Measuring Results of the Ghana Agriculture Project

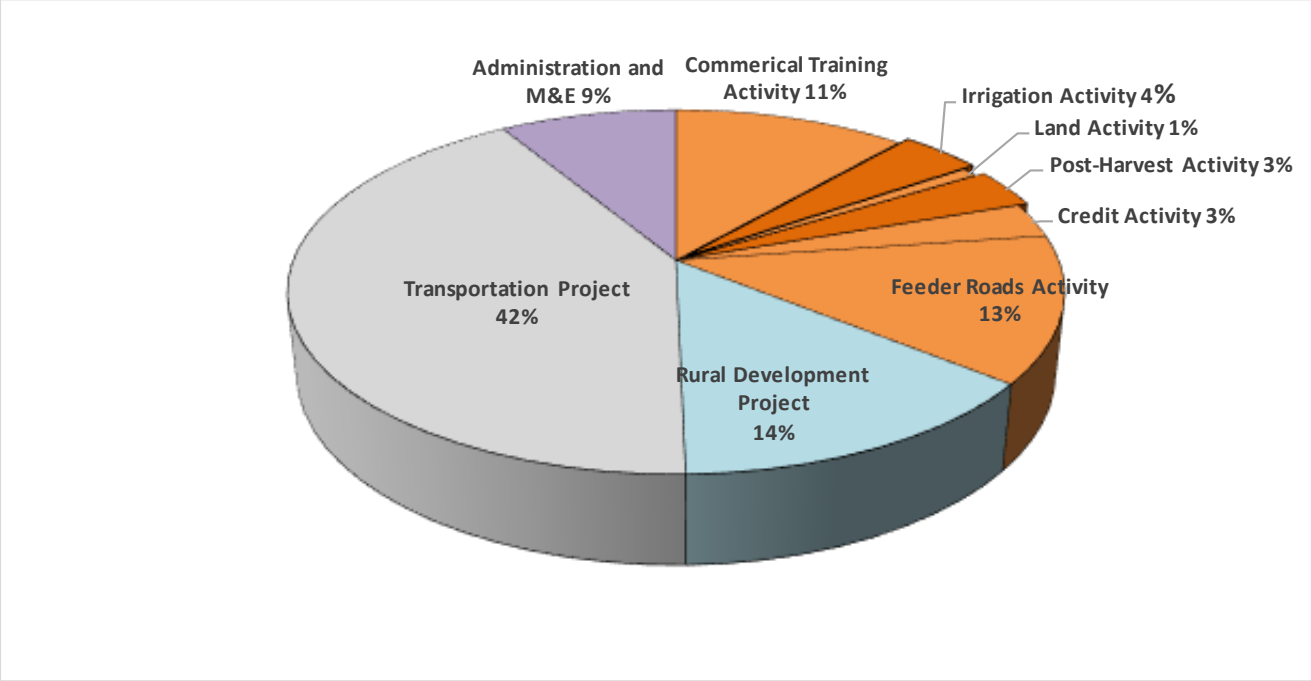
Abstract: The MCC compact with Ghana was a five-year investment (2007-2012) of $547 million. The Post-Harvest Handling and Irrigation Activities under the $188.7 million Agriculture Project are the subject of an independent performance evaluation summarized here.

- The Irrigation Activity built and rehabilitated irrigation schemes, and the Post-Harvest Activity built and improved infrastructure and public sector capacity aimed at reducing post-harvest losses. These activities had the objective of increasing profitability of cultivation, services to agriculture, and product handling in support of the expansion of commercial agriculture among groups of smallholder farms. This in turn aimed to increase production and productivity of high value crops in the intervention zones and enhance competitiveness on the domestic and international markets leading to poverty reduction through economic growth.
- The impact on the agricultural sector resulting from the Agricultural Project has not been substantial in light of the limited product throughput thus far at the Public Pack Houses (PPHs), the agribusiness centers (ABCs) and the perishable cargo center (PCC) at Kotoka International Airport (KIA). There is similar minimal impact for the Irrigation Activity given the slow production start by the two anchor farms operating at the irrigation schemes at Bontanga and Torgorme, along with the delayed start of their outgrower programs; as well as with the delayed completion of the Torgorme smallholder irrigation scheme.
- One key lesson runs through all of the activities and sub-activities of the Agriculture Project: MCC is not effective in projects that hinge on picking winners in the private sector and/or building private sector goods. Each one of these projects either failed or did not fulfill its original intent because MCC picked winners and then tried play the role of the private sector in the "winning" sector.
- There are no further steps in this evaluation.

