

INTRODUCTION

The agriculture sector dominates the Ghanaian economy in terms of income, employment (comprising 60% of the labour force), food security and export earnings. Although Ghana is one of the world's leading producers and exporters of cocoa beans, the sector is highly vulnerable to climate change and variability, particularly from variations in rainfall patterns. It is projected that increased temperatures and variations in rainfall patterns from climate change will have severe impacts on the sector. Some effects can be seen already now. Increased uncertainty in rainfall patterns are currently distorting farming cycles, lowering yields and creating a vicious cycle of hunger and poverty. In an effort to transform the structure of the economy and alleviate poverty, the government has stated that it regards agricultural modernization and increasing smallholder farmers' market orientation to be a key step in meeting this goal.

Ghanaian agriculture is dominated to over 90% by smallholders farmers. They only have limited access to irrigation, but most importantly have limited farming knowledge. Ghana's agricultural extension officer-to-farmer ratio is 1:2000, representing a thinly stretched service restricting the delivery of key extension services. It is estimated that over 95% of smallholders suffer a huge agricultural extension gap resulting in lower yields. However, there exists a high rate of ownership of mobile phones among smallholders, with most owning more than one phone. This high level of ownership created an opportunity for Viamo (previously VOTO Mobile) to leverage funding from the ADMIRE Project to develop a service that will provide mobile extension services to smallholder farmers through an Interactive Voice Response (IVR) platform that bridged the gap between farmers and extension officers.

PROJECT OBJECTIVE

The ADMIRE project aimed to build resilient livelihoods and maintain productive crop yields of smallholder farmers under climate change through the introduction of a mobile phone-based agricultural extension service and reliable weather information provided through a local technology company, Viamo.

RESULTS AND NEXT STEPS

Working together with Viamo over a two-year period, the project targeted approximately six thousand semi-commercial smallholders in nine regions through six local value-chain actors representing financial institutions, NGOs and outgrowers. The crops that were chosen for the Viamo service included maize and rice, which are two of the most consumed staple crops in Ghana, and cocoa being the country's main cash crop.

Project results show that the provision of mobile agricultural extension services on agronomy, market prices and linkages - coupled with weather updates via voice message in the farmers' local language - have led to improved yields for farmers involved in the project. Despite the higher costs associated with the adoption of new methods and techniques (e.g. use of various agrochemicals, ploughing techniques and improved seed varieties), the service provided prevented farmers from losses associated with climate change, compared to farmers without access to mobile extension services. The increased revenue translates to an increased disposable income of between USD \$34-\$88 per farmer, which is an increase of around 30%. Such an increase thus has a considerable impact on their livelihoods.

Since the completion of the ADMIRE project, several value-chain actors have continued to extend VOTO's mobile extension services to their clients, resulting in that now around 25,000 farmers use the services. Moreover, Viamo has attracted funding from numerous sources to continue to develop the service. An example is that Viamo developed a public info-line service called 3-2-1 that allows farmers who are on Vodafone's network to access free extension service and weather alerts once they dial 321. This service is delivered in partnership with the Vodafone Foundation, Ghana. Viamo is constantly exploring ways to make the business model commercially viable. In addition, Viamo is engaged in discussions with several financial institutions in Western Africa to provide the service to their smallholder clients.

IMPACT HIGHLIGHTS

	Beneficiaries	Investment	Stakeholders
Currently	25,000 farmers	367,000	7 integral partners, 18 total actors engaged
Total potential if up-scaled and replicated	5,500,000		

SUSTAINABLE DEVELOPMENT GOALS



Providing a service which allows smallholder farmers to increase their yield, and thereby their disposable income.



Increasing agricultural yields of food crops which allows the farmers to feed their families, but also through the increased disposable income.

THE TECHNOLOGY - MOBILE BASED EXTENSION SERVICES

VOTO Mobile provided weekly extension services on agronomy, market prices and links, coupled with weather updates via voice messages in the farmers' local language in an effort to increase farmer yields and increase their climate resilience. Agronomic tips were also given, covering site selection to harvesting and post-harvest handling, market prices in community, district and regional markets, and environmental protection tips on bush burning. The service also included weather forecasts which were issued in a timely fashion for at least five days of each week.

This free service provided the first opportunity for many farmers to acquire new technical information about agricultural practices (e.g. the correct time to apply fertilizer and other agrochemicals), and thereby change their behaviour and make informed decisions about which farming practices to employ. Through using existing infrastructure, and technology (mobile phones) which the target group already has, this model can be up-scaled relatively easy. Another impact was that many of the financial institutions

involved used the service to send out reminders to farmers about loan repayments and thus reduce farmer default rates and subsequently increase their borrowing capacity.

THE BUSINESS MODEL FOR CLIMATE ACTION

The service generated in the business model consists of the tailored information of how to grow certain crops combined with a weather service system. The proposed business model works through providing the service to smallholder farmers via value-chain actors, who are the ones who pay for the service.

Starting with the farmers, pre- and post project surveys indicate a 30% to 80% increase in yields per acre, which translated into USD\$75 to \$125/acre in revenue. The variations in yields were due to the extent of uptake of the intervention information by farmers, as well as variability in weather patterns. Moreover, in comparison to farmers without access to the mobile extension service, , who did not incur higher costs due to the adoption of new interventions such as the use of various agrochemicals, ploughing techniques and improved seed varieties, the farmers adopting the new knowledge fared better economically. At the end of the intervention, many of the described that the benefits outweighed the costs, and they also promoted the service through their farmers' groups and family networks.

Viamo recruited farmers through value-chain actors with an existing relationship with the farmers. In the baseline scenario, value chain actors spend a considerable amount of resources finding and grooming farmers and farmer's groups. This includes that value chain actors hire and train field officers, to scout for farmers within a certain geographical location, and who cultivate a specified crop. After the farmers are identified, they are trained and organised into groups. There is a considerable effort which goes into winning the farmers' trust. With the addition of the mobile based extension service, the value chain actor can easier communicate with the farmer, and improve their capacity in a more efficient manner.

This constitutes the value added for the value chain actor. Up till now, the value-chain actors who partnered on the ADMIRE project received the service pro bono, as a trial phase from Viamo to their farmers, but the ambition is to start charging for it. This business model is unique, as the mobile extension services that are currently available in Ghana often require farmers to pay directly to the service providers rather than to value-chain actors.

RESOURCES

Final Project Report - The final report including description of the intervention and economic calculations of its impact.

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