in Israel (cost-share), d. Local Trainings, field days, workshops etc.
		5. Other Expense related to the Project Activities
	1-4-2 Inputs from Israel	1. Expert: a. Lecturers, b. Experts,
		2. Other Personnel: a. Coordinator
		3. Training: a. Specialist Trainings in Israel, b. Israeli Experts' visit to Jordan, c. Farmers' Field visit
		4. Facility: a. Training Facilities
		5. Expenses: a. Cost-share for Trainings and Field visits
	1-4-3 Inputs from Jordan	1. Counterpart Personnel: a. Project Manager, b. 4 Team Leaders, c. Other Counterpart Staff including extension officers
		2. Facilities: a. Provision of Lands, Buildings and Other Necessary Facilities
		3. Local Cost: a. Local Running Expenses

2. Project Implementation Process

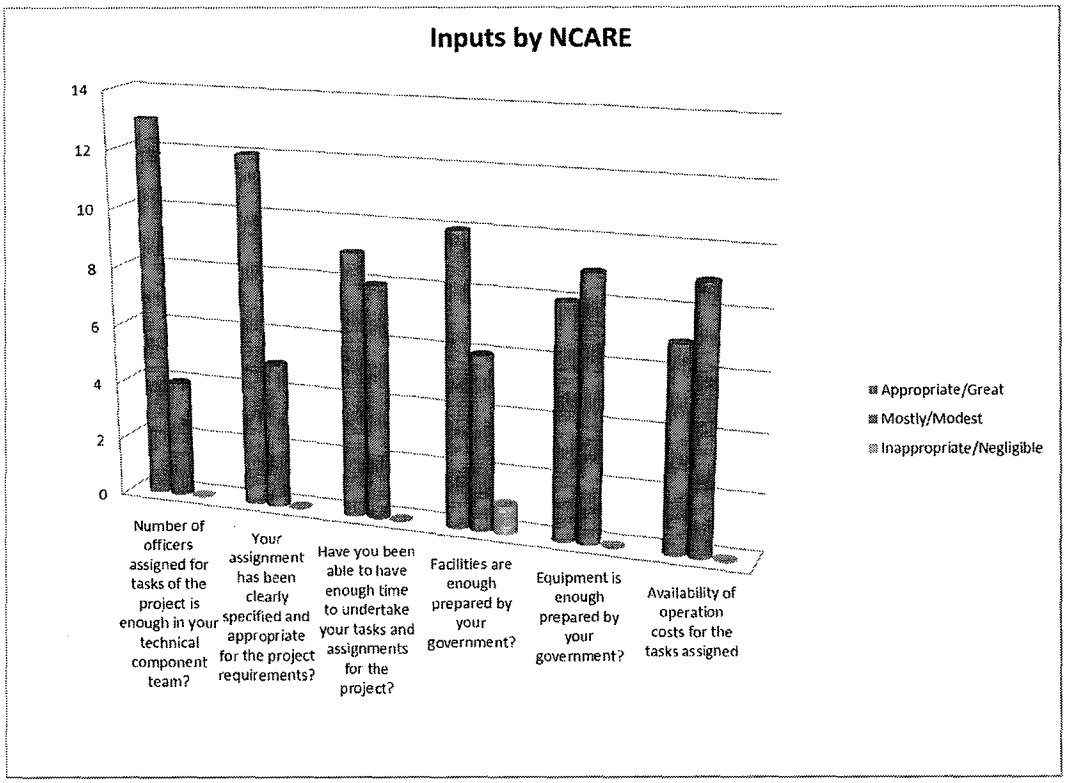
2-1 Project Implementation Process	2-1-1 Technical transfer to the project counterpart personnel in NCARE	Which input should have been done more for performing the project purpose? 1) Specialist Trainings in Israel, 2) Israeli Experts' visit to Jordan, 3) Japanese Experts' visit to Jordan, 4) Farmers' Field visit in Israel, 5) Local training/field days/workshop by NCARE in Jordan
	2-1-2 Ways of the inputs	1. Any difficult conditions to cause delay in the progress of the planned project activities - The suspension of the Israeli government experts' visit to Jordan seems to cause insufficient input in the Project. Other than this, were there any difficult conditions to input resources to the Project?
		2. Combination of the inputs under the trilateral project - if we exclude the above incidental case of insufficient inputs, have the current combined inputs by Japan, Israel and Jordan well worked?
	2-1-3 Purpose of aquaculture pilot	1. What was the main purpose of the aquaculture pilot? - experimental fish farming or trial extension service?
		2. What are the lessons from the aquaculture pilot at the 30 farmers?
2-2 Project Management	2-2-1 Management by JSC	Frequency to hold the JCC - were there other technical meetings to supplement the JSC?
	2-2-2 Management for operation - have there been any problems in followings?	1. Decision making process for the project management by the JSC and its supplementary meetings
		2. Communication among the project operation units (experts of Israel, project counterpart personnel and project management officers of NCARE)
2-3 Others	2-3-1 Important assumption and/or obstacles which affect progress of the project activities	Important assumptions in PDM: 1. Staff in NCARE in the capacity building programs will continue to work in NCARE. 2. Political stability in the region will not be deteriorated and the regional cooperation scheme will be kept.