Measuring Results of the Ghana Agriculture Project

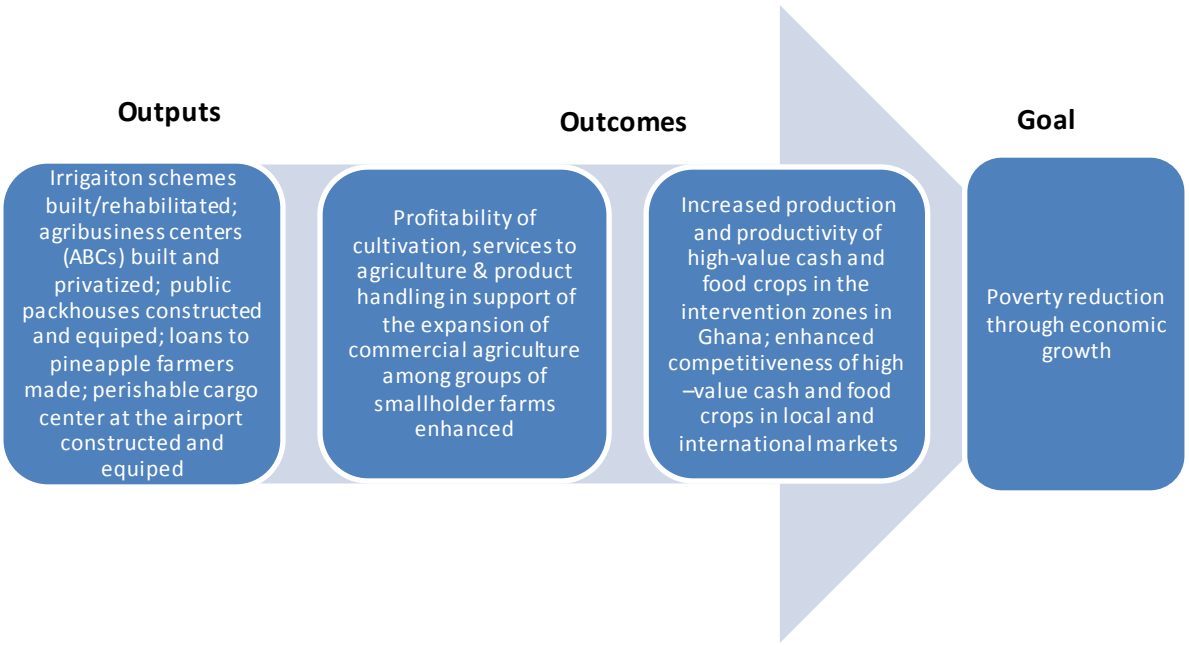
In Context

The MCC compact with Ghana was a five-year investment ((2007-2012) of $547 million in three projects: the Agriculture Project, the Rural Development Project, and the Transportation Project. The Agriculture Project included six major activities: i) Farmer and Enterprise Training in Commercial Agriculture, (ii) Land Tenure Facilitation, (iii) Improvement of Feeder Roads, (iv) Agricultural Credit, and (v) Post-Harvest Handling, and (vi) Irrigation Development. The $21.9 million Irrigation Activity and the $18.9 Post-Harvest Handling Activity are the subject of an independent performance evaluation released by MCC in 2018, the results of which are summarized here. These components combined, the Post-Harvest and Irrigation Activities, represent 7.5 percent of the total compact. Other components of the compact are the subject of forthcoming independent evaluations.



Program Logic

The Irrigation Activity built and rehabilitated irrigation schemes. The Post-Harvest Activity built and improved infrastructure and public sector capacity aimed at reducing post-harvest losses. These activities had the objective of increasing profitability of cultivation, services to agriculture, and product handling in support of the expansion of commercial agriculture among groups of smallholder farms. This in turn aimed to increase production and productivity of high value crops in the intervention zones and enhance competitiveness on the domestic and international markets leading to poverty reduction through economic growth.



There were several key assumptions underlying the Agriculture Project program logic during the design of the investment:

Irrigation

- Once the schemes were rehabilitated/constructed farmers would fully utilize their irrigated farm plots on a year round basis.
- Commercial "anchor farms" at each irrigation scheme would set up outgrower programs which would work with smallholders to produce high-value vegetable crops.
- Irrigation infrastructure rehabilitated/constructed under the Compact would be managed effectively by a scheme manager. This "manager" (whether an individual, a water users' organization, an institution, etc.) would be identified, created, enhanced, and/or trained as necessary during the course of the Compact.
- It was assumed that the Ghana Irrigation Development Authority (GIDA) would set irrigation service charges (ISCs) and collect payments at rates that would support the long-term sustainability of the schemes.

Agribusiness Centers (ABCs)

- ABC partner Farmer-Based Organizations (FBOs) were competitively selected from the wider pool of FBOs that participated in the Ghana Compact Agriculture Project Commercial Training Activity. It was assumed that participating FBO members were capable of producing high-quality surplus grain that could be sold at a premium.
- FBO members would be willing to cover the costs to deliver grain to the ABCs for storage, post-harvest processing, and marketing.
- ABCs would either buy grain from FBO members or be able find sufficient buyers of high quality grain willing to pay prices which would exceed prices paid by local traders and be sufficiently high to cover the accumulated farmer transportation, processing and storage costs charged by the ABC.
- Private investors and ABC managers were expected to have a continuous engagement with FBOs to improve their mutual understanding and ensure effective collaboration.

