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e-Agri Transport Network – Ghana

Albert Yeboah Obeng

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Albert Yeboah Obeng

Foresight Generation Club, Ghana

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The Technical Centre for Agricultural and Rural Cooperation (CTA) is a joint international institution of the African, Caribbean and Pacific (ACP) Group of States and the European Union (EU). Its mission is to advance food and nutritional security, increase prosperity and encourage sound natural resource management in ACP countries. It provides access to information and knowledge, facilitates policy dialogue and strengthens the capacity of agricultural and rural development institutions and communities.

CTA operates under the framework of the Cotonou Agreement and is funded by the EU.

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About the author

Albert Yeboah Obeng is the National Coordinator for the Foresight Generation Club, a non-governmental organisation based in Ghana. The Club is involved in innovative agricultural projects designed to protect the environment while promoting sustainable development. Albert has successfully designed and coordinated many projects for fresh graduates and young adults, including 'eAgriculture Employing Youth and Young Adults in Ghana'.

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Please address comments on this Working Paper to Benjamin K. Addom (addom@cta.int), Programme Coordinator, ICT, at CTA.

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Introduction

The Ghanaian economy is basically agrarian; the agricultural sector contributes to 40% of the gross domestic product. The government earns huge foreign exchange from agriculture products and produce and it employs a large sector of the Ghanaian population.

Figure 1. At the main Nkoranza Ghana market centre, during one of the market days where foodstuffs are being sold.

The lack of an effective road network to transport agricultural produce from farms to cities and buyers centres is a major threat to food security in sub-Saharan In many cases, harvested food crops go bad due to late access to transport and lack of proper storage facilities at the farms.

The Ghana National Transport Access Survey conducted by the Statistical Services of Ghana shows important household information for all the 10 regions in Ghana and highlights the challenges facing farmers in the producing regions in Ghana (Table 1).

Variables

Bad roads in rural and farming communities in Ghana are a source of hunger, poverty and hardship; this is more visible during the rainy seasons. The farmers' inability to pay high prices for the cost of transporting agricultural produce from their farms to villages and markets is a major annual problem facing subsistence farmers across Ghana.

Annual appeals and requests from farmers for support from national government representatives and agencies in repairing roads and in providing vehicles to transport their agricultural produce has received no response. In most developing and African countries there are very limited resources available and other issues such as health and education often get priority for government spending. The government's response is that farmers will have to find their own solution to their transport challenges; this effectively means that farmers will have to live with such problems for many years and maybe decades to come.

Table 1. Household information for all 10 region in Ghana

Value	Region	Number of cases	Percentage
1	Western	490	10.8%
2	Central	317	7.0%
3	Greater Accra	105	2.3%
4	Volta	285	6.3%
5	Eastern	322	7.1%
6	Ashanti	535	11.8%
7	Brong Ahafo	432	9.5%
8	Northern	841	18.5%
9	Upper East	715	15.7%
10	Upper West	508	11.2%

Source: Market access for agricultural produce in Ghana
Note: These figures indicate the number of cases found in the data file. They cannot be interpreted as summary statistics of the population of interest.

Project objectives

The main objectives of the e-Agri Transport Go Network are:

- to provide a viable transport access to farmers in transporting farm produce from their farms to villages and selected market centres; selling produce will boost the economic standing of the farmers and residents in our projects catchment communities
- to provide innovative marketing of the agricultural produce through access to the network of marketing centres we deal and work with across Ghana as rural farmers often do not have the required capacity to sell and market their farm produce.

The lack of accessible and better means of transportation for farmers has been a major driving force in the design and implantation of this initiative to address this problem.

Non-availability of direct and indirect marketing channels for farming and agricultural produce in most farming and agricultural producing areas in Ghana has motivated us to provide the same through this project.

Policy and public investments

Generally the lack of investments by national governments in sub-Saharan Africa and other developing countries including Ghana are the result of government policies which do not include infrastructural development such as building key access roads in rural farming towns and villages in the national development road maps; this is to the disadvantage of farmers in

producing areas and has a larger economic impact on the affected areas and the country as a whole.

As is the practice in most developing countries, public investment and infrastructural development have largely been on the basis of electoral votes and the associated political advantage political parties could derive from such targeted areas. In rural areas, the farming communities lack the larger population numbers required by political organisations so such areas tend to be overlooked for the construction of roads and infrastructure development.

When local farmers were asked about how often transport is available in their locality for farm produce during the harvest season in Ghana the information is summarised in Figure 2 below. Figure 2 shows the difficulty they encountered in accessing transport during the rainy season (June–October) which is the period for harvesting in many parts of Ghana.

