



FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

GHANA FEED THE FUTURE

AGRICULTURE POLICY SUPPORT PROJECT (APSP)

**IDENTIFYING BUILDING BLOCKS FOR COMMODITY TRADING IN
GHANA**



USAID
FROM THE AMERICAN PEOPLE

**GHANA FEED THE FUTURE
AGRICULTURE POLICY SUPPORT PROJECT (APSP)**

**IDENTIFYING BUILDING BLOCKS FOR COMMODITY TRADING IN
GHANA**

October 2015

This publication was produced for review by the United States Agency for International Development. It was prepared by Chemonics International Inc. The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Contents

1.0 Introduction	ii
2.0 Scope of Work.....	1
3.0 Building Blocks.....	2
Table 1: Sequential Building Blocks to Meet Trading Requirements.....	2
4.0 Indicators for Building Blocks.....	10
Table 2: Indicators for Building Blocks and Timelines	10
5.0 Intervention by USAID.....	13
6.0 Summary of Meetings.....	14
7.0 Standards and Volumes of Commodities	19
8.0 Analysis of Sustainability.....	19
8.1 Context of Formal Market	20
Tables	
Tables 1: Sequential building blocks to meet Trading Requirements.....	2
Tables 2: Indicators for Building Blocks and Timelines.....	11
Appendix 1.....	23

1.0 Introduction

There has recently been a slow trend toward modernizing agricultural commodity trading in Ghana. A sustainable and transparent system for commodity trading that is open to all will result in *ceteris paribus* higher prices paid to producers and better more consistent quality of goods to processors, end users and consumers.

In order to commence a sustainable and transparent system for commodity trading a number of facilitating conditions, instruments and institutions must be in place. These generally provide for assurances to market participants of commodity quality and title without labor intensive human intervention to allow efficient fungible trading. Once in place they permit anonymous trading, where buyer and seller need not have any relationship, which is the basis for an electronic commodity exchange.

A great deal has already been achieved as some of the conditions and institutions are in place, but others are incomplete or not scalable. For example the Ghana Standards Authority (GSA) has established standards for commodities and testing mechanisms as well. These are suitable and acceptable to industrial buyers and to a warehouse receipt system but not necessarily understood by farmers.

Many elements of warehouse receipts (WR) are in place but not yet secure enough to allow for anonymous transfer and not scalable. Collectively these make up the bulk of the building blocks because they represent the abstraction of commodities that are to be traded. The challenges going forward are mostly in the area of expansion (scale) and of system discipline and publicizing its integrity in order to promote confidence, which will assist in growth.

Little of an exchange is in place but that would logically trail the warehouse receipt system, although design and planning could be completed in parallel. Private sector commitments for equity in an exchange have been obtained however as of September the milestones to justify funding have not been achieved. As described WR trading has already begun but not on an open platform, not anonymously and without integrated settlement.

The regulatory structure is not in place for either WRs or for an exchange. Depositing and trading can begin, and has already begun, on a private contract basis. However these workarounds are not particularly scalable. For example a WR must be deemed a security by the draft warehouse receipt regulations, currently before Parliament, in order to be eligible for electronic depository.

Many of the components can be developed independently however some cannot advance without certain conditions precedent. For example an indemnity fund cannot begin to operate until warehouse operator rules are finalized. Electronic depository, which is essential to scaling trade volume, is conditional on passage of the draft warehouse receipt regulations.

Once a spot or cash exchange is operating and generating price information that is widely accepted then futures can be introduced. Futures rely on the cash market to value contracts at expiry, though with arbitrage cash and futures trading routinely influence each other. A futures market provides for risk management to producers, buyers, and financiers. Such risk management can expand the market, increase financing and lower the cost of capital to all market participants.

2.0 Scope of Work

To advance that goal, USAID has asked for research and analysis to accomplish the following:

- a. Identify a set of 'sequential building blocks' to strengthen commodity trading in Ghana
- b. Propose indicators for each building block, with timelines, that will signal the market's readiness to advance to the next building block

- c. From the above sequence, identify a series of phased interventions at which USAID could provide development assistance
- d. Obtain relevant information and data regarding the following:
 - a. Volumes and values of commodities to be potentially traded at any commodity trading scheme,
 - b. Assess the quality standards of the commodities to be traded
 - c. Identify the needs in order to develop and implement quality standards for feasible and sustainable commodity trading
 - d. Enhance the analysis on the financial sustainability of the WRS and that of the GCX, as basis for comparisons
 - e. Hold series of meetings with the private sector, potential investors, Ghana Grains Council, ‘market Queens’, Ghana Standards Authority and other relevant stakeholders, with the view to collecting information on the prospects of sustainable commodity trading in Ghana

3.0 Building Blocks

The following table identifies the sequential building blocks that are needed to meet trading requirements, indicators and responsible parties to achieve those building blocks, and opportunities for USAID to intervene to advance those accomplishments.