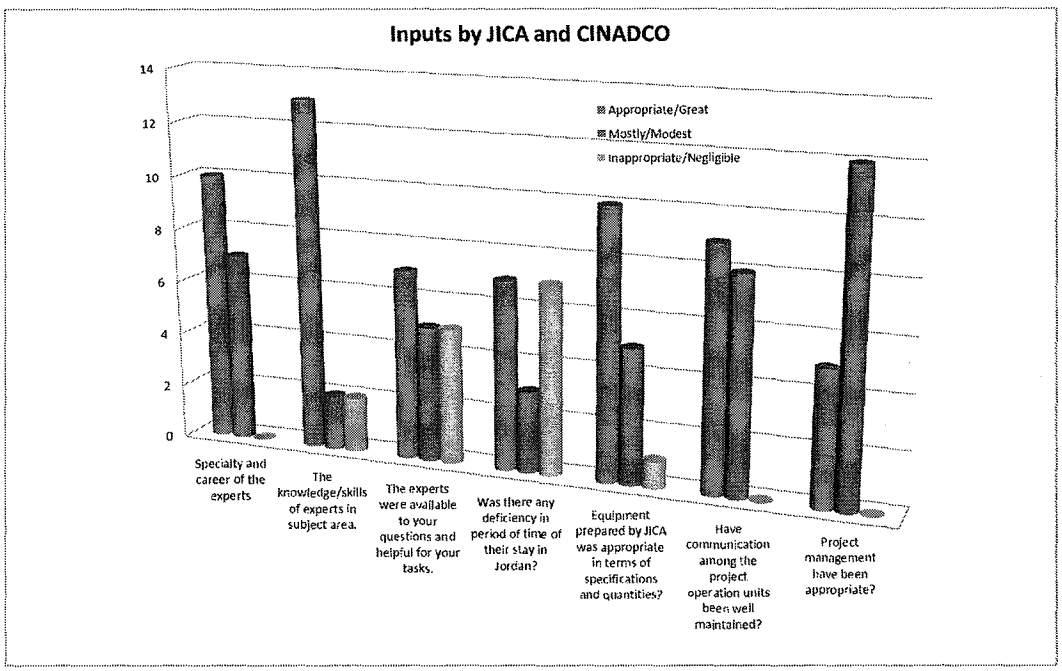
添付資料7 評価グリッド(2)

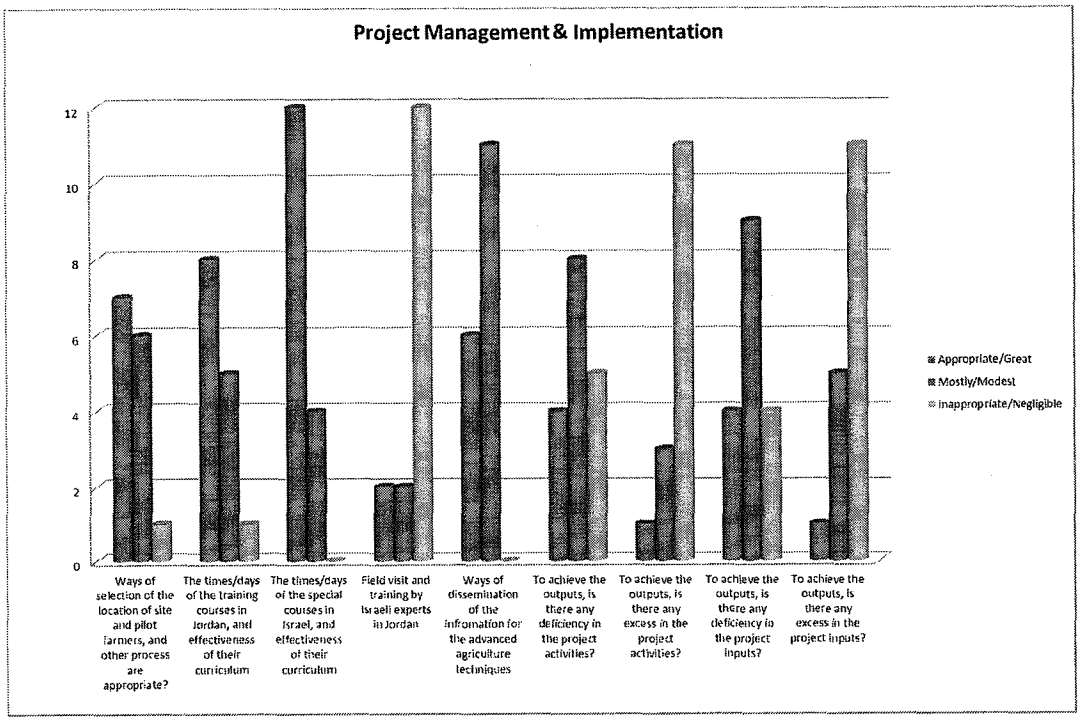
B. Analysis of the Five Evaluation Criteria

