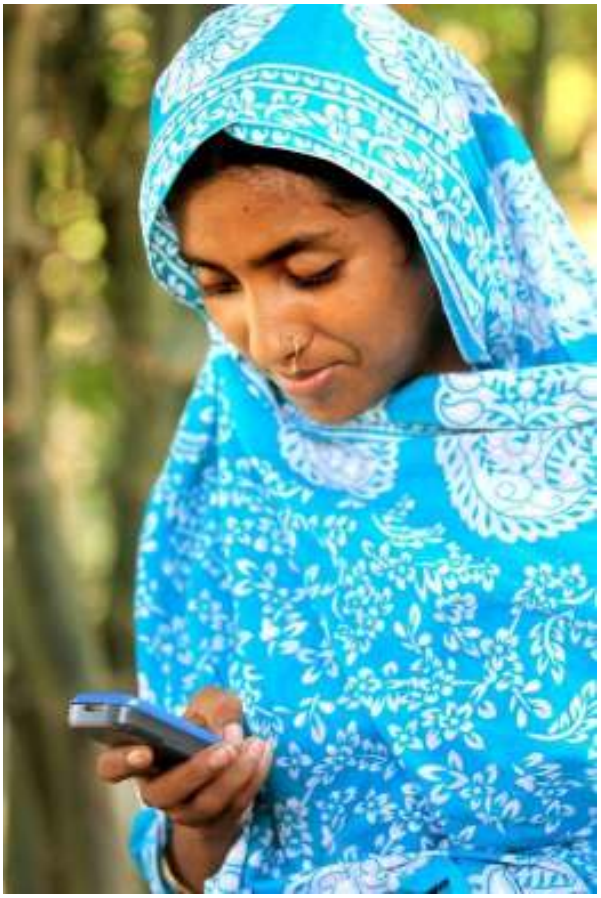
Chars Livelihoods Programme

Reducing Extreme Poverty on the Riverine Islands of North West Bangladesh

The use of mobile technology and its application in CLP-2

February 2014
Innovation, Monitoring and Learning Division



Haneef C, Pritchard M, Davies W, Bird J, Islam N, Barrett A

MAXWELL STAMP PLC

Australian Aid

UKaid from the British people

Contents

Acronyms

ACF	Action Against Hunger
AIS	The Agricultural Information Service
AMIS	Agricultural Market Information System
ATP	Asset transfer programme
BBCWST	The British Broadcasting Corporation World Service Trust
BFES	Bangladesh Friendship Education Society
BG	Business Groups
BIID	Bangladesh Institute of ICT in Development
BMD	Bangladesh Meteorological Department
BP	Business promoters
CBC	Chars Business Center
CDMP II	Comprehensive Disaster Management Programme Phase II
CIC	Community Information Centers
CLP/CLP-2	Chars Livelihood Programme/Phase two
CSK	Char Shasthya Karmis (community health workers)
DAE	The Department of Agricultural Extension
DFID	U.K. Department for International Development
DLS	The Department of Livestock Services
EMA	Event Mobile Application
EWS	Early Warning System
FFWC	Flood Forecasting and Warning Center
GUK	Gana Unnayan Kendra
IML	Innovation Monitoring and Learning Division
IVR	Interactive Voice Response
LSP	Livestock Service Provider
MAMA	The mobile alliance for maternal action
MLU	Markets and Livelihoods Unit
MoA	Ministry of Agriculture
MoF&L	Ministry of Fisheries and Livestock
NGO	Non-Governmental Organisation
SHIREE	Stimulating Household Improvements Resulting in Economic Empowerment
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
VDC	Village Development Committee
VLSGs	Village Saving and Loans Groups
WFP	World Food Programme
WHO	World Health Organisation

Executive Summary

Between 2000 and 2012, the number of mobile subscriptions worldwide grew from one billion to six billion and, according to figures from the World Bank, five billion of these are owned by people living in developing countries.[1] Over 80% of the world's population live in range of a mobile network.[2] Mobile phones are now being used to increase the efficiency and inclusivity of development and humanitarian programmes worldwide.

Realising this and the potential scope for mobile technology to enhance development programmes, in 2013, CLP began investigating the use of mobile technology and its potential application within the CLP.

The objectives of the report were to:

1) Research mobile phone technology services worldwide and evaluate their use in development programmes
2) Provide a detailed review of products and services in Bangladesh with a focus on five key areas:
a. Primary health care, family planning and nutrition
b. Market information
c. Agricultural extension: livestock and crops
d. Microfinance
e. Disaster resilience: early warning systems and needs assessments
3) Assess the feasibility of introducing mobile technology into one or more components of the CLP.

On completion of this research, recommendations were made to CLP under each of the five key areas. Throughout these reviews, added value to existing CLP programmes and the sustainability of each service were noted as key areas to consider when deciding on the recommendations. The recommendations made in each report area should now be followed up by the relevant staff at the CLP Secretariat.

The recommendations are as follows:

Primary health care, family planning and nutrition

- A needs assessment should be conducted to assess the potential usefulness and benefit of the *Aponjon* service to the *char* residents in our working areas
- Contact *Aponjon* to understand options relating to: (1) the potential benefit to *char* women; (2) the implementation of the service, including the possible reduced cost to women of low socio-economic status; and (3) required levels of engagement both from *Aponjon* and CLP
- Dependent on levels of engagement required, a pilot can be decided on with the potential to test which level of engagement is most well received by the *chars* people
- CLP should communicate with other NGOs in Bangladesh who are using the service e.g. The Smiling Sun and BRAC.

All recommendations will be headed up by CLP's health PHD and health co-ordinator.

[1] The World Bank. *Mobile Phone Access Reaches Three Quarters of Planet's Population*. Available from: http://www.worldbank.org/en/news/press-release/2012/07/17/mobile-phone-access-reaches-three-quarters-planets-population [Accessed 26 June 2013].
[2] Grameen Foundation. *Why Mobile?* Available from: http://www.grameenfoundation.org/what-we-do/mobile-phone-solutions/why-mobile [Accessed 26 June 2013].

Market information

- None of the current options should be pursued at present, because there are no mobile-based market information services which offer significant value to *char* milk, meat and fodder producers
- The market information products and services available in Bangladesh are constantly changing. As such, CLP should keep abreast of new developments and scope their relevance for *char* producers.