Table 1: Sequential Building Blocks to Meet Trading Requirements

	Building Block	Issue	Indicator	Responsible party	USAID intervention
1	<p>Commodity standards Each commodity that is to be eligible for receipting must be defined in such a way that any deposit is fungible. Naturally each commodity will have its own standards and many will have multiple standards. Maize, for example, has two grades and rice is likely to have many types. This gives buyers confidence that upon withdrawal the commodity will meet a known set of criteria. The Ghana Standards Authority has set standards for maize, maize meal, cassava chips, cassava starch, fresh yams, edible palm oil, fufu flour, sorghum, sorghum flour, millet grain and husked rice. These are effectively market driven in that they match the needs of buyers in the formal agricultural market. The GSA</p>	<p>Adoption of standardization and grading practices while selling agricultural commodities</p>	<p>Industrial buyers and/or aggregators accept standard(s) for each commodity (only one standard must be in place prior to WR)</p> <p>Achieved to date</p>	<p>GSA and warehouse operators</p>	<p>None</p>

	also operates testing laboratories to facilitate quality assurance. Ten year agricultural production results, by weight and value, are summarized in the attached table.				
STILL TO DO					
2	<p>Warehouse Receipts regulations</p> <p>The existing Warehouse Receipt System (WRS) is a contract based system that requires participants to join and agree to the contract ecosystem. Passage of the draft regulations (February 10, 2014) would give the system the force of law under regulation by the SEC. The draft regulations also authorize the SEC to delegate regulation to a Self-Regulatory Organization (SRO). Under current circumstances this SRO is likely to be the Ghana Grains Council that has several years of experience in the operation of a WRS. By defining a Warehouse Receipt (WR) as a security it also incorporates the Central Securities Depository act which permits book entry of securities. A WRS dovetails with commodity trading because it allows an exchange to separate the physical delivery of commodities (handled by the WRS) from trading (handled by the exchange). In essence a WR provides an exchange with something to trade, and streamlines trading to allow an exchange to achieve scale.</p>	Passage of the draft WRS regulations to give the system the force of law	Approved by Parliament	Parliament	None
3	<p>WRS understood by market</p> <p>In the informal market the WRS is a mystery. Participants do not understand the WR as title to and quality guarantee of a commodity. Also the public, including small farmers, need to</p>	Increase awareness and knowledge among traders and farmers about WRS	WRS deposits by <u>new</u> market participants	GGC	Aid in materials, presentations and publicity on value chain opportunities, post-harvest

	<p>be educated about the standards. Further, farmers have not seen the price premium that should accrue to product that carries the WRS imprimatur. These basic benefits need to be publicized in order to drive further deposit flow to the system. Market participants believe the best way to communicate these benefits is to emphasize the demonstration effect of successful transactions.</p>				handling and WRS benefits
4	<p>GGC WRS rules and regulations The GGC WRS has operated under its own rules and regulations since 2012. These have broadly served the purpose, however in the marketplace participants’ act to a great extent on the reputation of counterparties and informal confirmation procedures. To scale to volume there must be trust in the system itself so that informal checking of reputations, quality and inventory are redundant. The challenge is that there was a default under the GGC system in 2013 indicating both a shortcoming of the rules and their enforcement. GGC is currently undergoing a process of rewriting their rules, regulations and processes. These would cover the following issues;</p> <ul style="list-style-type: none"> • Licensing of Warehouse operators (WO) <ul style="list-style-type: none"> ○ Access to roads ○ Construction – concrete, steel, aluminum ○ Aeration ○ Data connectivity 	Update GGC rules, regulations and processes including dispute arbitration rules	New rules established and banks/lenders approve rules	GGC Board of Directors	Assist in design of rules based on a broad marketplace discussion – this could be an appropriate use of the pro bono offer by Sidley & Austin Provide assistance in materials, presentations and courses for training and certification on systems, systems adherence, and compliance

	<ul style="list-style-type: none"> • Assurance of accuracy (quantity/quality) upon deposit and of continuing inventory • Protection of inventory (warehouse quality, insurance, oversight) • Risk mitigation • Oversight - GGC and Collateral manager (CM) <p>In order to enforce the rules and regulations of the WRS the sponsor (GGC) will need to have staff that understand the rules, standards, contracts and systems.</p> <p>Dispute arbitration rules</p> <p>GGC has engaged Gamey & Gamey, a local consulting firm that specializes in conflict resolution, to draft WRS arbitration rules and regulations.</p>				
5	<p>Warehouses – available to the WRS</p> <p>Current membership totals 12 warehouses with capacity of 54,600 MT (four in the south and eight in the north). The inventory value at full capacity would be GHC 38-75 million depending on if the stored commodity is maize, sorghum or soy. This is an important achievement. The challenge is to increase the system’s capacity so that an exchange can scale to breakeven. What needs to be done is to increase warehouse membership/capacity by several multiples at least.</p>	Increase warehouses and membership of the WRS	New WO establish membership in GGC WRS	Warehouse operators	Encourage warehouses that get GCAP financing to join GGC
6	<p>GGC Warehouse receipt issued</p> <p>To date GGC WO members have issued 120 receipts on 44,927 MT</p>	Ensure effectiveness and reliability	Depositors accept WR in return for	WO	None