Evaluation Criteria	Evaluation Questions		Information/indicators
	Questions (as subject)	Sub-questions	
3. Relevance	3-1 Consistency and appropriateness of the overall goal and project purpose to the national and regional development policies in Jordan	3-1-1 Do the overall goal and project purpose conform to the development policies in Jordan?	Consistency with national development policy in Jordan; Executive Development Proram 2011 to 2013, etc.
		3-1-2 Do the overall goal and project purpose meet socio-economic needs in the target areas?	Consistency with the needs in targeted area; Jordan poverty reduction strategy 2013, and others
	3-2 Conformity to the Japanese ODA	3-2-1 Does the Project conform to the Japanese ODA and the country assistant plan?	Conformity to the Japanese ODA policy, Japan's Concept for Creating the Corridor for Peace and Prosperity (2006)
			Conformity to the country assistant plan (2012)
	3-3 Appropriateness of the project design	3-4-1 Appropriateness of selection of the four (4) components	Contribution of the four (4) components for enhancement of capacity of the NCARE officers involved
		3-4-2 Appropriateness of selection of the project sites and target groups	Development of the agriculture in the Jordan River Valley and its contribution to the national economy development, a role of NCARE as an agriculture research and extension agency
4. Effectiveness	4-1 Extent of achievement of the project purpose	4-1-1 Can the project purpose be achieved as planned in the PDM?	*See Project Achievement*
		4-1-2 Are there any inhibiting factors to achieve the project purpose?	*See Project Achievement*
	4-2 Was the project design appropriate to achieve the project purpose?	4-2-1 Were the outputs appropriate enough to achieve the project purpose?	*See Project Achievement*
		4-2-2 Are the important assumptions still applicable and/or valid?	Change of the external conditions affecting the implementation of the project
5. Efficiency	5-1 Extent of achievement of the outputs	5-1-1 Can the outputs be achieved as planned in the PDM?	*See Project Achievement*
		5-1-2 Are there any inhibiting factors to achieve the outputs?	*See Project Achievement*
	5-2 Efficiency of the activities	5-2-1 Were the activities appropriate to produce the outputs?	*See Project Achievement*
	5-3 Appropriateness of the inputs in relation to the produced outputs - have the timing, quality, and quantity of the inputs been needed and sufficient to achieve the outputs?	5-3-1 Were the inputs from Japan appropriate?	Experts/other personnel, equipment, cost for counterpart training; *see Project Achievement*
		5-3-2 Were the inputs from Israel appropriate?	Experts/other personnel, training, training facilities, cost sharing for training and field visits; *see Project Achievement*
		5-3-3 Were the inputs from Jordan appropriate?	Counterpart personnel, facilities, local cost; *see Project Achievement*
6. Impacts (prospective)	6-1 Impacts of the Project for the long term and other fields	6-1-1 Will the overall goal be achieved? Are there any inhibiting factors that may arise?	*See Project Achievement*
		6-1-2 Are there any positive spillover effects produced by the Project?	Positive impact, if any.
		6-1-3 Are there any negative spillover effects produced by the Project?	Negative impact, if any.
7. Sustainability (prospective)	7-1 Sustainability of the project benefits	7-1-1 Possibility of the policy and institutional backup for sustaining the project benefits at the national and/or local level	The national policies to develop and promote the advanced agriculture production in the Jordan River Valley
		7-1-2 Possibility of continuation of the budget allocation in NCARE for sustaining the project benefit	Budget allocation by NCARE for the advanced agriculture production
		7-1-3 Possibility of continuation of the current project activities in NCARE for sustaining and developing the technical capacities	Mandate of the NCARE divisions involved in the project activities

添付資料 8-1 (1) NCARE カウンターパート要員質問への回答集計結果






Project Management & Implementation
12
10
8
6
4
2
0
Ways of selection of the location of site and pilot farmers, and other process are appropriate?
The times/days of the training courses in Jordan, and effectiveness of their curriculum
The times/days of the special courses in Israel, and effectiveness of their curriculum
Field visit and training by Israeli experts in Jordan
Ways of dissemination of the infromation for the advanced agriculture techniques
To achieve the outputs, is there any deficiency in the project activities?
To achieve the outputs, is there any excess in the project activities?
To achieve the outputs, is there any deficiency in the project inputs?
To achieve the outputs, is there any excess in the project inputs?
Appropriate/Great
Mostly/Modest
Inappropriate/Negligible

添付資料8-1 (2) NCAREカウンターパート要員質問事項

Questionnaire Survey on Opinions of the NCARE Officers

Second Phase of Introduction of Advanced Agricultural Technology for Dryland Area Jordan under Trilateral Cooperation, Jordan-Japan-Israel, Final Evaluation, July 2015

No:

JICA Japan International Cooperation Agency

Name

Ministry/Department/Division:

Title of Duty Position in the Govemmen

Period of time engaged in govemment services: From month/year: To present

Period of time engaged in the project: From month/year: To present

As a part of the Final Evaluation of the 2nd Phaze of Introduction of Advanced Agricultural Technology for Dryland Area Jordan under Trilateral Cooperation, Jordan-Japan-Israel, ("the Project"), we, the JICA Evaluation Team developed this questionnaire to review the progress and the achievement of the Project. Mostly, the questions are to ask the project-related facts. The questionnaire is primarily addressed to the counterpart personnel of the Project, but if necessary, please circulate the questionnaire to other persons concerned for expanding the appropriate infromation source.

The information you would provide will be analyzed together with other information (interviews with counterparts, questionnaire for the experts, direct observation of the project sites and various documents collected from other sources) to draw the evaluation conclusion, all of which will be reflected to the draft evaluation report and discussed by members of the Joint Evaluation Team.

It would be greatly appreciated if you could send your answer by 1 August 2015 to Mr. Toyomitsu TERAO (terao@fishengn.co.jp), a member of the JICA Evaluation Team. We would like to thank you for your cooperation in advance.

13 July 2015
JICA Final Evaluation Team

			A: Appropriate A: Great	B: Mostly appropriate B: Modest	C: Inappropriate C: Negligible	
No.			A	B	C	Reasons for your evaluation or comments on subject if any
1	Inputs by NCARE	Number of officers assigned for tasks of the project is enough in your technical component team? Component: Aquaculture, Tropic Fruit Tree, Water and Mass Media				
2		Your assignment has been clearly specified and appropriate for the project requirements?				
3		Have you been able to have enough time to undertake your tasks and assignments for the project?				
		If "not", what were reasons?				
4		Facilities and equipment are enough prepared by your government? — Facilities				
5		Equipment				
6		Availability of operation costs for the tasks assigned				
7	Inputs by JICA and CINADCO	Specialty and career of the experts				
8		The knowledge/skills of experts in subject area.				
9		The experts were available to your questions and helpful for your tasks.				
10		Was there any deficiency in period of time of their stay in Jordan?				
11		Equipment prepared by JICA was appropriate in terms of specifications and quantities?				
12		Have communication among the project operation units (experts, component teams and NCARE) been well maintained?				
13		Project management (monitoring procedures, decision making process, ways of management by NCARE, MASHAV and JICA) have been appropriate?				