Agricultural extension

- CLP should contact Banglalink to assess the likelihood of them coming to our working areas and promoting the service themselves
- CLP should make core participants aware of the existence of Banglalink's helpline service and the services it provides. CLP should promote the use of the service though CLP training sessions and demonstration groups
- CLP should use Village Development Committees (VDC) and Chars Business Centres (CBC) as a base for promoting the service. VDCs, in particular, already have contact information of various services available to the *char* people and so it seems an appropriate reference point for agricultural extension service information. VDCs are also linked with influential persons in the community who could pass on the information within their village. CBCs would be an ideal platform to inform farmers directly about the service
- Services are always changing and as such CLP and Maxwell Stamp should keep up to date on new developments in this area. Relevant staff including those in CLP's MLU should sign up to the *e-agriculture* newsletter. This could influence any further direction that could be taken regarding mobile technology in agricultural extension.

All recommendations will require follow up by the Markets and Livelihoods Unit.

Microfinance

- CLP should ensure all NGOs providing micro-credit to *char* dwellers are aware of mobile cash transfers as an option for distributing and collecting loans
- CLP should inform all NGOs providing micro credit that mobile cash transfers have some potential to reduce transactions costs, but this is not guaranteed
- CLP should advise NGOs to conduct profitability, risk and feasibility analyses for their own situation
- On request, CLP should provide information about experiences with implementing bKash stipend transfers on the *chars*, in order to assist NGOs with profitability, risk and feasibility analyses
- In December 2013, Maria May from BRAC's Social Innovation Lab made contact with CLP regarding the use of mobile money in development programmes and potential opportunities to partner. CLP should continue contact with Maria May as this may provide opportunities to partner in the future
- If an opportunity arose, there is the potential to apply for the, DFID funded, m-farmer challenge fund offered by GSMA
- In addition to this fund, CLP should keep updated on research by GSMA and the other challenge funds they offer.

Disaster resilience

- Await the final outcome of the Barrett et al. study on CLP's impact on disaster resilience, to assess the gaps with access to early warning systems. If deemed necessary, at this stage, contact will be made with potential partners of Grameenphone and Teletalk, and government agencies: the Disaster Management Bureau of Bangladesh; the Flood Forecasting and Warning Centre; the Bangladesh Meteorological Department and UNDP to gain an understanding of the possible reasons the system is not being implemented in the *char* region and discuss the feasibility of extending their programme into the CLP working districts.

1 Introduction

Between 2000 and 2012 the number of mobile subscriptions worldwide grew from one billion to six billion and, according to figures from the World Bank, five billion of these are owned by people living in developing countries.[3] Over 80% of the world's population live in range of a mobile network.[4] Mobile phones are now being used to increase the efficiency and inclusivity of development and humanitarian programmes worldwide.

Realising this and the potential scope for mobile technology to enhance development programmes, in 2013, CLP began investigating the use of mobile technology and its potential application within the CLP.

2 Methodology

This report is the result of two phases of research. Phase one comprised of initial exploratory research into the use of mobile technology for development. Research became focused on three key areas: cash transfers; microfinance; and the transfer of information. In light of the research findings, CLP's current programmes were reviewed to see if there was scope to incorporate similar models of mobile technology into the Programme's activities. Five key areas were identified within CLP: primary health care, family planning and nutrition; market information; agricultural extension; microfinance; and disaster resilience. It was necessary to review, in more detail, the products and services that exist in Bangladesh and ascertain the relevance and applicability of the services to CLP. A number of recommendations were generated based on each of the five areas.

Section three of this report will provide an overview of the research findings regarding the global use of mobile technology in development. Section four will summarise CLP's experience with mobile technology so far and section five will provide a summary of the reviews produced for each key area. Detailed reviews for each can be found in the Annex.

3 The use of mobile technology in development

3.1 Cash transfers

Cash transfers using mobile technology began as a way of creating a fast and secure service for financial transactions. In 2007, M-Pesa was established: a Vodafone and Safaricom mobile money transfer and microfinance service in Kenya. The service allows users to: deposit money into an account; transfer money; make bill payments; and withdraw cash from a network agent. Since 2007, organisations around the world have been implementing programmes using mobile money in a variety of contexts using different operational models. Cash transfer programmes typically involve the distribution of mobile phones or SIM cards and periodic cash transfers that are sent to beneficiaries through their phones. Beneficiaries can *cash out* their money at dedicated stores or through trained mobile agents who can transfer the cash. Usually the whole or part amount can be cashed out allowing people to have increased security by carrying less money on them. It also presented the opportunity to save. A typical example of a cash transfer project is Concern

[3] The World Bank. *Mobile Phone Access Reaches Three Quarters of Planet's Population*. Available from: http://www.worldbank.org/en/news/press-release/2012/07/17/mobile-phone-access-reaches-three-quarters-planets-population [Accessed 26 June 2013].
[4] Grameen Foundation. *Why Mobile?* Available from: http://www.grameenfoundation.org/what-we-do/mobile-phone-solutions/why-mobile [Accessed 26 June 2013].

Worldwide's Kerio Valley Cash Transfer Project in response to the post-election violence in Kenya in 2008.[5]

Other programmes have shown the effectiveness of mobile money in a post-conflict context e.g. the World Food Programme (WFP) in partnership with Action Against Hunger (ACF) implemented an unconditional mobile cash transfer programme in Abidjan on the Ivory Coast following the 2011 elections.[6] WFP also demonstrated the usefulness of food voucher distribution through mobile transfer in their programme, working with Iranian refugees in Syria.[7]

Benefits of mobile cash transfers included a reduction in the time taken to distribute cash to beneficiaries, particularly in eliminating the need to count money each time. There were reduced security risks having the cash in digital form and an increase in cash flow which had the advantage of stimulating local market economies. In response to the north west flood of 2012, Oxfam and its implementing partner Gana Unnayan Kendra (GUK) carried out a mobile cash transfer programme to communities on the c*hars* in the Gaibandha district of Bangladesh. They found mobile cash transfers instilled a greater sense of pride as the money went straight to beneficiaries' phone via SMS and they did not have to stand in a queue to collect their cash.[8]

Some key observations were made from all these programmes regarding the limitations of using mobile technology. Mobile ownership was one such limitation. Although mobile phone ownership has been increasing over the past decade, a significant proportion of people still do not have mobile phones. Other common problems included: delays in the money reaching the phones; problems involving SIM card activation; misplaced SIM cards; and faulty chargers. In some cases people forgot their PIN numbers: in the Oxfam-GUK programme this occurred in as high as 10% of cases. It is also necessary for an agent to be available to dispense the money, however, having a high number of agents is not always achievable.[9] Literacy levels proved a constraint, as beneficiaries were not always literate. In the majority of the programmes discussed, an identification of some form was needed on collection. This step assumes that all beneficiaries have ID, which is not always the case. For those that do, there is still the risk they could misplace it and be unable to collect their money.