	<p>of maize and soy. Estimated value is GHC 59.3 million. This is an important achievement but depositors are relying as much on WO reputation and supplementary testing as on the system. These WRs were issued under the 2012 rules. Going forward WRs must be supported by tighter rules and regulations that provide for guaranteed title and quality. What needs to be done is for the system to be so reliable that a WR is accepted on its face as representing quality and quantity. Components of this include tight WRS rules and regulations and an indemnity fund.</p>	warehouse receipts	<p>commodity – WRS would be deemed to be working when WR buyer does <u>not</u> test commodity quality/quantity before buying and this would be known by WO – further indication would come from banks/lenders accepting WR as collateral for loans</p>		
7	<p>WO obligation guarantee</p> <ul style="list-style-type: none"> • Financial guarantee • Surety bond • Indemnity fund <p>Currently the obligation of the WO (to deliver the deposited commodity on demand) is backed by the CM. Many markets further support the reliability of the system by offering either a surety bond, bank guarantee or Indemnity fund (accumulated from fees or capital calls from WOs). This gives depositors (farmers and aggregators) and the buyers of WRs additional confidence in the WR, increasing its attractiveness and increasing values.</p>	Provision of guarantees to protect trade	<p>Issuance of bond/guarantee by institution with investment grade international credit rating</p>	GGC	<p>Some participants have asked that USAID make a grant/loan to establish an Indemnity fund. As this would serve to institutionalize the market and indirectly benefit farmers (depositors) use of the Development Credit Authority (DCA) would be justified. Good risk management would recommend risk sharing with WOs, as they are in the best position to police each other and</p>

					reduce DCA risk.
8	<p>WR depository A depository essentially holds the WRs (either in paper or digital form) centrally to allow for ready transfer and other actions. In order to be dependable its records must be scrupulous and auditable so that a record of title, lien or transfer is accepted by the market. GGC is a depository for the WRS. A similar function is provided to the GSE by Central Securities Depository.</p> <p>e-WR depository Best practice would be an IT and software system that is auditable and accessible. While depositors, WOs, buyers and lenders will need access to the depository, once mobile or even on-line access is established it will be essential to the integrity of the system to limit access to authorized users.</p> <p>Lien module</p> <p>Once the WRS can support deposit and withdrawal, the next logical service is the recording and releasing of liens. This will support financing to the agricultural sector and eventually allow margin balances to facilitate futures trading.</p> <p>Transfer module</p> <p>When WRs are seen as providing title and quality assurance they become a means of transfer to allow the buying and selling of the underlying commodity. This</p>	Enhance infrastructure in the form of central partial/complete IT depository	WR buyers accept GGC confirmation as transfer of title. Lenders accept GGC confirmation of recording of lien.	GGC	Grant/loan

	<p>frees an exchange to focus on trading and settlement without the burden of physical delivery and possession.</p>				
9	<p>Business plan and incorporation of a commodity exchange (CX) The commodity exchange should be established as a private sector endeavor with a high standard of corporate governance. This will insure a commercial approach that aims to earn a profit by serving the market. Design will be required for trading, clearing and settlement. This will have implications for systems (buy/build/outsource), staffing, capital budgets and operating budgets.</p>	<p>Adopt commercial approach to developing commodity exchange</p>	<p>Private sector investment into CX and the business plan itself</p>	<p>CX sponsor</p>	<p>Assist in design</p>
10	<p>Exchange rules and regulations These are intended to protect the integrity of trading by determining who can trade, who can broker, rules of trading and settlement.</p>	<p>Develop CX Exchange rules and regulations</p>	<p>Board of exchange approves</p>	<p>CX</p>	<p>Assist in design</p>
11	<p>Spot contract In order to provide liquidity (bid and ask prices routinely available) contracts must meet the needs of buyers and sellers. They must define the quality, establish a process for judging the quality and delivery terms. When derivatives are introduced contracts can be structured along standard terms, and subject to mandatory exchange trading in order to protect market integrity. In uncommon situations where unique terms are called for, Over The Counter (OTC) trading may be allowed with prior approval of the regulator.</p>	<p>Define spot contracts under CX</p>	<p>Depositors/industrial buyers accept</p>	<p>CX</p>	<p>Assist in design</p>