No.			A	B	C	Reasons for your evaluation or comments on subject if any
	Project Management & Implementation	To implement the project, have you ever presented any opinions when needed to improve your tasks? If "no", go to No.18.				
14		If "yes", 1) How much were your opinions reflected on the project?				
15		2) Give example(s) of your opinions.				
		Please assess effectiveness of the following approaches that have been taken by the Project.				
16		Implementation of pilot farming (aquaculture, tropical fruits or water saving) in the selected sites - ways of selection of the location of site and pilot farmers, and other process are appropriate?				
17		The times/days of the training courses in Jordan, and effectiveness of their curriculum				
18		The times/days of the special courses in Israel, and effectiveness of their curriculum				
19		Field visit and training by Israeli experts in Jordan				
20		Ways of dissemination of the infromation for the advanced agriculture techniques				
21		To achieve the outputs, is there any deficiency in the project activities? If your answer is A: "Great", please name such activity(ies).				
22		To achieve the outputs, is there any excess in the project activities? If your answer is A: "Great", please name such activity(ies).				
23		To achieve the outputs, is there any deficiency in the project inputs? If your answer is A: "Great", please name such activity(ies).				
24		To achieve the outputs, is there any excess in the project inputs? If your answer is A: "Great", please name such activity(ies).				

End of questionnaire: Thank you for your cooperation!

添付資料8-1 (3) NCAREカウンターパート要員　回答集計

	Respondents																						
Question No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	A	B	C	BLK	B	C	BLK
1	A	A	B	A	A	B	B	A	A	A	A	A	B	A	A	A	A	13	4	0	0	4	0	0
2	A	A	A	B	B	B	A	B	A	A	A	A	A	A	B	A	A	12	5	0	0	5	0	0
3	A	A	B	A	B	B	B	B	A	A	A	A	B	A	A	B	B	9	8	0	0	8	0	0
4	A	A	A	B	C	A	B	B	A	A	A	A	B	B	A	A	B	10	6	1	0	6	1	0
5	A	A	A	B	B	A	B	B	B	A	A	A	B	B	B	A	B	8	9	0	0	9	0	0
6	B	A	B	A	B		B	B	B	A	B	B	A	A	A	A	B	7	9	0	1	9	0	1
7	A	B	B	B	B	A	A	B	A	A	A	B	A	B	A	A	A	10	7	0	0	7	0	0
8	A	B	A	A	A	A	A	B	A	A	A	C	A	C	A	A	A	13	2	2	0	2	2	0
9	A	B	B	C	C	B	A	C	B	A	A	B	A	C	C	A	A	7	5	5	0	5	5	0
10	B	B	C	C	C	A	A	C	A	A	A	C	A	A	C	C	B	7	3	7	0	3	7	0
11		A	C	A	A	A	B	A	B	A	B	A	B	A	A	A	B	10	5	1	1	5	1	1
12	A	A	B	B	B	B	B	B	A	A	A	A	B	A	B	A	A	9	8	0	0	8	0	0
13	B	B	B	B	B	B	B	B	B	A	A	A	B	A	B	A	B	5	12	0	0	12	0	0
14				B	B		B	B	C		B		B	A	B	A	A	3	7	1	6	7	1	6
15																		0	0	0	17	0	0	17
16	B		C	A	A		B	A	B	B	B		B	A	A	A	A	7	6	1	3	6	1	3
17	A		B	B	A		B	A	A	A	A		B	A	B	C	A	8	5	1	3	5	1	3
18	B	A	A	A	A	B	A	B	A		A	A	B	A	A	A	A	12	4	0	1	4	0	1
19	C	B	C	C	C	C	A	C	C	C	C	C	B	C	C	A		2	2	12	1	2	12	1
20	A	A	B	B	B	B	B	B	A	A	A	B	B	B	B	B	A	6	11	0	0	11	0	0
21	C	C	C	B	B	B	A	B	C	A	B	B	A	A	B	C	B	4	8	5	0	8	5	0
22	C	C	C	C	C	A		C	C	C	C	C		B	B	C	B	1	3	11	2	3	11	2
23	A	C	A	B	B	C	B	B	B	B	B	A	B	A	B	C	C	4	9	4	0	9	4	0
24	C	C	C	C	C	C	B	C	C	B	C	A	B	B	C	C	B	1	5	11	0	5	11	0

添付資料 8-2　NCARE 本部質問事項及び回答

Second Phase of Introduction of Advanced Agricultural Technology for Dryland Area Jordan under Trilateral Cooperation, Jordan-Japan-Israel