Initial costs of implementing mobile technology transfer programmes has been widely discussed. If mobiles or SIM cards are required, this is an immediate upfront cost. Training of recipients was also seen as an additional cost in cash transfer programmes. Initial costs of implementation was a concern in some projects however, this could be justified if the length of a programme was long enough to warrant the initial spend.

---

[5] Brewin M. *Evaluation of Concern Kenya's Kerio Valley Cash Transfer Pilot (KVCTP)*. 2008. Available from: https://www.concern.net/sites/www.concern.net/files/resource/2011/03/kvctp_evaluation_report_08.pdf. [Accessed 7 June 2013].

[6] Thomson Reuters Foundation. *WFP launches phone cash transfers to reach Ivorians*. Available from: http://www.trust.org/item/?map=wfp-launches-phone-cash-transfers-to-reach-ivorians [Accessed 18 June 2013].

[7] The World Food Programme. *WFP Launches Mobile Phone-Based Food Voucher Pilot for Iraqi Refugees in Syria.* Available from: http://www.wfp.org/news/news-release/wfp-launches-mobile-phone-based-food-voucher-pilot-iraqi-refugees-syria [Accessed 18 June 2013].

[8] Oxfam. Mobile Cash Tranfer: A study on effectiveness and efficacy. Available from: http://hotjobs.bdjobs.com/jobs/oxfam/annex%202_109.pdf. [Accessed 10 June 2013]

[9] Michaels L. *Accenture Development Partnerships It's Better Than Cash – Kenya Assessment Report It's Better Than Cash: Kenya Mobile Money Market Assessment. Accenture.* 2011. Available from: http://www.merchantpro.co/betterthancash.pdf. [Accessed 12 Jun 2013].

3.2 Banking and microfinance

According to the Grameen Foundation, lack of access to formal banking services is a common problem for 2.7 billion of the world's poor.[10] Microfinance Institutions (MFIs) operate by providing small loans to individuals in order for them to get the initial start-up they need thus, creating solutions for the poor and most vulnerable people to access financial services.

Services such as M-Shawri and KEEF in Kenya, offer loans through a mobile-based account where recipients receive and repay loans through their mobile phone.[11] Customers are able to save on their phone and transfer money, making it easier to send and receive remittances.[12] Although having the positive effect of lowering operating costs of running the MFI service, it was noted that using this service through a mobile phone did not add any more efficiency to the MFI model as it is already very successful, with most MFIs seeing high repayment rates.

3.3 Information transfer

Mobile technology has been widely used as a way of transferring information. Digitalising more traditional methods of information transfer has improved its availability, its reliability and its accuracy. This has meant that information is able to be accessed by a greater number of people in a much more timely way.

One way in which mobile technology is being used to gather information is through a Bangladesh based programme, Stimulating Household Improvements Resulting in Economic Empowerment (SHIREE) and the social enterprise *mPower*.[13] They have developed a 'Change Monitoring System' (CSM2) which allows SHIREE to monitor and manage their programmes by collecting real-time information at a household level. This system should lead to quick, easy and accurate data collection and analysis. It uses a ten-minute 'self-assessment of change' from 200,000 beneficiaries to create a 'monthly snapshot' of progress at the grassroots level. This will allow monitoring to happen more frequently and for data to be analysed through a central database as it is collected from the field.[14]

Mobile phones are also being used to monitor, gather, send and receive information and data across the sectors, including health, livelihoods and agriculture.

3.3.1 Health

Particularly in rural areas, there are a lack of trained health professionals and a lack of access to adequate health care education. Mobile technology has been adopted to improve the quality of and increase access to health care education for those most vulnerable. One area in particular is to improve pre-natal and neo-natal care. MOTECH, Aponjon and BRAC's Manoshi are all examples of services offering varying levels of health care information and advice to expectant and new mothers.[15] Services such as these typically collect details from pregnant women in order to estimate

[10] Grameen Foundation. *Mobile Financial Services*. Available from: http://www.grameenfoundation.org/what-we-do/mobile-phone-solutions/financial-services [Accessed 17 June 2013].
[11] The Economist. *Is it a phone, is it a bank?* Available from: http://www.economist.com/news/finance-and-economics/21574520-safaricom-widens-its-banking-services-payments-savings-and-loans-it [Accessed 10 June 2013].
[12] Grameen Foundation. *Mobile Financial Services*. Available from: http://www.grameenfoundation.org/what-we-do/mobile-phone-solutions/financial-services [Accessed 17 June 2013].
[13] Salahuddin T. *Using Mobile Technology to Fight Extreme Poverty*. 2011. Available from: http://www.shiree.org/wp-content/uploads/2012/02/Sept-29-Using-Technology-to-Fight-Extreme-Poverty-English.pdf. [Accessed 09 Jun 2013].
[14] Shiree. *CMS 2: Monthly Snapshot*. Available from: http://www.shiree.org/extreme-poverty-monitor/cms-2-monthly-snapshot/#.UcvhS22TNFu [Accessed 09 Jun 2013].
[15] Khabar South Asia. *Mobile technology harnessed for maternal health in Bangladesh*. Available from:

their expected delivery date, after which pregnancies can be tracked. Mothers receive information relevant to their stage of pregnancy usually through voice messages or SMS. Services can offer: reminders to attend check-ups; information on good hygiene and sanitation practices; and good diet and nutrition advice. Once the child is born, mothers will receive information regarding vaccinations required and common child illnesses. MOTECH also offers women the option to text into the service with questions and even provides money saving tips.[16] BRAC, in partnership with Clickdiagnostics, identifies pregnant women in the urban slums of Dhaka. Mobile technology is used as part of their monitoring system to enhance their data collection with the objective of improving the quality of data and reducing the amount of redundant data collected. In addition, it allows them to monitor the data in real time and increase the capacity of their community health workers who then attend to the pregnant women.[17]