12	<p>GGC OTC two party training and trading</p> <p>GGC has already conducted 4 trades as a facilitator rather than as an exchange. Two trades in 2013 (prior to the WR default) totaled GHC 37.7 million. In 2015 two trades have been done with a total value of GHC 4.3 million. In both cases GGC handled the non-cash settlement by manual WR transfer. Cash settlement was via paper check outside of GGC system. It appears that the buyers supported the WR purchase with sampling and phone calls to confirm title and relied on the reputation of the sellers. This is good practice in the current less formal market and may simply be a matter of habit. However in order to serve exchange trading and scale the market the WR must be seen on its own as guaranty of title and quality. This should be communicated to the market at each stage of training and publicity.</p>	Use GGC exchange system to formalize trade relationships	Trades complete based solely on WR with no informal additional due diligence	CX and/or GGC	Aid in materials, presentations, courses for training and certification on systems, systems adherence, and compliance
13	<p>Data dissemination system</p> <p>Commodity trading prices can be valuable not only to the formal market participants but also to sellers in the informal market. Small and medium farmers can measure offers against exchange prices where aggregators are likely to sell.</p>	Enhance information sharing through CX data dissemination system	Sponsor accepts delivery of hardware and software; distribution agreements signed and initiated	GGC and/or CX	Assist in design/grant/loan
14	<p>Passage of CX legislation to regulate parallel to equities</p>	Protection of CX market participants	Approved by Parliament	Parliament	None
15	<p>Trading and clearing & settlement systems</p> <p>Almost all trading is electronic now and often accessible via the web. Open outcry is labor</p>	Enhance CX operations through electronic trading,	Sponsor accepts delivery of hardware and software	CX	Assist in design/grant/loan

	intensive and is not scalable. Most exchanges purchase trading systems and configure them to local law and regulation. Across the business model, an exchange can lower its required breakeven level of trading volume by outsourcing. Order matching and pre-trading systems could be outsourced to the Ghana Stock Exchange (GSE). The most secure form of settlement is Delivery Versus Payment (DVP), where each party to a trade hands over its consideration simultaneously. An exchange could outsource clearing and settlement to the Central Securities Depository (CSD), which has a developed settlement system to provide T+3 settlement.	clearing and settlements systems			
16	Electronic trading with trade guarantee	Guarantee settlement of trading transactions	Trades complete and settle	CX	None

4.0 Indicators for Building Blocks

While many of the indicators are both objective and binary, some are more subjective. Also where indicators can be measured a specific target cannot be identified. Appropriate indicators are discussed in the table below.

Table 2: Indicators for Building Blocks and Timelines

	Indicator	Timeline
1	Standards in warehouse deposit contracts exactly mirror those of the GSA. Increased deposit volumes indicate acceptance of the standards. Any deposit after a change of standards would indicate acceptance and deposits	1 month

	<p>in excess of current volumes would indicate broad acceptance.</p> <p>Achieved to date</p>	
2	<p>Parliament approves the draft warehouse receipt regulations.</p>	Unknown
3	<p>New depositors, that did not previously utilize the WRS, deposit commodities.</p> <p>There does not need to be an exact match between WR deposits and breakeven trading volume for an exchange. This is because deposits can trade multiple times before withdrawal. A rough estimate is that deposits should probably reach ¼ of breakeven exchange trading volume, or GHS 131 million. This is approximately double the current capacity.</p>	3 months
4	<p>Board of GGC (or GCX with a parallel WRS) establishes new system rules.</p> <p>These should be consistent with international best practice, and in fact the current draft by an international consultant meet that standard.</p>	2 months
5	<p>More warehouse operators join the WRS.</p> <p>There are currently 12 warehouses in the system and more capacity is needed. This could be accomplished by more and/or larger warehouses. This also serves the objective increased depositors</p>	3 months
6	<p>Depositors accept WR in return for their product.</p> <p>For most depositors their commodity production is their most valuable asset. Agreeing to take a WR backed by a fungible commodity and the reliability of the system indicates a high level of trust.</p>	1 month
7	<p>Establishment of a deposit indemnity fund (or equivalent).</p> <p>A satisfactory solution to this assurance of reliability of the system would be indicated by acceptance of WR (for deposit or in trade) by international trading houses.</p>	<p>6 months</p> <p>This is contingent on the board of GGC (or GCX with a parallel WRS) establishing new system rules</p>
8	<p>Market accepts WR depository transfer of title and lien filing.</p> <p>Acceptance would be indicated when WR buyers will settle payment based on an electronic record of WR transfer and lenders will fund loans based on electronic record of a lien being filed on a WR.</p>	<p>9 months</p> <p>Electronic depository records are contingent on Parliament approving the draft warehouse receipt regulations.</p>