- The ABC escrow accounts set up with FBO equity contributions were intended to facilitate smallholder access to credit by serving as a security for bank loans to purchase inputs or equipment.
- Facility construction and equipment transfer from the Ghanaian Millennium Development Authority (MiDA) to the new ABCs was scheduled for 2010, pending the enactment of amendments to the Plant and Pest Disease (Act 307) of 1965 to be consistent with IPPC Standards. Because passage of the required legislation was delayed by two years, ABC start-up took place after the Compact closed in February 2012. As a result MiDA staff were not available to monitor, facilitate and mediate ABC operations.

Perishable Cargo Center (PCC)

- The design and planned capacity of the PCC facility was based on estimates that KIA would handle a daily peak volume of 130 metric tons of produce and a yearly export volume of just below 20,000 metric tons per annum with an assumed annual growth rate of 5 percent.
- Upon the completion of the PCC facility the Ghana Airports Company, Limited (GACL) was expected to award the PCC the exclusive right to handle all export perishable cargo that was being shipped from KIA. However, the GACL chose to maintain open completion for cargo handling at KIA and the PCC had to compete with well-established cargo handlers.

Sea-freight Pineapple Exporters of Ghana (SPEG)

- It was assumed that repayment on loans would create a rotating credit fund for successive groups of SPEG exporters, thereby by expanding the reach and ensuring the sustainability of the program.

For a more detailed version of the program logic, please refer to page 4 of the Ghana M&E Plan, which can be found here.

Measuring Results

MCC uses multiple sources to measure results, which are generally grouped into monitoring and evaluation sources. Monitoring data is collected during and after compact implementation and is typically generated by the program implementers; it focuses specifically on measuring program outputs and intermediate outcomes directly affected by the program. However, monitoring data is limited in that it cannot reflect the full range of targeted outcomes and cannot tell us whether changes in key outcomes are attributable solely to the MCC-funded intervention. The limitations of monitoring data is a key reason why MCC invests in independent evaluations to assess the achievement of a broader set of program outcomes. When feasible, MCC supports impact evaluations, which use a counterfactual to assess what would have happened in the absence of the investment and thereby estimate the impact of the intervention alone. When estimating a counterfactual is not possible, MCC invests in performance evaluations, which compile the best available evidence and assess the likely impact of MCC investments on key outcomes.

Monitoring Results

The following table summarizes performance on output and outcome indicators specific to the evaluated program.

Indicators	Level	Baseline	Actual Achieved (Mar-2012)	Target	Percent Complete
Post-Harvest Handling Activity					

Volume of products passing through post-harvest treatment (metric tons)	Outcome	0	36,641	385,120	9.5
Number of cooling facilities installed	Output	0	10	12	83
Area of cold storage facilities constructed	Output	0	1,350	2,081	65
Area of pack-houses and other post-harvest infrastructure constructed	Output	0	9,781	12,940	76
Irrigation Activity					
Additional hectares irrigated with MCC support	Outcome	0	513.6	4,200	12.2
Number of irrigation facilities constructed/ rehabilitated	Output	0	2	10	20

Source: Closeout ITT from March 2012, which includes data through the end of the compact, based on reporting from MiDA)

Evaluation Questions

The evaluation was designed to answer the following questions:

Interim Assessment of MCC Irrigation Investments in Ghana

- Were the irrigation schemes funded by MCC implemented according to plan? What positive and negative factors affected implementation?
- Has the project as designed and implemented been able to provide substantial improvements in irrigated agriculture in Ghana?
- Were the irrigation schemes soundly managed and did the stakeholders receive value for money (efficiency) during the construction phase of the project when MCC and MIDA were in charge?
- Was the transition to irrigation scheme management by private stakeholders done efficiently?
- Are project beneficiaries presently managing project assets and continuing activities efficiently?
- Have the new irrigation schemes increased crop production, yields, and farmer income?
- Has irrigation led farmers to cultivate higher-value crops?
- Are the results achieved sustainable? Are the facilities constructed still in use and being maintained according to schedule? Is a system in place to ensure that financial resources are available to maintain the facilities over the long-term?
- What are the main positive and negative lessons learned, the main reasons for particular components not achieving the desired results, and the specific remedial actions recommended to achieve these results now, to the extent possible? If the results were not as planned or envisioned, then explain why the results were not achieved. What went wrong?

Post-Compact Assessment of Agricultural Investments under the First MCC Ghana Compact: Financial and Social Analysis of Agribusiness Centers

- What does a viable business model look like for an ABC? What is the break-even point for revenue and throughput?