3.3.2 Livelihoods

Broad based information systems exist that can provide generalised livelihoods advice. An example of this comes from the Bangladesh initiative, "*mobile ladies*" which was set up in order to link rural communities to information aimed at improving the quality of their livelihoods. The mobile ladies go door-to-door in their community and respond to people's queries by calling an information helpline that is connected to a database of information relating to common livelihood problems.[18] An educative initiative '*Janala'* funded by the British Broadcasting Corporation World Service Trust (BBCWST) and the U.K. Department for International Development (DFID) was set up to provide English language education through mobile phones. It takes the form of 3 minute short lessons that cost 3p each to receive and provides an avenue to education that people may not otherwise be able to access.[19]

3.3.3 Agriculture

One of the key ways in which mobile technology is working to improve the efficiency of the agricultural sector is by improving the accessibility and availability of real time information to farmers. Information transfer can be bi-directional: helping farmers obtain information and also provide information. Services offer different levels and quality of information. This can range from agricultural tips and advice, to best farming practices. Services sometimes have the option for service providers and producers to link with one another creating networks. The Grameen Foundation's Community Knowledge Worker Programme provides weather forecasts for up to three days in advance.[20] Daily market prices can also be disseminated allowing producers and buyers to know the best price on a given day for various commodities. An example can be seen in Zambia with the Zambia National Farmers Union providing information on a variety of commodities through an SMS-based service.[21] This can enable farmers to gain a competitive advantage within the market. It is predicted that access

http://khabarsouthasia.com/en_GB/articles/apwi/articles/features/2013/04/06/feature-01 [Accessed 11 June 2013].

[16] Grameen Foundation. *Mobile Health*. Available from: http://www.grameenfoundation.org/what-we-do/mobile-phone-solutions/health [Accessed 17 June 2013].

[17] BRAC & ClickDiagnostics. *Envisage achievement of MDGs-4 and 5 through Innovative mHealth Solution partnering with ClickDiagnostics*. n.d.. Available from: http://healthmarketinnovations.org/sites/healthmarketinnovations.org/files/BRAC-Click-Partnership-Annoucement_0.pdf. [Accessed 10 June 2013].

[18] Miller D. *id21 Insights 69: Mobile phones and development The future in new hands?* Brighton: Institute of Development Studies. 2007. Available from: http://r4d.dfid.gov.uk/PDF/Outputs/IDS/insights69.pdf. [Accessed 10 Jun 2013].

[19] Robi.com.bd. *BBC Janala*. [Online] Available from: http://www.robi.com.bd/index.php/page/view/274 [Accessed 10 Jun 2013].

[20] Community Knowledge Workers: *The Farmer's Oracle*. Available from: http://www.ckw.applab.org/section/about-ckw [Accessed 12 June 2013].

[21] GRM. *GRM International Southern Africa*: Smallholder Enerprise and Marketing Programme, Agri-business Development Component (SHEMP-ADC), SMS System.

to price information using ICT can create “increases of up to 24 percent in incomes for farmers and up to 57 percent for traders” compared to the more traditional methods of hearing price information second-hand.[22] It will also prevent farmers travelling long distances to a market where they will not make a good profit from their produce. Real-time information ensures that farmers sell for the right price and feel confident in their sale.

Information can also be collected from the field level. Acquiring data in real time could help prevent or control disease outbreaks, thus helping to save or reduce damage to crops and animals. Initiatives such as the EMPRES-I Event Mobile Application (EMA) and Epicollect, increase the efficiency and timeliness of animal disease information and the latter can even help track wide-scale vaccinations and animal treatment drives.

3.4 Conclusion

As the research demonstrates, mobile technology is being used on a local and national level to meet the needs of the most vulnerable in society. Regarding cash transfers, the added advantage to using mobile technology seems to be very context dependent and reliant on a number of factors. These include the type of programme and its duration, the literacy levels of the beneficiaries, mobile phone ownership, and agent liquidity. In health, livelihoods and agriculture, mobile technology is already playing a key role in facilitating traditional methods of providing services and in transferring crucial and up-to-date information that previously was not able to reach remote, rural locations. There are some criticisms and concerns that have emanated from the research, particularly in relation to the financial implications of using mobile technology and whether these costs outweigh the benefits. However, as with any new technology, there needs to be an adjustment phase where organisations will become aware of its limitations and work to resolve initial setbacks. In doing so, its application within programmes will become much easier. Particularly when the cost of smartphone technology decreases and the technology becomes more available and accessible, it should open up many avenues for the expansion of mobile phone services to the poor.

[22] Halewood N, Surya P. *Mobilizing the Agricultural Value Chain*. 2012. pg. 31-43. (33) Available from: http://siteresources.worldbank.org/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/Resources/IC4D-2012-Chapter-2.pdf. [Accessed 09 June 2013]

4 CLP's experience with mobile technology so far

As part of the CLP's asset transfer programme (ATP), a stipend is provided to each core participant for 18 months from the date the asset is purchased. Participants receive Tk. 600 per month for the first six months, which is intended as maintenance support for the asset. For the following 12 months, the participant receives Tk. 350 as family income support. There are no banks on the *chars* and CLP participants do not have bank accounts or saving account facilities. During July 2012, CLP-2 introduced the bKash system to support and enhance the process of transferring stipends. This system is available to each person with an electronic account registered with bKash enabling participants to receive their monthly stipends straight to their SIM.[23]

In February 2013, the Gram Bikash Foundation carried out a study with CLP beneficiaries, looking at those using and those not using bKash.[24] Of the 77 participants, 43% owned a mobile phone. Comments regarding their experience of using the service suggested that it was easier and quicker and had the added benefit of allowing them to withdraw variable amounts. Prior to using bKash, they would receive the full stipend amount in cash. Illiteracy is high on the *chars* and initially beneficiaries required assistance in handling SMS. At the time of the study, it was reported that all participants, after assistance, were able to read their PIN. However, approximately 57% still required help in order to understand messages that they were sent.[25] Occasional problems included money not being able to be cashed out, due to improper handling of the technology and cases of people losing their mobile or their SIM card. However, as an example, for the reporting month of May 2013, CLP recorded only 5 participants who could not cash out their money and only 17 participants losing or damaging their card. This was from a total number of 6,537 participants showing that this is not a significant barrier.