9	<p>Private sector investors commit to and then invest in a CX.</p> <p>Written commitments would likely be withheld until a business plan indicates the expected trading volume justifies the initial capital investment and recurring operating expenses. Completion of investment funding would indicate that the main controllable elements of the business plan, or milestones, have been fulfilled.</p>	3 months
10	<p>Board of a CX establishes rules.</p> <p>These rules act to protect the integrity of the exchange, assuring participants that trades will settle and encouraging anonymous trading.</p>	3 months
11	<p>Standard spot contract established.</p> <p>Standardizing nearly all elements of the contract (except price) facilitates volume by making the contract suit the needs of as much of the market as possible. Higher volumes will reduce the bid/ask spread and retain more of the value chain for farmers/aggregators.</p>	2 months
12	<p>WRs trade anonymously.</p> <p>Measuring this will be anecdotal based on warehouse operators informally reporting that no testing was requested by buyers (indicating acceptance of the guaranty embedded in the WR). Only when a WR trades on its own, without any independent due diligence, can the market scale to the volumes needed to make an exchange profitable.</p>	10 months This could occur independent of a deposit guarantee fund but is likely to be contingent on such a fund (or alternative)
13	<p>Posted prices become common basis for investing/trading decisions.</p> <p>When a data dissemination system is operational it will be pointed to as part of commodity sales negotiations and could be the basis of farmers planting decisions. Once the data is commonly accepted it can provide the essential tool for a derivatives market, thereby allowing risk management.</p>	12 months Contingent on WR trading
14	<p>Parliament approves the draft commodity exchange legislation.</p>	Unknown
15	<p>CX takes delivery of trading and clearing and settlement systems.</p> <p>Once these systems are acquired and configured, whether by purchase, development or outsource, trading can launch.</p>	6 months This is not contingent on electronic depository records but cannot scale without them

16	First anonymous trade completes and settles on a CX	12 months This is contingent on clearing and settlement systems This could occur independent of a deposit guarantee fund but is likely to be contingent on such a fund (or alternative)
----	--	---

5.0 Intervention by USAID

In order to provide for a sustainable and transparent system for commodity trading there are a number of possible interventions that could be effected by USAID.

To expand and add liquidity to the WRS an education and publicity program could be developed. The aim would be to demonstrate to farmers and aggregators that the quality discipline and security of member warehouses will increase the value of their commodity deposits more than the higher costs of the system.

New rules and regulations for the WRS (internal to the system itself) will increase the integrity of warehouse receipts making them a more useful security (a status to be established by parliamentary approval) for trading. Ensuring that the rules are consistent with international best practice will draw export business and offshore trading houses.

USAID could use its prestige to encourage warehouse operators that obtain financing from GCAP to participate in a WRS. This should add to WRS volumes and increase the value of the warehouse operator’s services.

Confidence in the WRS is partly based on members complying with the rules but can be bolstered with an indemnity fund or similar mechanism. This allows for wider utilization of the system, especially by international counterparties. Some risk should be borne by other WRS members in order to provide an incentive for policing each other. To give the indemnity heft, especially in its early years, it could be supplemented by USAID. The Development Credit Authority might be appropriate as the fund will indirectly benefit farmers as depositors in the WRS.

In order to scale trading the record of title to WRs must be done electronically. The hardware and software to support book entry, or e-depository, would be an appropriate intervention by USAID as it will benefit depositors (farmers), lenders and traders, as well as the WRS and an exchange. Even non-participants could benefit from higher headline prices at the WRS.

A commodity exchange will need to design trading and clearing and settlement systems. In order to scale they will likely be IT based and highly integrated. USAID could provide design assistance for the systems as well as funding for the build or purchase and configuration of the IT infrastructure.

Just as with the WRS, an exchange will need to establish rules and regulations. These are intended to assure fair treatment of all participants and to maximize the likelihood of trades completing with quick settlement. Ensuring that the rules are consistent with international best practice will attract domestic volume and offshore trading houses.

Liquidity in the market can be increased with good contract design. USAID can assist this with polling to identify the terms that will maximize participation from both buyers and sellers.

Once exchange rules and regulations are established a broad audience will need to know them and understand them. USAID can assist in developing materials, presentations and courses for training

and certification on systems, systems adherence, and compliance. These would be appropriate not only for traders, brokers and exchange employees but also for regulators.

Exchange trading will generate extensive data on trading prices and volumes, as well as warehouse inventories and other supplementary information such as shipping availability and prices. Distributing this data in a format(s) and technology(s) that is non-discriminatory will benefit both market participants and outsiders. Both the design of the system and the build/purchase of components would be an appropriate role for intervention.

Over and above designing an exchange's systems the build/purchase could be a substantial investment. A grant or loan for this infrastructure cost could be appropriate to facilitate scaling the systems.