- Are the ABCs working with both the anchor investor and FBO farmers as intended? Are their customers largely coming from within a 20-km radius?
- What factors limit their use, as well as the benefits derived by small-scale farmers from MCC's investments in the ABCs? What action could be taken to increase their use by smallholders?

Evaluation of the KIA Perishable Cargo Center Final Report

- Has the construction and operation of the PCC facility gone according to plan? Were there delays, bottlenecks, and/or deviations from plan? What positive and negative factors affected construction and operations?
- Has the facility been able to provide substantial improvements in the export of horticultural products in Ghana?
- Was the facility soundly managed and did the stakeholders receive value for money (efficiency) during the construction phase of the project when MCC and the Ghanaian Millennium Development Authority (MiDA) were in charge?
- Was the transition of the PCC facility to private stakeholders achieved according to plan? Was the transition efficient?
- Is the PCCs private operator presently managing program assets and continuing activities efficiently?
- What has been the overall impact of the program?
- Are the results achieved sustainable? Are the facilities constructed still in use and being maintained according to schedule? Is a system in place to ensure that financial resources are available to maintain the facilities over the long-term?
- What are the main positive and negative lessons learned, the main reasons for particular components not achieving the desired results, and the specific remedial actions recommended to achieve these results now, to the extent possible? If the results were not as planned or envisioned, then explain why the results were not achieved. What went wrong?
- What are the volumes of produce passing through the PCC facility per agricultural season?

Evaluation of the SPEG Loan Program Final Report

- Was the SPEG loan program implemented according to plan? Were there delays, bottlenecks, and/or deviations from plan? What positive and negative factors affected implementation?
- Has the program, as designed and implemented, been able to provide substantial improvements in the export of horticultural products in Ghana?
- Was the program soundly managed by SPEG?
- What has been the overall impact of the program?
- Are the results achieved sustainable? Are the facilities constructed still in use and being maintained according to schedule? Is a system in place to ensure that financial resources are available to maintain the facilities over the long-term?
- What are the main positive and negative lessons learned, the main reasons for particular components not achieving the desired results, and the specific remedial actions recommended to achieve these results now, to the extent possible? If the results were not as planned or envisioned, then explain why the results were not achieved. What went wrong?
- What are the volumes of produce passing through each SPEG facility per agricultural season?

Post-Compact Assessment of MiDA's Post-Harvest and Irrigation Investments

- **Project Implementation:** Was the MCC investment implemented according to plan? Were there delays, bottlenecks, and/or deviations from plan? What positive and negative factors affected implementation?
- **Improvements in Agriculture:** Has the program, as designed and implemented, been able to provide substantial improvements in irrigated agriculture, the export of horticultural products, and the marketing of grain crops in Ghana?
- **Project Management:** Was the program soundly managed and did the stakeholders receive value for money (efficiency) during the construction phase of the project when MCC and MIDA were in charge?
- **Private Sector Participation:** Was the transition to program management by private stakeholders achieved according to plan? Was the transition efficient?
- **Asset Management:** Are program beneficiaries presently managing program assets and continuing activities efficiently?
- **Overall Impact:** What has been the overall impact of the program?
- **Sustainability:** Are the results achieved sustainable? Are the facilities constructed still in use and being maintained according to schedule? Is a system in place to ensure that financial resources are available to maintain the facilities over the long-term?
- **Lessons:** What are the main positive and negative lessons learned, the main reasons for particular components not achieving the desired results, and the specific remedial actions recommended to achieve these results now, to the extent possible? If the results were not as planned or envisioned, then explain why the results were not achieved. What went wrong?
- **Volume of Produce:** For ABCs, pack houses, PCC and SPEG facilities, what are the volumes of produce passing through each facility per agricultural season?

Because all of these evaluations were performance evaluations, the evaluation did not rigorously cover any of the benefit streams that were modeled in the economic analysis of the program. More detail on this topic can be found in the Evaluation Design Report here. The benefit streams in the cost-benefit analyses were:

Agriculture:
- Crop yields higher than without project
- Farm gate prices for cash crops higher than without project
- Farm gate prices for inputs lower than without project
- Expansion of cropped areas

Post-Harvest:
- Crop loss avoided through on-farm spraying and cribbing
- Yield improvements for pineapple out growers
- Improvement in value of pineapples ready for exporting (value as FOB)

Evaluation Results

Interim Assessment of MCC Irrigation Investments in Ghana

The evaluation noted varied results across the irrigation schemes. Construction of the Torgorme scheme was only 71% complete at the end of the Compact. Despite an additional contribution of 6.6 million USD from the Government of Ghana to finish the works in the post-Compact period, the evaluator found that little progress had been made toward completion as of September 2014. In addition, the completed parts

of the scheme had severely deteriorated, and will require additional construction and repair work if the scheme is to ever become fully operational.