Terminal Evaluation in July 2015

Questionnaire for NCARE Head quarters

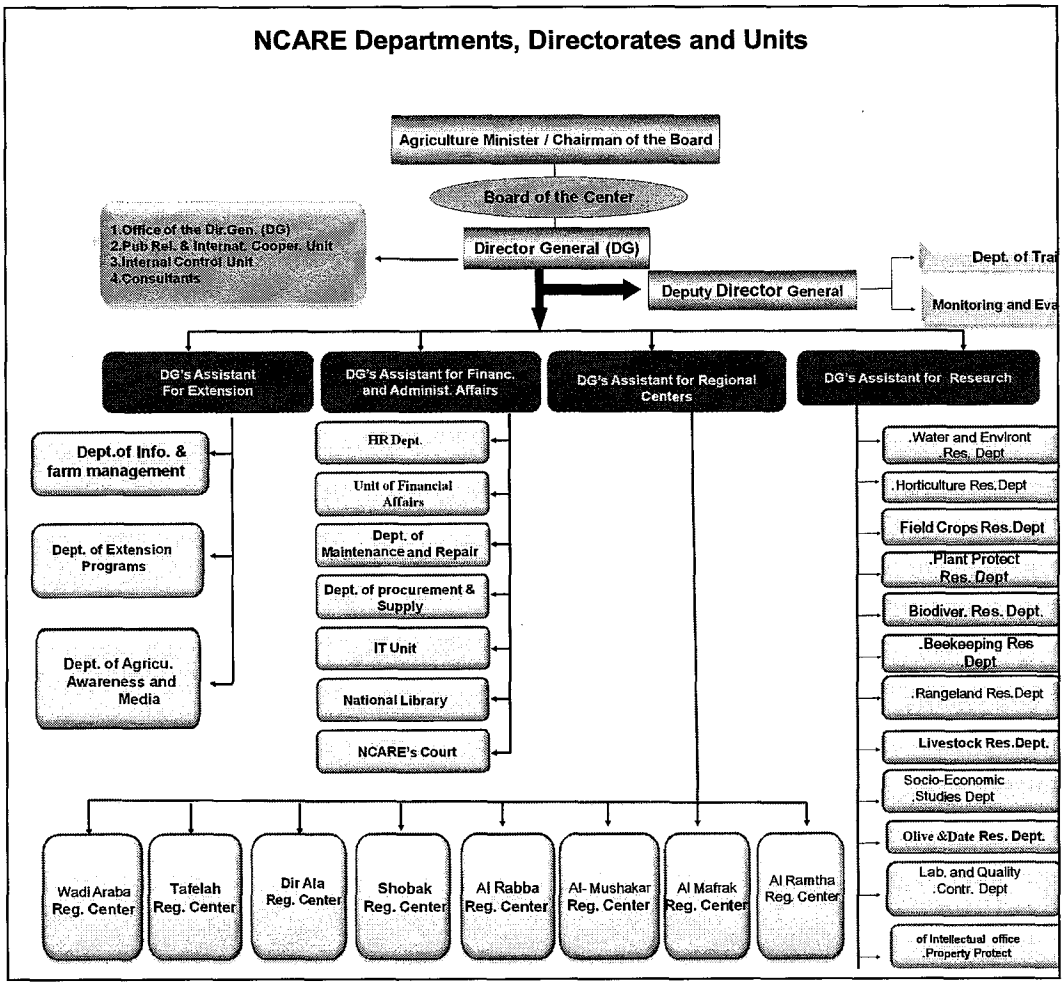
1. Please provide the following general information of the NCARE organization.

(1) Organization structure of the NCARE Headquarters

(2) NCARE headquarters structure (Departments, Directorates and Units)

NCARE conducted its plans through different research, extension and supporting directorates and units in several regional centers, research and extension units covering the different climatic zones in Jordan.

(3)



(3) Location of Centers, Stations and Extension Units

REGIONAL CENTERS, STATIONS AND EXTENSION UNITS:

In addition to the headquarter center, NCARE operates the following regional centers:

1. ***Ramtha Regional Center**; Located the northern part of Jordan, 10 km south of Ramtha City, with a total area 320 ha. The center, its 2 research stations and 3 extension units (Irbid, Aglon and Jerash) are responsible for all rainfed field crops, fruit trees and vegetable activities.*
2. ***Rabbah Regional Center**; Located in the southern of Jordan, 30 km from Al-Karak city, with an area of 60 ha. The activities conducted in the center, its 3 research stations (Rabbah, Ghour Al-Safi and Al-Gouair), and two Extension units (Rabbah and Ghour Al-Safi) are related to cultivation of rainfed field crops, fruit trees and vegetable activities.*
3. ***Dair-Allah Regional Center**; Located in the middle of Jordan Valley, Total Area: 100 donum; responsible for 3 research stations (Dair Alla, Al-Karamah and Sharhabeel), and 3 extension units (Dair Alla, South Shouneh and North Shouneh). The activities of this regional centers and its research and extension units foucused on vegetable and fruit trees production, and water management. .*
4. ***Mshaqar Regional Center**, Located in Madaba, 28 km south of Amman, Total Area: 1112 donum. The activities conducted in the center, its 1 research station and 1 extension unit are responsible for all rainfed field crops and fruit trees.*
5. ***Shoubak Regional Center**, Located in Ma'an/ Shobbak-South of Jordan; Area: 1200 donum.*
6. ***Mafraq Regional Center**, Located in Mafraq-North-east of Jordan; Total Area: 160 donum, responsible for 2 research stations.*
7. ***Tafieleh Regional Center**, Located five km far from Tafieleh town, Total Area: 150 donum, responsible for 2 research stations.*
8. ***Wadi Araba Regional Center,** Located in Wadi Araba*

(4) Mandate of the Headquarters and the above branches:

History

Recognizing the importance of agricultural research and extension way back in 1958, the Jordanian Ministry of Agriculture established the "Scientific Research and Agricultural Extension Department" to assist farmers finding solutions to everyday agricultural problems. In 1985, this department has been divided into two entities: i) A non-profit scientific research entity, which then assumed the name "the "National Center for Agricultural Research and Technology Transfer (NCARTT)" and tasked with coordinating agricultural research and carrying out applied research and technology

transfer at the national level; and ii) the extension department, tasked with providing services such as technology transfer, training, and information to farmers on agriculture, marketing, and social organization. In 1993, NCARTT became a semi-autonomous non-profit institution with administrative and financial independence. Both NCARTT and the created extension department existed and operated independent from each other till 2007 when both entities have been merged and the name of the resulting merger named the "National Center for Agricultural Research and Extension (NCARE)".