One general problem with using the current bKash system on the *chars* is that there are a limited number of bKash agents available. This means that, currently, the service cannot be scaled up further.

[23] Cash transfer through mobile (CTM). CLP project summary. 15 August 2012. pg 1-16.
[24] Huda, E & Uddin, M.N. Report on women's response to money transfer: A study on users and non-users of bKash in three districts of Bangladesh. Shorebank International. February 2013. Bogra, Bangladesh. Pg. 1-18.
[25] Ibid

5 Review of the potential use of mobile technology in CLP-2

A review looking at all the components of the CLP was conducted to ascertain other potential areas within CLP where mobile technology could be incorporated. This resulted in the following five key areas being identified for further review:

a) Primary health care, family planning and nutrition
b) Market information
c) Agricultural extension: livestock and crops
d) Microfinance
e) Disaster resilience: early warning systems and needs assessments

The objectives were to:

1) Provide a detailed review of mobile phone technology services and products available in Bangladesh with a focus on the five identified key areas.
2) Assess the feasibility of introducing mobile technology into one or more components of the CLP

This next section of the report will provide a summary of the reviews conducted on each area and the recommendations proposed to CLP. The recommendations will outline the next steps for CLP.

5.1 Primary health care, family planning and nutrition

People living on the *chars* suffer from poor health and under-nutrition. There is often a lack of knowledge about good health and hygiene practices and very limited or no access to adequate health care services. To address this, CLP trains paramedics to run satellite clinics that provide primary health care and family planning services to the community. Paramedics visit pregnant women and new mothers to provide ante-natal and post-natal care. CLP also trains Char Shasthya Karmis (CSKs, community health workers) who register pregnant women in their area and maintain their health information.

After a review of existing primary health care and family planning services that use mobile technology in Bangladesh, two services were evaluated in detail: 1) The mobile alliance for maternal action (MAMA) and the *Aponjon* initiative and 2) ClickMedix.

5.1.1 The Aponjon initiative

MAMA is a Global Development Alliance whose main objective is to improve the health of pregnant women and new mothers. MAMA's Bangladesh brand operates under the name *Aponjon* meaning "the close one". Women sign up to the service, after which two text or voice messages are sent per week from the 6th week of pregnancy to the 42nd week and right through to the child's first birthday. In addition, *Aponjon* allows for a secondary subscriber to also receive messages e.g. the husband or mother-in-law. Information in the messages are based on the World Health Organisation (WHO) and the United Nations Children's Fund (UNICEF) guidelines and relates to:

- good health and hygiene practices;
- how to prevent infections;
- what illnesses to be aware of;
- the symptoms to look out for;
- nutrition and vaccination advice;

- oral rehydration;
- infant feeding;
- how to look after themselves during pregnancy; and
- when to seek care for their child after birth.

This information builds on the help and advice CSK's and paramedics provide to pregnant women in our communities and as such, the information provided can be seen to complement CLP's current activities.

A significant advantage of the service is that *Aponjon* is currently partnered with NGOs in five of CLP's working districts and they are looking to expand their partnerships with other programmes. The service is not restricted to any particular mobile network, with *Aponjon* currently connected to networks that make up 98% of mobile coverage in Bangladesh. A further benefit comes from the service being able to run on basic mobile handsets. If *char* people own a mobile phone most, if not all, will be basic models. There are no restrictions regarding who can register to the service, it only requires that the *char* resident has a phone or access to a phone. Message dissemination can be via SMS or voice calls and is therefore appropriate, considering the high illiteracy levels on the *chars*. The service runs at a cost to the receiver of BDT 2.30 including VAT, however *Aponjon* provide the service for free to 20% of users considered as having low socio-economic status.

Resources required by CLP regarding time and cost will be minimal due to the content of messages having already been developed by *Aponjon* and the service already being operational. In terms of start-up, levels of engagement from CLP are dependent on the level of service available from *Aponjon's* "brand promoters" who are available to promote the service and register women. We would need to understand the level of involvement the service itself is willing to give and weigh this up against the costs and time involved in using them, over CLP promoting the service itself. If CLP's involvement is necessary, we can demonstrate the service during the satellite clinics' Health, Education and Nutrition sessions. Independent of the level of engagement needed from CLP in this initial phase, overall, its main role would be to facilitate a partnership between *Aponjon* and CLP's Implementing Organisations (IMOs).

Creating linkages on the *chars* is an important way to ensure overall sustainability of CLP's impact after it phases out. Sustainability of the service will depend largely on the success of this partnership as well as the response from women once they start using the service. It should be noted that for the service to be successful and sustainable on the *chars*, residents must be able to see the added value of the service, opposed to their more traditional ways of receiving health and pregnancy advice, e.g. from their family members or neighbours. If they do see the value in the service, switching to receive health advice digitally will involve a significant behaviour change and as such follow up with users would be necessary to help increase sustainability. BRAC is taking over CLP's health component once the Programme ends in 2016. BRAC are listed as one of Aponjon's current partners and as such if they are still working with *Aponjon* this could increase the sustainability of the service.

5.1.2 ClickMedix

ClickMedix is a tool designed to provide health workers with timely, accurate health care advice and allows them to record patient information and monitor patient records through health questionnaires. There are three important benefits of the service: it is free for those receiving health information; ClickMedix is available to provide technical support and this, therefore, would not have to come from CLP; and ClickMedix is currently looking to partner with other programmes.

The service is a downloadable application that runs on smart phones which would mean the initial investment and running costs for the ClickMedix service would be high. There would be costs required for training our CSKs to use the software, costs to purchase the phones, and costs involved in overall monitoring. Staffing resources would be required to review and tailor the health questionnaire to the specific needs of the Programme. The service would also require staffing resources for training and monitoring. Regarding sustainability, the ongoing costs involved in running the service mean that it would probably face sustainability challenges following the completion of CLP. Weighing these constraints against the added value it would bring to the Programme, it is not recommended that CLP continue with this option.