Table 2. Transport frequency during the harvest season.

Value	Category	Cases	Percentage
0		1	0.0%
1	Once	1,244	32.3%
2	Twice	1,337	34.7%
3	Three times	505	13.1%
4	More than three times	482	12.5%
5		8	0.2%
6		2	0.1%
7	N/A	273	7.1%
Sysmiss		698	

Our project, the ‘e-Agri Transport Network’ aims to innovatively improve the economic standing of farmers and the catchments communities while it works to support the national government’s goal of providing food security and better employment opportunities for young adults and residents in farming communities.

Factors affecting economic activity and produce quality

Economic activities in most farming communities in Ghana are highly dependent on the nature of the roads and road facilities in farming areas, especially in rural communities in Nkoranza, Techiman, Kintampo, Akomadan and Abofour and the surrounding towns located in the Brong Ahafo and the Ashanti regions of Ghana.

A survey conducted in the rainy season on market access for agricultural produce of farming households in Ghana by the statistical services showed the situation with regard to access to cars and vehicles and other transport challenges facing many farmers and farming communities in Ghana.

Table 3. Road access during the rainy season, Ghana.

Value	Category	Cases	Percentage
1	Motorable	874	22.3%
2	Motorable with difficulty	2,259	57.7%
3	Unmotorable	780	19.9%
Sysmiss		637	

Once a lucrative agriculture industry, the agricultural export industry in most sub-Saharan African countries is dying due to lack of access routes for export products such as bananas, pineapples and other potential vegetables destined for European and other foreign markets. Damage to such produce during transport makes them unsuitable for export; farmers are forced to selling such produce at a low cost cheaply to local markets with greater economic disadvantage to farmers which is drastically affecting the ability of many farmers in sub-Saharan Africa to expand their activities to export for better prices for their produce.

Farmers in some of our catchment beneficiary marketing and producing centres are direct victims of this phenomenon and this includes communities in Techiman district, Nkoranza district, Abofour and other catchment and surrounding communities and villages who are part of our network. It has wider economic and health implications on the lives of residents of such communities and surrounding towns.

The growth of private transport systems and innovative initiatives by other actors including our project, e-Agri Transport Network, in supporting the transport of farm produce and its onward distribution through sales at the market centres is providing a much needed economic vibrancy in our projects catchment communities in the Brong Ahafo and Ashanti regions of Ghana; in the meantime we are trying to expand the project through replication in other communities and regions in Ghana.

Limited market supply – In the mist of plenty

The abundance of high-yielding foodstuffs after harvest and agriculture produce in the farms and forests in Eastern region, Ashanti, Brong Ahafo and other regions of Ghana is not a reflection of the food shortage being experienced in many homes and communities in other parts of Ghana. There is a limited market supply in the mist of plenty of produce at the farms; this is due to the lack of transportation systems and the poor condition of roads which become unusable during the rainy seasons, forcing farmers to resort to porterage (the carrying of foodstuffs on the heads of farmers from very long distances to marketing centres).

Main difficulty in market access for agricultural produce

Some of the residents and farmers in selected areas had difficulty marketing their farm produce due to the poor condition of roads in their region and districts in Ghana.

Table 4. Road conditions, Ghana.

Value	Category	Cases	
1	No access road	120	9.6%
2	Bad road	459	36.7%
3	No means of transport	293	23.4%
4	Transport cost high	246	19.7%
6	Other	133	10.6%
Sysmiss		3,299	

Market women and female farmers who carry these foodstuffs on their heads from their farms to marketing centres can only transport relatively small quantities of food which limits the income they can earn to improve the economic situation of their families and communities.

Below is a survey of national district market access for agricultural produce by the Ghana Statistical Service in agriculture producing districts and communities in Ghana (Table 5).

The concept

A database has been compiled and created by our project team; this data is stored at our data centre and it is made up of names and mobile phone numbers of our registered members, farming associations and transport owners and drivers who are responsible for the transportation of the farm produce from the farms to the villages and from the villages to the marketing centres. Messages and alerts via text or SMS are sent out to the mobile phones of members when there is a request from any one of our members for transport and a confirmation will be sent (via our short code for confirmation) to fulfil such a request. Field agents who are responsible for the collection of such data are specially trained to serve as mobile data centre agents and they send information and details of registered members to headquarters for processing, storage and administrative purposes.