6.0 Summary of Meetings

The analysis and recommendations above are based on publicly available information and reports of the Ministry of Food and Agriculture, Ghana Standards Authority, draft regulations, and especially from meetings with market participants. Those meetings were very productive and the analysis reflects the transparency and cooperation of the many counterparties. Meeting summaries follow:

Date	Institution	Contact	Issues	Remarks
27 th February 4 th March 23 rd March	MOTI Technical Committee GCX	Mr. Joe Tackie	GCX strategy	GGC WRs is now better but not perfect Have commitments for \$15MM equity (conditioned on CX and WR regs, corporatization, investment by Eleni) Government favors process outsourcing GSA is capable of regulating warehouses Need capacity building at SEC
4 th March 23 rd March	Ghana Commodity Exchange Project Office	Mr. Robert D. Owoo	GCX strategy	Intend to build their own systems (candidates: Softribe, Axxon) Hope to get volume via "partial mandate"

				<p>Thinks market sophistication for futures is 10 years away</p> <p>Need capacity building for farmers, GSA, SEC</p>
5 th March	Ghana Grains Council	Dr. Godwin Ansah - CEO	<p>Control systems</p> <p>African Connections history</p>	<p>Prior default: conflict of interest, collateral manager AWOL</p> <p>Fired Ecosafe, hired DMT</p> <p>Setting new warehouse rules and new MIS (expected to complete in 6 months)</p> <p>Currently shopping for a \$10MM bond supporting WR guarantees</p>
10 th March	MOFEP	<p>Dr. Sam Mensah</p> <p>Hon. Mona Quartey – Deputy Minister</p>	<p>Regulatory structure</p> <p>Demand</p>	<p>Currency forwards by banks are very thin volumes</p> <p>Consider SRO with SEC oversight</p>
10 th March	CCH Finance House Limited	<p>Mr. Alexis Aning</p> <p>Major Rtd Ablorh Quarcoo.</p>	History of African Connections	<p>CCH is the lender to African Connections</p> <p>If GGC completes the remediation it will be accepted by the market</p> <p>Thinks an exchange will attract more cash crop production and be virtuous circle</p>
12 th March	Ghana Standards Authority	Mrs. Ademola and Team	GCX regulation	See regulation and certification as a conflict of interest, so GSA certifies but another party regulates

				Most warehouses are of such poor quality that they can't support a standardized product
12 th March	Private Enterprise Foundation	Naan Osie Bonsu	Market overview	Thinks WRs will need to operate for years prior to an exchange Storage not satisfactory
12 th March	Ministry of Food and Agriculture/ National Food Buffer Stock Company	Eric Zoes, CEO	Market structure	Warehouse capability not satisfactory NAFCO LBCs can act as aggregators to reach GCX volumes
12 th March	Ghana Stock Exchange	Mr. Ekow Afedzi-DMD	Risk management Trading systems Volume Profitability	Robust systems including scalable Ultra Trade by InfoTech Became profitable after 5 years Virtually no trade defaults
12 th March	Central Securities Depository	Mr. Stephen Tetteh - CEO	Settlement capabilities Risk management IT systems	Very efficient, including scalable Millenium Tech IT systems Capable of T+0 real time settlement Forward looking management (adding stock margin capability)
11 th March	The Securities and Exchange Commission	Alexander Williams-DDG	GCX regulation	Draft CX regulations are satisfactory Likes GCX SRO overseen by SEC Sees need for capacity building at SEC and market participants

11 th March	UNDP	Mrs. Christie Ahenkorah	GCX history	Believes GGC WRs is scalable Points to slow growth of GSE
12 th August	GGC	G Ansah - CEO, K Akuffo - COO	Status of WRS	Have expanded participating warehouses; provided updated volume data and history of WR trading; gaps are passage of WR draft bill, market recognition of the value of WRS (demonstration effect of deposits valued at a premium), broader familiarity of GSA standards by farmers, approval of rules and regulations (they predict 5-6 months) and indemnity fund
14 th August	Ghana Rice Inter-professional Body	J Amoro - President	Rice standards	Believe rice is a good candidate for CX trading; rice varieties and quality can not be readily inspected at a warehouse gate
14 th August	IFPRI	S Kolavalli	Trading prospects	Believes steps to WR trading are clear but not imminent
18 th August	MoFA	G Kwadzo	Production data	Provided direction to 2013 agricultural production
19 th August	GAPFA	V Norgbey - MD	WR issuance/extinguishment mechanics	Described a recent WR trade; title and quality were acceptable however both parties had a broader relationship so therefore

				not classic anonymous trading
19 th August	CCH	A Aning	Role of market queens or aggregators	Believes there is demand for the quality and pricing premium that formal trading provides; thinks market will re-orient to cash crops when CX is operational; very knowledgeable about WRS rules; thinks contract structure on an exchange will maintain role of market queens and aggregators; thinks an alternative to WR indemnity fund could be CM with AA credit rating
19 th August	Premium Foods	T Gambrah - MD	Requirements of industrial buyers	GSA commodity standards are satisfactory to industrial buyers; WR trading at GGC is successful but somewhat redundant where supply chains are so short
26 th August	GGC	G Ansah - CEO, K Akuffo - COO	Mechanics of WR trading	Reviewed commodities, parties, quantities of every trade so far at GGC; current trading is completely manual, subject to human error, and not scalable, although all trades have settled properly; frustrated that GCAP financed warehouses have not joined the GGC WRS; anticipates a need for a deposit indemnity fund or alternative