Vision

"Reference center for developing applied agricultural research and knowledge transfer to achieve optimal sustainable use of the natural resources".

Mission

- *Promote and organize agricultural research and extension plans for sustainable development;*
- *Develop, test and adopt the latest agricultural techniques for local conditions;*
- *Enhance capacity building at all levels; and Provide training and cross-learning opportunities".*

Responsibilities

1. Organizing agricultural research and extension plans for sustainable development,

2. Adopting the latest agricultural techniques for local conditions,

3. Conducting economic studies aimed at improving farmer's organization,

4. Capacity building of researchers and extension agents in collaboration with local, national and international partners and provides training and cross-learning opportunities in order to better addressing agricultural development problems.

(5) Number of the Extension Agents and Researchers:

Extension Agents and Researchers	Number
Ph. D.	*44*
M. Sc.	*83*
B. Sc.	*180*

(6) Amount of the annual total current and development budget of NCARE: *8,371,000 JD*

(7) Amount of the annual budget allocated for the mobilization of the extension agents for visiting his/her assigned villages

217.000 JD

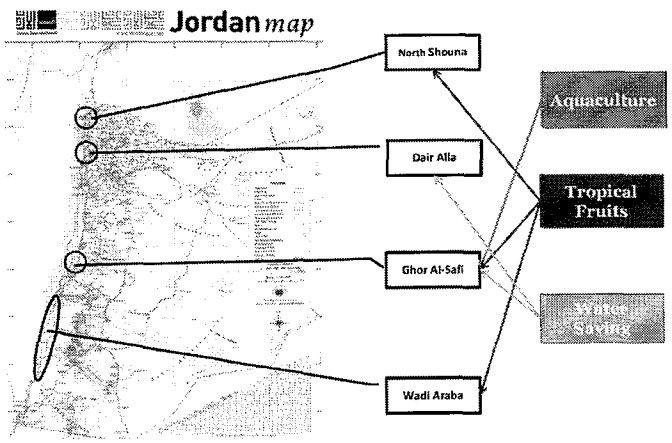
(8) Turnover rate of the extension agents and researchers in the recent years

1,000.000 JD

2. For implementing this Project, which Centers, Stations and Extension Units of NCARE have been involved? Followings were the original assignment plan of the NCARE branches. Is there any modification in this plan?

Regional Center	***Stations and Extension units***	***Location***	***Activities - Component***
1. Dair Alla *2. Ramtha*	*North Shuoneh Extension Units* *Irbid Extension Unit*	*North Shouneh*	*Tropical fruits*
Dair All	*Dair Alla Experimental Staton* *Al- Karamah Experimental Station*	*Dair Alla* *Al-Karamah*	*Water saving*
Rabbah Regional Center	*Ghor Al Safi experimental Station* *Rabbah extension Unit*	*Ghor Al Safi*	*Tropical fruits, Aquaculture, Water saving*
Wadi Araba Regional Center	*Wadi Araba Experimental Station* *Aqaba Extension Unit*	*Wadi Araba*	*Tropical fruits*

Project Sites



3. Have the following facilities been established as planned in Annex 6 of the Minutes of Meeting dated 19 December 2012? In case of the facilities not established yet, please comment on the reasons why the establishment was delayed or canceled.

(1) Aquaponics or "hydroponic culture and aquaculture using water recycle system" in Ghor Safi Station.

This activity was postponed by the decision of the project Steering Committee during the last meeting because the Steering Committee believe that the priority must be given to solve the problems facing the Tilapia Hatchery and to operate it, also to operate the Fish nutrition laboratory before establishing new facilities.

(2) Hatchery in Ghour Safi Station (2 units; each for carp and Tilapia)

The establishment of the Carp Hatchery was postponed by the Steering Committee decision for the same reasons as in the above activity.

(3) Fish nutrition laboratoryin Dehert Al Ramed Station

The actual activities in the Lab. started in 2014, 2 experiment have been done and the report were submitted, another 2 experiments are running now and the results will be ready in August, 2015.

(4) Two Tropical Fruits Tree Research Orchards in Ghor Safi Station, Al-Rysha Station.

The Tropical Fruits Tree Research Orchards at Ghor Safi Station were established during 2014 instead of 2013 due to the delay in receiving the nursery plants. The second Tropical Fruits Tree Research Orchard at Al-Rysha Station in Wadi Araba were also delayed because of delay in receiving the seedlings and the availability of irrigation water and as planed and replaced by Al-Rahma research station in Wadi Araba. The fruit trees seedling were at new site were planted during 2014. The delay in receiving the nursery plants (fruit trees seedlings) was due to the instruction of the Ministry of Agriculture including "The imported seedlings must be propagated in peat media not in natural soils".

(5) Field Trial Plot in Dair Alla Regional Center

Water saving Component field trial plot experiment in Dair Alla Regional Center was established during 2014-2015 growing season, and most of the results were submitted.

4. Mainly from which organization(s) or human resource entities could you get the designing and construction supervisory services for developing the above facilities?
   NCARE, Ministry of Agriculture, Universities and private sector.

5. Has NCARE ever collaborated with the private sector organizations such as Jordan Valley Farmer's Association and/or seed/fertilizer companies for undertaking the extension services? Please give examples of the collaboration if any. Please also give the brief information regarding these two organizations.