Problem statement

The challenge facing smallholder farmers and commercial farmers in most farming communities in Ghana are numerous but there are two main challenges that have been an impediment in their economic empowerment; these are: lack of timely access to vehicles for transporting the produce from the farms and villages to the marketing centres; and the high cost of transporting such farm produce and farm animals. Transporters charge high rates due to the poor condition of the roads in the dry season while the situation is compounded during the rainy season as vehicles usually break down and in many cases, the costs of spare parts and labour to fix the vehicles are passed on to farmers or market women; in some cases, the vehicles break down during the process of transporting the food produce which can become a security threat for both drivers and the market or farmers involved in the transport of such farm produce if this happens at night time.

Table 5. Market access for agricultural produce by district, Ghana.

Value	Category	Cases	
1	District 1	436	9.6%
2	District 2	424	9.3%
3	District 3	406	8.9%
4	District 4	616	13.5%
5	District 5	458	10.1%
6	District 6	426	9.4%
7	District 7	307	6.7%
8	District 8	225	4.9%
9	District 9	404	8.9%
10	District 10	218	4.8%
11	District 11	238	5.2%
12	District 12	219	4.8%
13	District 13	75	1.6%
14	District 14	39	0.9%
15	District 15	17	0.4%
16	District 16	19	0.4%
17	District 17	23	0.5%
18	District 18	0	0.0%

Note: These figures indicate the number of cases found in the data file. They cannot be interpreted as summary statistics of the population of interest.

There is no official or direct marketing mechanism for farm produce and farm animals in Ghana and most surrounding villages and towns. We need to work strategically with marketing centres and buyers to get better marketing of agricultural and farm produce to ensure adequate income is earned by the individual farmers; this will boost the economy of farming communities and villages in Ghana and the projects catchment communities and towns nationally.

Deployment of the initiative

Project field agents have been visiting prospective members to register farming associations and individual farmers who are members of our organisation and project. A group of transport and vehicle owners both in the projects catchment communities and the district capitals where the market centres are located have joined the project. We hope to facilitate

easy and cheaper transportation of agricultural produce from the farms to the target market centres across our catchment communities and towns in Ghana.

The e-Agri transport initiative goal

Our main goal in the design and implementation of this project is to provide a locally designed solution to meet a pressing transportation and marketing of farm produce problem of our farming communities in Ghana while we also seek to replicate the concept in other African and developing countries reliant on agriculture for commercial and subsistence levels.

As part of our initial study for this project, we did a survey to get reliable data on the main purpose of engagement in agriculture for residents and citizens in our projects catchment community.

Table 6. Types of cropping practised, Ghana.

Value	category	Cases	Percentage
1	Commercial crops mainly for export	384	9.8%
2	Commercial crops for both export and domestic market	309	7.9%
3	Food crops for export market	11	0.3%
4	Food crops for domestic market	185	4.7%
5	Both for domestic market and own consumption	2,306	58.6%
6	Food crops for own consumption	737	18.7%
96	Other	3	0.1%

The adoption of basic and user-friendly technological applications in agriculture is key to the increase in production, reduction of post-harvest loses, provision of better marketing of farm produce, creation of direct and indirect employment opportunities in the catchment areas whiles ensuring that the supplied farm produce are in a healthy state for buyers and consumers in implementing communities in Ghana.

While the project seeks to address particular challenges facing farmers and vehicles owners in the catchment areas, the project aims to make profits and earn some profitable income on the service we are providing to the farmers and the community at large.

Impacts

The impacts of this project have been very positive, with important measurable results in the catchment communities and implementing areas in Ghana. The problem of locating and finding suitable buyers for selected farm produce including farm animals has been solved by the project. In the Ashanti region and the Brong Ahafo regions, farmers have prior information about their produce from across districts; they are getting good market prices for their produce which is bringing much needed income to farmers and improving their

economic situations. This is creating direct and indirect employment opportunities for other actors who are import stakeholders in the agriculture industry such as trucks responsible for short distance journies.

Replication and sustainability

Linking farmers to market centres on time is a wider challenge facing farmers across Africa and in other developing countries. The lack of vehicles to facilitate the timely transportation of agricultural produce from farms to villages and to marketing centres remains a major challenge to farmers in Africa and the cost of transporting such produce has been a major deterrent to young adults who would have liked to venture into agriculture as a full-time business. This project is of greater importance to many African and developing countries whose economies are dependent on agriculture and do not need huge funds to initiate such a project. In order for such a project to be successful, we need to build important partnerships, develop good management skills and the required technical information and communications technological skills.

Multi-stakeholder partnerships

Agri Transport aims to work in collaboration with key stakeholders in its catchment communities. Such a partnership is important for its success and sustainability; among our partners are the district assemblies in the catchment communities, chiefs and elders, Unions of Transport Owners, heads of market centres and leaders in the catchment communities and towns whose contributions has included tools, logistics and transport assistance.