Aponjon would provide a complementary service to CLP's programme. With regards to costs involved, time taken to implement, the number of people that potentially could be reached and the benefits the service would bring, makes this service a workable option. Therefore it is recommended that we look into extending the *Aponjon* service within CLP working areas.

Recommendations are as follows:

- A needs assessment should be conducted to assess the potential usefulness and benefit of the *Aponjon* service to the *char* residents in our working areas
- Contact *Aponjon* to understand options relating to: (1) the benefit to *char* women; (2) the implementation of the service, including the possible reduced cost to women of low socio-economic status; and (3) required levels of engagement both from *Aponjon* and CLP
- Dependent on levels of engagement required, a pilot could be implemented, with the potential to test which level of engagement is most well-received by the *chars* people
- CLP should communicate with other NGOs in Bangladesh who are using the service e.g. The Smiling Sun and BRAC.

All recommendations will be headed up by CLP's Health PHD and health coordinator.

5.2 Market information

The CLP market development project works with *char* producers in the beef, milk and fodder sectors. *Char* producers require information regarding inputs and outputs. Input information typically includes: information on service providers' locations; the quality of stock; present stock levels; pricing; sellers contact details; where sellers are; and at what price they are selling. Output information informs the producer about: who wants to buy their produce; in what volumes; the preferred location to purchase; pricing; and their contact details. It is important that this information is accurate and timely to avoid producers losing out, paying too much for inputs, travelling long distances where their inputs are not being sold, or selling their produce for lower than the market rate. A review of existing market information services in Bangladesh highlighted six services available for *char* producers that provide crop and livestock information for input and output markets: Krishibazar "2474"; Cell Bazaar; Banglalink channel I krishi news "3646"; Banglalink Krishi Jigyasha "7676; e-krishok; and Agricultural Market Information System (AMIS).

The AMIS service is not currently operating and e-krishok is a crop and livestock information and advisory service that is operated through a network of information centres. This is not currently available to the public to independently access through their mobile phones. As such these two services will not be reviewed further by CLP at this time.

Krishibazar has two services. One offers pricing from 18 markets in Bangladesh and the second allows the user to search for products and get their price and location, with contact information of the person who placed the advert. One limitation comes from information being available only from 18 markets and these may not be located near the *chars.* For information to be available it also relies on local providers to record messages and upload them. Similarly *Cell Bazaar* acts as a virtual market place for buyers and sellers to advertise their products and services. It was noted that there is limited information available on the site and information relevant to *char* producers is minimal. *Banglalink channel I krishi news* is a news service that provides market information, however, the type of information disseminated will be dependent on what the news channel decides to broadcast on a given day and there is no way to request specific information. The final service, *Banglalink Krishi Jigyasha "7676"*, is a livelihoods advisory service offering personalised advice to callers relating to 67 livelihood topics of which livestock and crop production information are included. There is, however, no real-time input or output market information available.

The recommendations are as follows:

- None of the current options should be pursued at present, because there are no mobile-based market information services which offer significant value to *char* milk, meat and fodder producers
- The market information products and services available in Bangladesh are constantly changing. As such, CLP should keep abreast of new developments and scope their relevance for *char* producers

5.3 Agricultural extension

During its 18-month support period, CLP ensures that core participants receive information on agricultural best practices, primarily through training, demonstrations and exposure visits. CLP trains Livestock Service Providers (LSP) in the working area and links them with the Department of Livestock Services (DLS) who are responsible for providing veterinary support to farmers in the community. CLP also provide training for core participants on homestead gardening and trains participants on best practices in growing a variety of fruits, vegetables and spices. They are able to use their produce for household consumption and any surplus can be sold at the market, providing a valuable additional income. CLP also helps to establish compost pits and provides training to participants on how best to produce compost. Homestead gardens provide an important supplementary livelihood and therefore after the period of CLP support, their sustainability is important.

Continued availability of technological information on crops and livestock production is essential for sustaining the improved livelihoods of CLP's participants once they graduate from the programme.

Initial research highlighted seven providers of agricultural extension services in Bangladesh. Of these, three were seen to be most relevant to CLP: e-Krishok; e-Krishi; and Banglalink's helpline service.

e-Krishok, as discussed in the market information section of this report, is not available to members of the public via their mobile phones: only through designated information centres. As such, it is not feasible for our participants and therefore is currently not a viable option for CLP. e-Krishi is available only as a web based platform. It can be accessed via smartphones; however, the level of smartphone ownership on the *chars* is low and therefore this is currently not seen to be applicable for the CLP. Therefore, at this time, CLP will not pursue these two services any further.

Banglalink's helpline service

Banglalink's helpline service operates 24 hours a day to provide callers with expert solutions to their agricultural queries on poultry, fishery, livestock and vegetable/fruit and flower farming. On average, the service receives 170,000 calls per month, from approximately 120,000 agri-professionals. This volume of calls demonstrates that the service is widely used and is providing a useful service to farmers.

A second service linked to Banglalink's helpline service is called Krishibazaar (Agriculture Market). People are able to buy and sell agricultural products using the system thus, cutting out the middleman and ensuring the producer sees more of the revenue from a sale. To register to the service, customers dial "2474". They can then either record their agricultural product information making it available for trading, or they can browse through information that other customers have uploaded. Buyers then have the option to call up the trader instantly, using the service, to complete the trade. Product information is made available by category, price and location to allow the user to tailor the information they receive to their requirements.

Due to poor literacy levels in the country, the services use step-by-step voice prompts to guide both buyers and sellers through the whole process. This would be particularly beneficial to farmers on the *chars*. Another advantage of the service comes from the fact that it has already been designed and is operational thus minimising time and resources required from CLP. Further, knowing that a large number of farmers are using the service provides a good indication that the service really is useful to farmers.