The rehabilitation and expansion of the Bontanga and Golinga schemes were completed within the compact period. At Bontanga, the scheme is used mainly for rice and vegetable production during the dry season only. The Golinga scheme is fully utilized year-round for rice and vegetable production, although the limited capacity of the Golinga Dam restricts the availability of irrigation water near the end of the dry season, hindering cultivation of a second vegetable crop.

Production of high-value vegetable crops has lagged at Bontanga and Golinga. This is explained by: a) a tradition of rice production among farmers; b) rice is a food security crop; c) smallholders have inadequate knowledge of vegetable crops and are concerned about risks; and d) no anchor farm has started a contract farming program for vegetable production.

To support the efficiency and sustainability of the irrigation schemes, MiDA designed an institutional structure to oversee and manage scheme operations. However, the structure was difficult to implement. At Bontanga and Golinga, failure to incorporate a key member caused the MiDA-planned structure to collapse. Consequently, these two systems reverted to the pre-Compact status quo of management by the farmers' associations, although the Compact did not explicitly fund efforts to prepare FBO members to manage irrigation schemes. There are no monitoring systems, enforcement of the irrigation schedule is poor or non-existent, and collection of irrigation service charges are artificially low.

Interim Assessment of MCC Irrigation Investments in Ghana	
Evaluator	NORC
Impact or Performance?	Performance
Methodology	Process Evaluation
Evaluation Period	Compact Period: February 16, 2007 – February 15, 2012 Field work for the evaluation took place in September 2014 over a 3 week period.
Outcomes	As of September 2014, MCC's investments in Bontanga and Golinga are only partially successful. MCC's investment in the Torgorme irrigation scheme is not yet successful. • Without professional management, operations at Bontanga and Golinga will remain ineffective. • At Bontanga, the slow development of an anchor farm contract farming program has limited high-value crop production. • MiDA's withdrawal from active involvement in the operation of the assets created a leadership vacuum that jeopardizes the successful operation of the investments. • There is disorder in the distribution and management of water by smallholders, particularly at the Bontanga scheme, where downstream users including the anchor farm have experienced adverse impacts. • The irrigation systems are unlikely to be managed or maintained due to the poor payment record by farmers. • At Bontanga, smallholders are not making optimal, year-round use of their irrigated plots.

Interim Assessment of MCC Irrigation Investments in Ghana	
	• Construction delays at the Torgorme have delayed crop production by small-scale farmers at the scheme and have severely affected their livelihoods. Without further investment, smallholder irrigation will not be effective at Torgorme. • Deterioration from weather has occurred at the Torgorme scheme, affecting performance of the irrigation system. • At Torgorme, there is a situation of bureaucratic gridlock, with none of the responsible government institutions providing the leadership needed to complete the construction of the irrigation system on a timely basis.
Effect on household income attributable to MCC	N/A

Financial and Social Analysis of Agribusiness Centers

ABCs experienced positive interaction with FBO leaders and members in the initial growing season by providing inputs on credit. However, almost all ABCs experienced high initial credit default rates that led most of them to curtail future sale of inputs and credit provision. While most ABCs eventually recovered at least part of the provided credit by persistent follow-up with defaulting farmers, severe credit default problems used up much of the original working capital forestalling ability of many ABCs to purchase grain in the future. Attempts to recover credit also soured relations between ABC and FBO members which led many FBO members to forego further ABC patronage. Fallout from high credit default rates on input supplies is a major reason for the high FBO non-participation with associated ABCs.

Post-Compact Assessment of Agricultural Investments under the First MCC Ghana Compact: Financial and Social Analysis of Agribusiness Centers	
Evaluator	NORC
Impact or Performance?	Performance
Methodology	Process Evaluation • Qualitative Social and Financial Analysis • Key informant interviews with individuals (n=46) representing all 10 ABCs (including, PIs, ABC field managers, FBO leaders), as well as interviews with (n=11) with grain buyers, MiDA staff and MoFA district officers. • Eight focus group discussions with 119 FBO members
Evaluation Period	Compact Period: February 16, 2007 – February 15, 2012, though the ABC were completed several months after Compact completion in mid-2012. Field work for the evaluation took place from February – April 2015.
Outcomes	• Income statements and throughput data were available to conduct ABC breakeven analyses for six of the ten ABCs. Five of the six exceeded their breakeven point for at least one year while two exceeded their breakeven point for both 2013 and 2014. Of the other four ABCs, one was