Farming/Agricultural-based associations and group benefits/advantages

During the project's implementation and replication in catchment communities across regions in Ghana, it became clear that farmers who tended to join associations and form groups derived many benefits from doing so. They were able to negotiate better for transport cost for their members of the associations; they got ready corporate buyers for their farm produce which helped to prevent high post-harvest losses (as most of these farmers did not have adequate storage facilities and spaces).

A practical example was when the Ghana Free School Feeding Programme which in May 2007 came to an agreement with a group of 25 farmer-based groups in the WA East District of the Upper West Region of Ghana to buy 80% of the production of the group of farmers in that association; this was a big boost to the economy of the local areas.

Figure 2. Schoolchildren from Ghana benefiting from the effective production and food marketing innovations of the e-Agri Transport project.

Financial viability

The individual farmers and farming associations who are members of our network are required to pay a registration fee to become a member of our project and to benefit from our services; membership cost are also levied on owners of vehicles and drivers as members of our network As the project is highly SMS-driven and uses mobile communications and selected ICT tools, our project is also involved in the sales of phone cards, call credit and associated materials to enhance our income generation to sustain the project and make profits to achieving a break-even point of self reliance by 2016.

To expand our financial generation sources, the project is currently working to advertise and market agricultural products such as fertilisers and farming inputs (including tools such as pumping machines, weeding chemicals and pesticides) to farmers and subscribers of our network to generate further income for the project. Work on this is very advanced.

We have also learned of funding for start-ups and projects designed taking into consideration employment creation for youth and young adults in agriculture from the Government of Ghana and we are currently working to access these funds; we are confident that these funds will boost our expansion and ensure our sustainability while improving our prospects of reaching our break-even target of profitability.

Currently we are seeking to expand our services beyond agricultural products to other challenging sectors in Ghana to generate additional income; there is also interest in replicating the project regionally and nationally.

Lessons learned

Among the most important lessons this project has learned was the benefits of the use of volunteers and interns in start-ups; we found it is a useful way of recruiting qualified project personnel at a very low cost; the individual provides a useful expert service to the project while he or she gains the much needed working experience and working exposure demanded by employers.

A multi-stakeholder partnership is very useful for a new project with scarce financial resources, logistics and infrastructure to get the support and assistance it needs (including skills transfer).

There is a real need for project managers of such ICT projects to have skills and experience in human resources, project management and in the application of ICT tools in such projects. These skills are vital to the success of such a project and people management experience is vital to its longevity and profitability.

Key agricultural facts

- Only 25% of the available land area is under cultivation.
- Small-scale farmers (using shifting cultivation, no tillage or irrigation and little fertiliser) account for about 80% of agricultural production.
- The average farm size is less than 1.2 ha.
- Women are responsible for 55–60% of total agricultural production. They are especially predominant in food production and processing. They also supply labour on most farms.
- Men predominate in selected crop production including cocoa farming, where there is individualised land ownership.
- About 6,000 out of 2,740,000 farm households (0.22%) used irrigation in 1998/99. About 20% of households used fertilisers. About 10% bought seeds for planting (Ghana Statistical Service, 2000).
- Fertiliser use in Ghana is about 8 kg per ha; the average for developing countries is 60 kg per ha.
- Post-harvest losses are 20–30% of harvested produce.
- Storage losses range from 8% after 1 month to 20% after 4 months of storage.
- Of about 22,700 km of feeder roads, only 40% are classified as good.
- The Medium-Term Agricultural Development Plan of the 1990s aimed to rehabilitate 1,200–2,000 km of roads a year. Annual performance is poor, at only between 212 and 1,080 km.
- About 90% of farm produce is carried from farm to village mainly on the heads of women and children.
- Farmers sell about 80% of their marketed surplus within 4 months of harvest.
- While productivity in the livestock sector is low, Ghana imports about US$100 million of livestock and livestock products a year.
- The meat yield of local livestock is about 20% of that of other breeds. Lack of access to high-yielding breeds is a major constraint.
- Over 80% of poultry in Ghana is a local breed that produces about 100–150 eggs a year, compared to 180–250 eggs from other breeds.
- Currently, there is one extension officer to 2,500 farmers.
- Ghana’s forest cover has diminished from 8.2 million ha at the start of the 20th century to 1.7 million ha in 2001.

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Contact us
CTA
PO Box 380
6700AJ Wageningen
The Netherlands

Tel: +31 317 467100
Fax: +31 317 460067
Email: cta@cta.int

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