The CLP programme is tailored largely to illiterate rural farmers and aims to bring them up to a basic level of knowledge once they leave the programme in order for them to sustain a livelihood. As such, the service would act to complement the current work CLP does rather than going beyond the scope of the programme. In terms of sustainability, once farmers are aware of the service and opt to use it, knowledge that we have passed on during CLP will more likely sustain due to the reinforcement of good practices. Having access to a source of information, such as pricing, will also help ensure their livelihoods remain stable over time.

CLP's role would be to make farmers aware of the service. Depending on the level of engagement the service provider is willing to have, CLP could help to promote the service. One way would be through CLP's trainings or demonstration groups within the Market Development project. There, the service could be demonstrated in an interactive way to show its usefulness and relevance. The three main groups would be: formal training; yard meetings; and follow up support through house visits. Posters could be created to complement demonstration sessions, detailing the services: what they provide; costs involved; and contact details. Posters could be put up at Social Development, VDC and CBC meetings as well as in shops and bazars on the *chars*. Creation of posters would require minimal time and resources but should be partnered with demonstration sessions to increase their effectiveness.

The following recommendations were made:

- CLP should contact Banglalink to assess the likelihood of them coming to our working areas and promoting the service themselves
- CLP should make core participants aware of the existence of Banglalink's helpline service and the services it provides. CLP should promote the use of the service though CLP training sessions and demonstration groups

- CLP should use Village Development Committees (VDC) and Chars Business Centers (CBC) as a base for promoting the service. VDCs, in particular, already have contact information of various services available to the *char* people and so it seems an appropriate reference point for agricultural extension information. VDCs are also linked with influential persons in the community who could pass on the information within their village. CBCs would be an ideal platform to inform farmers directly about the service
- Services are always changing and as such CLP and Maxwell Stamp should keep up to date on new developments in this area. Relevant staff including those in CLP's MLU should sign up to the *e-agriculture* newsletter. This could influence any further direction that could be taken regarding mobile technology in agricultural extension.

All recommendations will require follow up from the Markets and Livelihoods Unit.

5.4 Microfinance

Microfinance encompasses micro-credit, micro-savings and micro-insurance. Through CLP's Village Savings and Loans Groups (VSLGs), core and non-core participants have access to a 'safe place to save' their money and the opportunity to access small quantities of credit. In addition, CLP is currently working with NGOs and the private sector to facilitate the provision of microcredit to core participants who have graduated from the programme. There is also a particular emphasis on business group (BG) members who are part of CLP's market development project.

At a microfinance workshop held in December 2013 with CLP's partner IMOs, different microfinance models were discussed. Prior to the workshop, this review on mobile technology was carried out to ascertain existing products and services in Bangladesh that could provide microcredit in the form of *distribution* and *repayment* of loans through mobile technology.[26] Micro-credit through mobiles was presented as one of the potential models. Following the workshop, the Human Development unit, through the VSL co-ordinator, is following up with all 12 IMOs present at the workshop, to understand their interest in developing micro-credit services on the *chars* and the potential for using a mobile model.

A benefit for NGOs to switch to mobile banking is that once an account is on the client's SIM card it opens the client up to other banking options, such as receiving remittances. Benefits also include the knowledge that the technology is well established and unlikely to fail. It was noted that although formal partnerships with a mobile banking service provider may not be necessary, CLP has experienced advantages as a result of the formal partnership with bKash. Advantages have included reducing costs for our participants in the event of problems occurring and in ensuring technical or logistical issues are smoothed out quickly and easily. Time taken to form partnerships will be very case-dependent and will be influenced by: the outreach of the client base; the systems used by the mobile banking service provider; the operational models used by the NGOs; and any issues that may arise during the transition from manual to mobile transfers. Other factors that will determine the ease of forming a partnership between NGOs on the *chars* and service providers include: the client base of the NGO; special agreements required by the NGO; and time commitments required by the service provider.

Some issues were highlighted during the research, one of which was agent presence. This is currently considered to be moderate in the *char* areas. For bKash, 27% of agents are based on the *chars* with the rest living close by. CLP, however, has already experienced problems rolling out its

[26] It was noted that carrying out the verification process for obtaining loans was not likely to happen through mobile technology due to a personalised visit being necessary

stipend transfers through bKash agents, achieving 53% of the expected amount as a result of low agent coverage. Another constraint is that, to set up an account, the client must have a National Identification card, which many *char* residents do not have. It also requires two passport-sized photographs and a SIM card which will involve time and money to obtain. The process also requires clients to fill out a form. Illiteracy is a common problem on the *chars* and as such can make this process difficult or put people off altogether. The costs related to these processes are not present for manual cash transfers and thus the process would overall end up more costly to the *char* resident.

It should be noted that there is no guarantee that any reduction in transaction costs will be achieved by using mobile cash transfers over the manual distribution and collection of loans, nor would time and resources involved in staffing necessarily reduce. Reasons for this include that although lower-level staff would not be required for the distribution and collection of loans, house visits must still be made for verification and monitoring of the loans. It was also highlighted that staffing costs may only be reduced at the distribution stage, as it is still sometimes necessary to collect loans physically to ensure repayments occur. In addition, the need for mid to high-level staff to form a partnership and troubleshoot any operational issues would be required.

Benefits must be present for both the *char* resident and the NGO for this type of service to be sustainable. If the extra cost and inconvenience to the *char* residents is minimised and NGOs are able to reduce their transaction costs and operational resources enough to generate a profit, then this could increase the sustainability of such a service on the *chars*.

Recommendations are as follows:

- CLP should ensure all NGOs providing micro-credit to *char* dwellers are aware of mobile cash transfers as an option for distributing and collecting loans
- CLP should inform all NGOs providing micro credit that mobile cash transfers have some potential to reduce transactions costs, but this is not guaranteed
- CLP should advise NGOs to conduct profitability, risk and feasibility analyses for their own situation
- On request, CLP should provide information about experiences with implementing bKash stipend transfers on the *chars*, in order to assist NGOs with profitability, risk and feasibility analyses
- In December 2013 Maria May from BRAC's Social Innovation Lab made contact with CLP regarding the use of mobile money in development programmes and potential opportunities to partner. CLP should continue contact with Maria May as this may provide opportunities to partner in the future.
- If an opportunity arose, there is the potential to apply for the DFID funded, m-farmer challenge fund offered by GSMA
- In addition to this fund, CLP should keep updated on research by GSMA and the other challenge funds they offer.