	profitable in 2013 and 2014 and one had a positive cash flow for 2013 but not 2014. The remaining two did not attain positive cash flows since startup. One of the two did not open for business in 2014. • Three ABCs met the MiDA activity objectives in 2014. Six of the remaining ABCs provided few services to the original FBOs, and the seventh did not open in 2014. The effective ABCs predominately purchased grain on their own account using the ABC facilities to process and store grain prior, but only one maintained a large proportion of the original FBOs. It provided inputs on credit to subsistence smallholders. • New non-FBO ABC clientele tended to be closer to the ABC site than many of the original FBO and at least one ABC worked primarily with women farmers as they demonstrated lower credit default rates than men. • Nine of the ABCs had sustainable business models by attracting clients that were large, non-FBO farmers. • Only one ABC still provided input supplies on credit after the high credit default rates in the 2012/2013 seasons. However, FBO member and leader discussions indicated that FBOs would like ABCs to provide input supplies. • Most FBO members are subsistence farmers storing maize or rice at their own or community storage sites. The grain serves a form of savings that can be sold to local traders after initial postharvest price increases to meet household needs. Most farmers do not have their own transport, and it is too expensive to pay the ABC for transportation to the center and associated processing and storage costs. Most ABCs were unable to pay above local price levels or provide farmers with linkages to buyers paying higher prices. • FBO members were to have contributed 50 kg bags of grain each to form an equity fund to be kept in an ABC escrow account serving as security for bank credit provided to smallholder members. ABC staff and FBO farmer interviews indicated that farmers did not contribute the required grain nor did any ABC set up an escrow account.
Effect on household income attributable to MCC	N/A

Evaluation of the KIA Perishable Cargo Center

Although construction of the PCC as designed was completed and the facility turned over to the private operator, Air Ghana Perishable Cargo Center, Ltd. (AGPCC) in February 2012, the AGPCC then required almost ten months to complete several modifications to the facility to meet the company's standards for commercial operations. Despite delays, the facility is now operating effectively and is fully serving its intended purpose. However, volumes to date have been much lower than anticipated. The PCC has been a positive factor in fresh horticulture exports since it began operating but, due to its limited volume, its impact thus far has been small. The initial assumption that the PCC would the sole provider of perishable cargo handling services at KIA was invalid. As such, AGPCC started a new business in a highly competitive environment for air cargo handling at KIA. The PCC is unlikely to achieve the desired Economic Rate of Return (ERR) of 10% for investments by MCC. Nevertheless the PCC's strong administrative and institutional structure provides some assurance that needed increases in and diversification of the cargo handled can be realized, which will support the sustainability of the asset over the long term.

Evaluation of the KIA Perishable Cargo Center Final Report	
Evaluator	NORC
Impact or Performance?	Performance
Methodology	Process Evaluation
Evaluation Period	Compact Period: February 16, 2007 – February 15, 2012. Field work for the evaluation took place in September 2014.
Outcomes	• The PCC ownership structure provides a solid foundation for PCC operations. • The PCC competes with cargo handlers providing services for incoming, as well as outgoing, air cargo whereas the PCC handles only export cargo. The current low level of cargo throughput at the PCC is the main factor contributing to poor profitability. • The initial design and construction of the PCC had to be modified to bring the facility up to the operating requirements of the management company. • A new business for product scanning and general cargo handling have brought additional revenue to the PCC. Its ability to increase freight handling fees has also favorably impacted revenue. However, the PCC has been notified that all cargo scanning services at KIA will be consolidated within the government-controlled facility to improved airport security, requiring the PCC to suspend its scanning service for export cargo. • The PCC reached a position of financial breakeven after 18 months of commercial operations. • Airlines, not the exporters themselves, contract the services of air cargo handlers at KIA. Exporters have little influence over the decisions taken by the airline companies as to which freight handler to use for their cargo handling services. It is only when there is a delay in the scheduled departure time by the airline transporting cargo that there is a strong demand for refrigerated storage by perishable exporters.
Effect on household income attributable to MCC	N/A

Evaluation of the SPEG Loan Program

The SPEG loan program aimed to enhance the competitiveness of Ghana pineapple exports. Ghana's export pineapple industry was in decline due to its slow response to move to a new and improved variety. The loan program supported the revitalization of the industry by facilitating the purchase and installation of packing lines, providing pre-cooling and cold storage facilities, and installing standby electric generators at existing pack houses belonging to SPEG exporters. It was expected that with these facilities and equipment, the SPEG members would be able to export fresh pineapples with an adequate shelf life to meet European market requirements. Unfortunately, these expectations were not fully achieved due to the failure of some SPEG members to repay their loans.

In September 2008, MiDA established a conditional grant program for improvements to existing pack houses owned by SPEG exporters. The funds were used to provide term loans for seven exporters. Loan repayments were to be used to create a rotating credit fund for successive groups of SPEG exporters.