31 st August	EcoBank	J Oware - Gestionnaire	GCX funding	It appears that they are keeping a very tight rein on their participation in GCX; funding is contingent on milestones that apparently have not yet been met, implying that they have not made any investment to date; believes an operating CX will draw volume to justify itself; gaps are publicity to explain need for CX, education of participants and greater warehouse capacity
4 th September	USAID	F Sands	Report of findings	Status of WRS; previous WR trading; need for WR rules and regulations – role for Sidley Austin pro bono offer; need for book entry WR for scalability; deposit guarantee fund – possible role for Development Credit Authority

7.0 Standards and Volumes of Commodities

As described above the GSA has established commodity standards that suit the market. This is indicated by, among other things, the acceptance of WRs (which incorporate the GSA standards) by processors and industrial buyers. In the informal market these standards are not necessarily maintained and may not be widely known. As a result producers are not aware of the premium they could obtain if they meet the standards and demonstrate their quality through receipting.

Estimating the volumes that could pass through a WRS and trade through a commodity exchange is inexact. It is likely, at least initially, to be a subset of the formal market where trades meet quality standards and are of meaningful size. An estimate can be extrapolated from gross production figures and from exchange trading in other markets.

8.0 Analysis of Sustainability

Because of the high fixed cost of a commodity exchange it can sometimes take years to reach volumes and revenues to cover those costs or achieve critical mass. For example the Ghana Stock Exchange operated for five years before it became profitable.

The Natural Resource Institute (NRI) in its report for the Securities and Exchange Commission developed a forecast of revenue and expenses, as well as the needed capital investment for an exchange. They estimated that the fixed operating cost of the exchange would be just over \$2.1 million upon achieving scale. On this basis they believe breakeven would be achieved in the third year.

In the NRI revenue forecasts approximately 1/3rd of forecast revenue is from warehouse receipt fees, a business line that may accrue to others, such as the GGC. They state that breakeven occurs when 9% of the formal agricultural market is exchange traded. For comparison the Ethiopia Commodity Exchange has approximately 11% market share, with the subsidy of mandatory exchange trading for coffee.

Compare the NRI operating budget of approximately \$2 million to the actual costs in the Ethiopia case. As described above, the total expense in the most recent year at ECE was ETB 222 million, which equates to approximately \$10.8 million. With such a cost structure an exchange in Ghana would need to achieve nearly a 50% market share in order to break even. To put this in perspective, NRI estimates the total formal commodity market at \$745 million. They predict trading volume (the value of the commodities as opposed to the fee income from that trading) in the third year of \$80.9 million or 11% market share. A forecast by Eleni in August 2013 expected third year trading volumes on the exchange of \$696 million.

Fee income to exchanges as a percentage of volume ranges from a very efficient 0.61% on CME (US) to 1.23% on ECE (Ethiopia). Assuming that an early CX in Ghana will be somewhat inefficient due to low volumes, its fee income could be 1.5% of trading. As fees climb as a percentage of trading, volume will start to move back to the informal market. If NRI is correct in its operating budget of \$2.1 million that suggests that a CX would require USD 140 million in trading to break even. If costs are greater, then the breakeven volume increases in tandem. At current exchange rates USD 140 million represents GHS 525 million and this is a key number to remember in considering the following discussion of the formal market.

8.1 Context of Formal Market

A more granular approach is to consider individual commodities and the anecdotal indications of how they are distributed. Recent production volumes and values of individual key commodities are shown in the **Appendix 1**.

Maize, sorghum and soy appear to have the best near term potential for formal trading. In this context the formal market is defined by market participants as commodity traded where at least one party is of industrial scale. Maize, sorghum and soy offer volume, even after subsistence consumption and post-harvest losses, and are suitable for testing to meet the needs of anonymous transfer.

Rice may not be appropriate in the near term because production is fragmented into many varieties. The Ghana Rice Inter-Professional Body (GRIB) estimates that the largest product, “Jasmine 85” fragrant rice, represents only 20% of the total market. Further, testing of rice at the warehouse loading dock may not be sufficient as GRIB indicates that key supply chain processes that determine quality may not be apparent to testing at such a late stage.

According to the Ministry of Food and Agriculture Statistics Research and Information Directorate (SRID) 2014 maize production totaled 1,762,000 metric tons. The Institute of Statistical, Social and Economic Research at the University of Ghana (ISSER) estimates that subsistence consumption and post-harvest losses represent 45% of production. The Esoko surveys indicate average wholesale prices in 2014 of GHC 890 per MT. After deducting subsistence consumption

and post-harvest losses this suggests a formal market potential of GHC 862.5 million for maize. The GGC estimates that 401 MT go to animal feed manufacturers, 249 MT go to processors (for industrial end users), and 50 MT go to institutional buyers for food consumption. The rest of the market is informal and presumably less demanding and not likely to value the WRS quality guarantee or exchange trading.