Yes, NCARE usually collaborate with private sector including Jordan Valley Farmer's Association such as when conducting demonstrations for new technologies, workshops, or outside technical visit where they provide us with the farmers' names related to the selected activity. For seed or fertilizer companies we collaborate with some of them to conduct trails to evaluate new vegetable varieties especially potatoes or new types of fertilizer which usually done via signing an agreement. NCARE also do fertilizer formula test for fertilizer companies at NCARE fertilizer test labs.

6. **Abilities of the Extension Services of NCARE**

   In June 2013 when the Project was run at its initial stage, the officers of NCARE conducted the two days aquaculture training for the first group of the pilot farmers. We should note that there was no practical experience or expertise of the aquaculture in NCARE at that time. After two years, do you observe any points in the contents of the training in 2013 or any ways of implementation of the training that can be improved in view of the present abilities of NCARE? If you observe any of such points, please state the points that could have been improved.

   - The main point, in the June 2013 training, that the team believed that the suitable weight of the fingerlings to be distribute to the farmers is 1 gm, however, after distributing the 1 gm fingerlings (1000 fingerlings for each of the 15 pilot farmers), most of the farmers complains that the number of fish is around 400-600 not 1000. Later the team find that the farmers could not notice the death of fingerlings in the ponds which reached around 60% and they found that the minimum suitable weight of the fingerlings, for distribution, should be around 10 gm or more. So in 2014, the

farmers were provided with 15 gm fingerlings (1000 fingerlings for each of the new 15 pilot farmers) and these fingerlings reached to marketing weigh (around 350 gm) at early November before winter season.

7. Profile of the Target Farmers.

What is the general profile of the target farmers of the extension services of NCARE? For undertaking the extension services, have the target farmer been profiled in terms of landowning or tenant farmer, beneficiaries of irrigation, way of irrigation - open water channel or pipe irrigation, cropping pattern, recipient of agriculture loan, and others?

In general, the target farmers of the extension services of NCARE are the medium to small scaled farmers who are representing the majority of the farmers in Jordan. however, a pilot, interested large scaled farmers, were also targeted depending on their ability of distributing new technologies/ information to neighboring farmers.

The target farmers group for Tropical fruit trees profiled in terms of:

- Location of the farm (should be suitable for tropical fruit trees conditions).

- The farmer must be the owner of the farm (not rented) because these trees remains for more than 20 years.

- Availability of the infrastructure needed for establishment of tropical fruit trees orchards such as the availability of water all year around, methods used for irrigation (closed irrigation system not open channels), and cropping pattern.

- Recipient of agriculture loan didn't play major role.

8. Criteria to Select the Pilot Farmers:

What were the criteria to select the pilot farmers of Aquaculture, Tropical fruits and Water saving Component of the Project? Did the criteria include their experience in these three components? Did Israeli/JICA expert(s) assist NCARE in developing the criteria?

Criteria used for choosing the pilot farmers of Aquaculture:

1. *Average irrigation pond area should be around 250-500-750 m^3.*
2. *Farms irrigation pond should be clean from fish and any other materials.*
3. *Sustainability of good quality water supply, at least 2 times a week.*
4. *Farms irrigation pond should be well protected.*
5. *farmers ability to follow the instructions of the Aquaculture advisory team including fish feeding schedule and quantity, irrigation pond temperature and oxygen content control and monitoring.*

6. *Willing to continue fish culture after the project (sustainability).*
7. *Willing to provide the project team with all requested information and data.*
8. *Willing to distribute information to other neighboring farmers.*

Criteria used for selecting the pilot farmers of Tropical fruits trees:

1. *Suitable site with proper weather conditions and good soil properties for tropical fruit trees cultivation including soil salinity, soil depth, ...etc.).*
2. *The farmer should be fruit trees grower, interested and willing to grow tropical fruit trees.*
3. *Availability of good quality water supply all year around.*
4. *Farmers ability to follow the instructions of the tropical fruits trees including irrigation and fertilizer schedule and application rates, plant protection management.*
5. *Willing to provide the project team with all requested information and data.*
6. *Willing to distribute information to other neighboring farmers.*

Criteria used for selecting the pilot farmers for Water saving Component:

For this component, there were no pilot farmers because all the trails were carried out at NCARE Research stations.

Did Israeli/JICA expert(s) assist NCARE in developing the criteria?
In general, very little help was done in this regards.

9. Among the following inputs, which input should have been done more for ensuring the achievement of the project purpose?

1) Specialist Trainings in Israel, 2) Israeli Experts' visit to Jordan, 3) Japanese Experts' visit to Jordan, 4) Farmers' Field visit in Israel, 5) Local training/field days/workshop by NCARE in Jordan

In fact, the 5 inputs, mentioned above, were very important for the project and they should have been done more. However, the most important input which effect the achievement of the project was No 2 input "Israeli Experts' visit to Jordan" which didn't happen for the three components at all, especially for aquaculture team were left alone in the artificial hatchery facing many problems without enough knowledge or experience. The second important input is No 1 "Specialist Trainings in Israel" and we believe that this input was very important and useful but it was not enough in view of time and subjects, especially for Tropical and Aquaculture teams. Also input No. 4 Farmers' Field visit in Israel should be consider.

10. The suspension of the Israeli government experts' visit to Jordan seems to cause insufficient input of the expertise in the Project. Other than this, were there any difficult situations to input resources to the Project?

The most important difficulties other than the suspension of the Israeli government experts' was the availability of the Zugar from Israel and it was the main reason for not operating the artificial hatchery properly so far. Furthermore, the difficulties and the long expensive procedure needed to bring the Israeli expert to fix the Laysometer, which was imported from Israel, force the water saving component to ignore the experiments related to that Laysometer.