Evaluation of the SPEG Loan Program Final Report	
Evaluator	NORC
Impact or Performance?	Performance
Methodology	Process Evaluation
Evaluation Period	Compact Period: February 16, 2007 – February 15, 2012. Field work for the evaluation took place in September and October 2014.
Outcomes	• The first disbursement made under the grant provided for facilities and equipment for $2.17 million. By the end of the Compact the seven exporters had paid only $409,619 for debt service, which included $106,323 as loan principal. Under MCC's instructions, MiDA cancelled the grant agreement with SPEG January 2012. The SPEG borrowers have made no further payments against their loan since the Compact ended. • All but one exporter registered considerable increases in their export shipments after the equipment loans were provided. • The annual growth rate in their exports from 2009 – 2013 was approximately 17%, compared to an annual rate of increase of only 6% for the industry as a whole over the same time period. • Prior to the end of the Compact MiDA arranged to transfer the accounts receivable for the SPEG loans to the Ghanaian Export Trade, Agricultural & Industrial Development Fund (EDAIF), with the hopes that EDAIF might be able to offer SPEG members credit in the future. As of September 2014, this agreement between MiDA and EDAIF not put into effect and there was no entity responsible for oversight or enforcement of loan repayment. • With the failure of the first group of exporters to repay their outstanding loans, the planned reflows of loan funds did not take place and there was no possibility of creating a revolving credit fund for the benefit of subsequent exporters. The SPEG loan program was not sustainable, given its poor repayment history.

Evaluation of the SPEG Loan Program Final Report	
Effect on household income attributable to MCC	N/A

Post-Compact Assessment of MiDA's Post-Harvest and Irrigation Investments	
Evaluator	NORC
Impact or Performance?	Performance
Methodology	Process Evaluation
Evaluation Period	Compact Period: February 16, 2007 – February 15, 2012
Outcomes	**Project Implementation:** Nearly all of the construction work was completed during the Compact's final two years. MiDA completed all the required construction before the end of the Compact except the Torgorme Irrigation System, but there was insufficient time remaining after construction to ensure sustainability. Since the end of the Compact, MiDA has withdrawn from its involvement in operation of the agricultural assets that were provided to private operators. **Improvements in Agriculture:** The Public Pack Houses (PPHs) have not had an impact on the export of horticultural products due to low capacity utilization of the pineapple PPHs and the non-functioning of the mango PPH. Loans for post-harvest investments by pineapple exporters have helped to improve export fruit quality, and have made it possible for exporters to increase marketing strength and open new markets. However, most exporters are unable to capitalize on these advantages due to their limited production volumes. The Perishable Cargo Center (PCC) at KIA has improved the product quality and convenience of exporting perishable products. However, export volumes remain low in the face competition from general cargo handlers at the airport. The impact of the PPC on horticultural exports has thus far been limited. The ABCs are operating, although their uptake of smallholder grains for processing, storage and marketing has low. **Project Management** With these exceptions, the project was well managed during construction. The exceptions are: - At the time of the post-Compact evaluation, the Togorme Irrigation scheme was not complete, having by then

accumulated approximately 20 months of delays due to the late start of construction, weather delays, and contractor inefficiencies.

- Modifications to the PCC delayed the start of commercial operations by approximately six months. The changes were needed to satisfy the operating requirements of the user.
- None of the operators of the PCC were satisfied with the equipment or layout provided by MiDA.

Private Sector Participation:

The evaluator identified two problems that have affected the transition to program management by private stakeholders:

- The mango PPH has not yet started operating as a commercial business due to a miscommunication between MiDA and the new pack house owner as to whether or not the Union was authorized to operate the pack house.
- MiDA was unable to contract a private operator to manage the Bontanga and Golinga schemes before the Compact ended. At the end of the Compact, management responsibility for the two schemes passed to a government agency. This agency has neither the technical staff nor the administrative budget to effectively manage the schemes.

Asset Management:

Management and operation of the investments are being carried out under difficult circumstances. The factors affecting asset management include:

- The fresh fruit throughput at the pineapple PPHs is low because their outgrower schemes have collapsed and small-scale farmers are not supplying fruit to the PPHs.
- The main factor affecting the operations of the PCC is its limited product throughput, which has made it impossible for the PCC to achieve financial breakeven.
- MiDA was unable to select a private scheme manager for Bontanga and Golinga irrigation schemes before the Compact ended. Maintenance and fee collection is overdue. These two schemes are poorly managed.
- Responsibility for irrigation management at Torgorme has not yet been turned over to the private sector. However, without the planned startup capital that was an integral part of MiDA's plan for scheme management, a private sector entity will not be able to manage it.
- The complacency, passiveness, and lack of follow-up by the Dangme Union on the use of the mango PPH calls into

question the commitment and the qualifications of this producer organization to operate the mango pack house.

Overall Impact:
The impact on the agricultural sector resulting from the Agricultural Project has not yet been substantial in light of the limited product throughput thus far at the PPHs, the ABCs and the perishable products center at KIA; the slow production start by the two anchor farms operating at the irrigation schemes at Bontanga and Torgorme, along with the delayed start of their outgrower schemes; as well as with the delayed completion of the Torgorme smallholder irrigation.