Soy bean production in Ghana totaled 138.7 thousand metric tons in 2013, down from 151.7 thousand MT in 2012. MoFA reports that the average price paid per metric ton at the farm gate was GHC 750 in 2013, and the average LBC (aggregator) price paid was GHC 850. ISSER estimates post-harvest losses and subsistence consumption at 20% of production. Therefore at the LBC wholesale level this indicates a total formal market value of GHC 94.3 million, out of total production value of GHC 117.9 million. Of the market surplus, the balance after post-harvest losses and subsistence consumption, nearly all soy production goes to actors that would be logical participants in a WRS and CX system. GGC estimates that 46% of the surplus is sold to Ghana Nuts, 36% to other oil seed processors and the balance to feed mills. These are the type of participants likely to value the quality guarantee of a WRS.

Sorghum has good potential as a cash crop but has not recently been marketed as such. According to the Food and Agricultural Organization of the UN (FAO) only 17% of sorghum production reached processors in 2013. This suggests the formal market for sorghum may be in the area of GHC 48 million. Most of the production is utilized for subsistence consumption, with 16% in post-harvest loss. However there is demand for sorghum by brewers, who have in the past imported the commodity.

This analysis suggests that a CX will live or die entirely based on the maize crop. The smaller production of rice, soy and sorghum could be an important incremental business but not sufficient alone to support an exchange. Sorghum could be an example where crop production evolves in reaction the example of the cash market. Several knowledgeable market participants have opined that a formal cash market will change farmer's behavior to produce more cash crops. Fortunately the maize market could sustain an exchange on its own. If the NRI operating expense forecasts are correct a CX could break even if approximately 60% of maize is traded through the exchange. Perhaps any shortfall could come from rice, soy and sorghum.

Appendix 1: Annual Production of Selected Food Crops in Ghana

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Maize ('000MT)	1158	1171	1189	1220	1470	1620	1872	1683	1950	1764
Average price GHC per MT	214.53	330.47	231.61	266.99	491.27	541.97	487.4	651.19	870.27	741.01
Value of production GHC ,000	248,426	386,980	275,384	325,728	722,167	877,991	912,413	1,095,953	1,697,027	1,307,142
Millet ('000MT)	144	185	165	113	194	246	219	183	180	155
Average price GHC per MT	224.52	403.1	422.35	412.72	638.41	766.33	677.38	765.37	1233.79	1439.4
Value of production GHC ,000	32,331	74,574	69,688	46,637	123,852	188,517	148,346	140,063	222,082	223,107
Sorghum	287	305	315	155	331	351	324	287	280	257
Average price GHC per MT	227	387.57	327	326.05	519.55	624.64	659.3	780.52	974.67	1094.94
Value of production GHC ,000	65,149	118,209	103,005	50,538	171,971	219,249	213,613	224,009	272,908	281,400
Cassava	9739	9567	9638	10218	11351	12231	13504	14240	14547	15990
Average price GHC per MT	87.39	112.79	107.97	111.31	152.75	189.5	223.57	220.7	336.81	499.65
Value of production GHC ,000	851,091	1,079,062	1,040,615	1,137,366	1,733,865	2,317,775	3,019,089	3,142,768	4,899,575	7,989,404
Cocoyam	1716	1686	1660	1690	1688	1504	1355	1299	1270	1261
Average price GHC per MT	195.22	220.95	248.92	293.99	349.28	409.14	509.15	587.4	836.9	1074.27
Value of production GHC ,000	334,998	372,522	413,207	496,843	589,585	615,347	689,898	763,033	1,062,863	1,354,654
Plantain	2381	2792	2900	3234	3338	3563	3538	3619	3556	3675
Average price GHC per MT	231.39	230.92	269.65	302.72	340.1	433.85	554.11	558.65	764.92	900.84
Value of production GHC ,000	550,940	644,729	781,985	978,996	1,135,254	1,545,808	1,960,441	2,021,754	2,720,056	3,310,587
Yam	3892	3923	4288	4376	4895	5778	5960	5855	6639	7075
Average price GHC per MT	204.88	262.67	265.77	292.27	380	462.54	507.91	580.1	763.92	907.92
Value of production GHC ,000	797,393	1,030,454	1,139,622	1,278,974	1,860,100	2,672,556	3,027,144	3,396,486	5,071,665	6,423,534
Rice ('000MT)	242	237	250	185	302	391	492	463	481	570
Average price GHC per MT	416	514	514	580	896	1052	372	432	526	116
Value of production GHC ,000	100,672	121,818	128,500	107,300	270,592	411,332	183,024	200,016	253,006	66,120
Source: Ministry of Food & Agriculture										