11. Combination of the inputs under the trilateral project - if we exclude the above incidental case of insufficient inputs, have the current combined inputs by Japan, Israel and Jordan well worked as expected?

Yes, the current combined inputs by Japan, Israel and Jordan worked very well as expected and below are some details:

A- From Japan side : Japan provide the project throw JICA Jordan Office with very sufficient budget and JICA/NCARE office follow up continuously all the activities of the project with full cooperation with the project teams from NCARE.

B- From Israeli side: MASHAV and CINADCO organized the needed Specialist Training courses for the Jordanian project teams in Israel with full cooperation with JICA and NCARE.

Beside that the Embassy of Israel in Amman are cooperating in perfect way in getting visa for the participants nominated for the training courses.

C- From Jordan side: Jordan throw NCARE provide the project with necessary staff, locations (open fields or protected plastic houses), Offices for JICA/NCARE office with full cooperation with JICA team.

12. What was the main purpose of the aquaculture pilot? – was it aimed at experimental fish farming or trial extension service?

The main purpose of the aquaculture pilot farms, is to introduce and disseminate new technology (Fish culture) to the selected area (Ghour Al Safi) where the farmers in this area characterize, in general, by low education and income small to medium scaled farmers, through implementing fish culture at 30 pilot farms to

improve their income and livelihoods. Furthermore, farmers use fish for their families feeding to improve their nutrition level. Most of the farmers in this region depending only on growing one single crop (tomato) and suffering from the low income most of the seasons.

13. What are the lessons from the aquaculture pilot at the 30 farmers?

The lessons learned from the aquaculture pilot were:

- *Fish culture is a new technology in Jordan with great potential to improve small to medium scaled farmers income and livelihoods not only in the target area but also in other regions.*
- *The farmers, in general, started to believe about the important and benefits of fish culture.*
- *Establishment of "Fish farming" cooperative is very important not only for providing the farmers with fish food and trustable fingerlings with suitable price but also for marketing fish and sustainability.*
- *Infrastructure for collecting mature fish, transportation and storing fish are very important for sustainability for fish culturing in the target region.*
- *The high cost of imported fish food is one of the main obstacles facing the dissemination and sustainability of fish culture.*
- *Local production and the availability of suitable fingerlings size/weight is one of the most important factor that affect dissemination and sustainability of fish culture.*
- *Good management practices of fish farming including record keeping is very important to improve farmers capacity buildings.*
- *Because fish farming is a new technology in Jordan, more capacity buildings regarding good management practices including fish feeding, fish diseases, mature fish collecting, marketing management, production of suitable fingerlings .....etc. for the pilot farmers, NCARE staff and new farmers are highly needed.*

添付資料 8-3　イスラエル関係機関質問事項及び回答

Second Phase of Introduction of Advanced Agricultural Technology for Dryland Area Jordan under Trilateral Cooperation, Jordan-Japan-Israel
Terminal Evaluation in July 2015
Questionnaire for MASHAV-CINADCO

1. The basic framework of the current trilateral cooperation may be built of the followings;

   a) Materializing the inputs as specified in the PDM,
   b) executing the project activities as much as possible by fully utilizing the available resources,
   c) coordinating the activities done by all the parties involved as needed, and
   d) monitoring of the outcomes and feedback to the Project in time

   Based on the experience during the last three years, do you think which one might have been most important for performing the Project?

   B,C &D

2. For conducting a series of the trainings planned in the Project, was the information on the project background enough available? For an example, profiles of the target farmers were well studied? Did you have any difficulties to conduct the trainings due to unavailability of such preliminary information?

   There is an ongoing difficulty with the flow of information from all three teams (NCARE), We did not receive any updates or reports on the progress and needs of each component therefore it was a challenge to decide on the curriculum of the trainings, this resulted in the need for last minute changes and adjustments to the program which we were not always able to make.

3. It seems that the first local training for the aquaculture component in June 2013 should have been done after finishing more preparatory works – more capacity building of the lecturers of NCARE, more identification of the development needs, and clearer design of the pilot. What lessons should be extracted from this

unprepared training?

The aquaculture team is very dedicated to their work and is very eager to learn. But it seems that they need to flow through each stage before moving to the next. In addition it is very important the technician employed at the hatchery will be a permanent one. If NCARE could involve more Extension workers it will be best.

4. Since when has the security regulation of the Israeli MOFA begun to suspend the CINADCO officers' field works in Jordan? What conditions are needed to improve the security and thus to terminate the suspension?

   N/R

5. Among the following inputs, which input should have been done more for ensuring the achievement of the project purpose?

   Sending reports of progress and updates on the needs of each component

   1) Specialist Trainings in Israel,
   2) Israeli Experts' visit to Jordan,
   3) Japanese Experts' visit to Jordan,
   4) Farmers' Field visit in Israel, and
   5) Local training/field days/workshop by NCARE in Jordan

6. The suspension of the Israeli government experts' visit to Jordan seems to cause insufficient input of the expertise in the Project. Other than this, were there any difficult situations in delivery of the necessary resources to the Project?

   Lack of reports and updates from all the three components

7. Combination of the inputs under the trilateral project - if we exclude the above incidental case of insufficient inputs, have the current combined inputs by Japan, Israel and Jordan well worked as expected?

   Under the circumstances the project worked well. We strongly recommend that monthly reports and updates be sent from the Jordanian side, more involvement of

NCARE extension officers to insure the practicality of the new knowledge gained, and finding a way of sending Israeli experts to Jordan.