Sustainability:
The two pineapple PPHs will likely be sustainable as long as a financial shock does not occur to the anchor firms.

Sustainability of the mango PPH will depend on the management capabilities of the pack house owner. Given this organization's performance since the Compact ended, it is not likely that it will effectively manage the facility, and that the sustainability of the mango PPH beyond 3-5 years is questionable.

The PCC appears to be well managed. The PCC's product throughput should increase with increased market share and as more exporters become attracted to its export services for perishable products. The outlook for the PCC seems positive and sustainable over the long-term.

At the Bontanga and Golinga irrigation schemes, the combination of deficient management and maintenance and insufficient payments for water usage by farmers will affect the long-term sustainability of these two schemes. If nothing changes with regard to scheme management and the inadequate collection of irrigation service charges, within a period of five years or less the operations of the two schemes will likely deteriorate to conditions found before the renovations occurred. At the Torgorme irrigation scheme, the likelihood of private scheme management appears low unless start-up capital becomes available. In the event that the responsibility of scheme management reverts to the government, the scheme will likely deteriorate within five years.

The assessment suggests that the ABCs are sustainable.

Lessons:

	- Imposing a rigid, fixed timetable for a complex, pioneering development effort involves a high risk of failure. - Continuing leadership and involvement by the development organization must be provided beyond the Compact to ensure the effective use of the assets. - The operators of assets provided for commercial use must be involved in the design and operational planning. - Assets should function fully before transferring to the user. - Training is a key, not only for the operators and users of the assets provided, but also farmers that supply the facilities. - Providing assets alone does not ensure development success.
Effect on household income attributable to MCC	N/A

Lessons Learned

The compact had two main objectives (1) increase the production and productivity of high-value cash and food crops and (2) enhance the competitiveness of high-value food crops in local and international markets. The Agriculture Project pursued these objectives by picking winners and building private sector goods. Each one of these activities either failed or did not fulfill its original intent because MCC picked winners and then tried play the role of the private sector in the "winning" sector.

- Irrigation: MCC built irrigation infrastructure with the intent to turn it over to a private sector operator to run. In the two schemes where the infrastructure was finished, the private operators were unable to set irrigation service charges (ISCs) that would ensure sustainability of the scheme. Even at the artificially low ISCs that were established, collection of payments was poor.
- Agribusiness Centers (ABCs): MCC built grain agribusiness centers with processing facilities to help smallholder farmers from beneficiary farmer business organizations (FBOs). However, these facilities are not being utilized by the farmers we intended to help because the farmers cannot recover the transportation and processing costs in the sale of their goods. The ABCs that are profitable are not providing services to the intended beneficiaries. Essentially, MCC built a series of processing centers and turned them over to the private sector. The evaluator provided no clear argument why MCC should give transfers of this kind to the private sector, nor does MCC's documentation of this investment decision clarify what market failures justified this public subsidy.
- Public pack houses (PPHs): The public pack houses are a similar story to the ABCs, but they have had difficulty being profitable, and their sustainability hinges on the ability of the private sector operators to turn a profit. Again, there is no argument for why MCC should be giving transfers of this kind to the private sector.
- PCC: The Perishable Cargo Center's success relied on the PCC having a monopoly at the Accra airport. Without this monopoly, the PCC had to adjust, and it has not realized the projected profitability. MCC should not be developing projects based on monopolistic advantage where there is no argument for a natural monopoly.

- Sea-freight Pineapple Exporters of Ghana (SPEG) Loans: The SPEG loans are picking winners in the pineapple sector. It is not clear that Ghana had a comparative advantage in pineapples or that a lack of financing was the constraint that kept the Ghanaian pineapple industry from being competitive on the European market.

In Ghana, the technical work of rehabilitating the irrigation systems was completed at Bontanga and Golinga, but the post-Compact evaluation findings suggest that these schemes are unlikely to remain functional because the institutional structures are not in place to run and maintain them, the service charges are too low, and the farmers do not have the motivation (financial or otherwise) to use the systems optimally. The technical pieces are in place, but the social ones are not. Torgorme presents the flip side of the coin: extensive training programs were conducted, the scheme management structure was in place with key players active (though hampered by financial challenges), and some of the mid-size farmers were even developing their own outgrower programs. Despite these efforts on the "soft" side that seemed to lay a strong foundation for success, the infrastructure wasn't completed. Local partners and stakeholders were unable to step in and finish construction of the scheme after the Compact closed, and consequently, the post-Compact evaluations found that the land was not irrigated and the system was not working. In short, hard (technical) and soft (capacity-building and behavior change) investments are necessary and complementary.

Next Steps
This evaluation is complete and there are no planned next steps.