5.5 Disaster resilience: early warning systems

CLP's working areas are prone to natural disasters such as floods and cyclones. As such, early warning systems (EWSs) and disaster risk assessments are important to help reduce the impact of disasters by increasing the resilience of our core participants and the wider community. CLP provides disaster response training through its social development training and this has shown positive results in increasing disaster resilience among our core participants. Due to CLP coming to an end in 2016, for us to implement an early warning system or risk assessment through mobile technology it would be necessary to partner with an existing system. A review of existing EWSs in Bangladesh highlighted one potential partnership.

An EWS is has been developed by Grameenphone and Teletalk in partnership with the Government's Disaster Management Bureau of Bangladesh; Flood Forecasting and Warning Centre; and the Bangladesh Meteorological Department, as well as the Department for International Development (DFID) sponsored Comprehensive Disaster Management Programme Phase II (CDMP (II)) with the United Nations Development Programme (UNDP). The system provides early warnings for cyclones in all 14 coastal districts through a 20-character SMS. A benefit of the service is that people would not necessarily have to have a mobile phone; they would just have to live close to someone that did and receive the warning through word of mouth.

An important issue highlighted was that the service was only operating in the 14 coastal districts and not in the north west of the country. The service had been piloted in Sirajganj, one of CLP's working areas but this area was not brought forward into the final project. A potential reason for Sirajganj not being included in the final project could be the difference in disasters between the north west of Bangladesh and the coastal regions. The *chars* are prone to slow onset disasters, such as flooding, whereas coastal areas are more prone to cyclones that require fast early warning systems. Therefore it may not have been deemed as necessary to roll the service out on the *chars*.

Following the review, the recommendation was as follows:

- Await on the final outcome of the Barrett et al. study on disaster resilience to assess the gaps with access to early warning systems. If deemed necessary, at this stage, contact will be made with potential partners of Grameenphone and Teletalk, and government agencies: the Disaster Management Bureau of Bangladesh; the Flood Forecasting and Warning Centre; the Bangladesh Meteorological Department and UNDP to gain an understanding of the possible reasons the system is not being implemented in the *char* region and discuss the feasibility of extending their programme into the CLP working districts.

5.6 Conclusion

Throughout all these reviews, added value to existing CLP programmes and the sustainability of each service were noted as key areas when deciding on the recommendations. The recommendations made from each key area should now be followed up by the relevant staff at the CLP Secretariat.

6 References

- BRAC & ClickDiagnostics. *Envisage achievement of MDGs-4 and 5 through Innovative mHealth Solution partnering with ClickDiagnostics*. n.d.. Available from: http://healthmarketinnovations.org/sites/healthmarketinnovations.org/files/BRAC-Click-Partnership-Annoucement_0.pdf. [Accessed 10 June 2013].

- Cash transfer through mobile (CTM). CLP project summary. 15 August 2012. pg 1-16.

- GRM. *GRM International Southern Africa*: Smallholder Enerprise and Marketing Programme, Agri-business Development Component (SHEMP-ADC), SMS System.

- Grameen Foundation. *Mobile Health*. Available from: http://www.grameenfoundation.org/what-we-do/mobile-phone-solutions/health [Accessed 17 June 2013].

- Grameen Foundation. *Mobile Financial Services*. Available from: http://www.grameenfoundation.org/what-we-do/mobile-phone-solutions/financial-services [Accessed 17 June 2013].

- Grameen Foundation. *Why Mobile?* Available from: http://www.grameenfoundation.org/what-we-do/mobile-phone-solutions/why-mobile [Accessed 26 June 2013].

- Halewood N, Surya P. *Mobilizing the Agricultural Value Chain*. 2012. pg. 31-43. (33) Available from: http://siteresources.worldbank.org/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/Resources/IC4D-2012-Chapter-2.pdf. [Accessed 09 June 2013]

- Huda, E & Uddin, M.N. Report on women's response to money transfer: A study on users and non-users of bKash in three districts of Bangladesh. Shorebank International. February 2013. Bogra, Bangladesh. Pg. 1-18.

- Khabar South Asia. *Mobile technology harnessed for maternal health in Bangladesh*. Available from: http://khabarsouthasia.com/en_GB/articles/apwi/articles/features/2013/04/06/feature-01 [Accessed 11 June 2013].

- Michaels L. *Accenture Development Partnerships It's Better Than Cash – Kenya Assessment Report It's Better Than Cash: Kenya Mobile Money Market Assessment. Accenture.* 2011. Available from: http://www.merchantpro.co/betterthancash.pdf. [Accessed 12 Jun 2013].

- Miller D. *id21 Insights 69: Mobile phones and development The future in new hands?* Brighton: Institute of Development Studies. 2007. Available from: http://r4d.dfid.gov.uk/PDF/Outputs/IDS/insights69.pdf. [Accessed 10 Jun 2013].

- Oxfam. Mobile Cash Tranfer: A study on effectiveness and efficacy. Available from: http://hotjobs.bdjobs.com/jobs/oxfam/annex%202_109.pdf. [Accessed 10 June 2013]

- Robi.com.bd. *BBC Janala*. [Online] Available from: http://www.robi.com.bd/index.php/page/view/274 [Accessed 10 Jun 2013].
- Community Knowledge Workers: *The Farmer's Oracle*. Available from: http://www.ckw.applab.org/section/about-ckw [Accessed 12 June 2013].

- Salahuddin T. *Using Mobile Technology to Fight Extreme Poverty*. 2011. Available from: http://www.shiree.org/wp-content/uploads/2012/02/Sept-29-Using-Technology-to-Fight-Extreme-Poverty-English.pdf. [Accessed 09 Jun 2013].

- Shiree. *CMS 2: Monthly Snapshot*. Available from: http://www.shiree.org/extreme-poverty-monitor/cms-2-monthly-snapshot/#.UcvhS22TNFu [Accessed 09 Jun 2013].

- The Economist. *Is it a phone, is it a bank?* Available from: http://www.economist.com/news/finance-and-economics/21574520-safaricom-widens-its-banking-services-payments-savings-and-loans-it [Accessed 10 June 2013].

- The World Bank. *Mobile Phone Access Reaches Three Quarters of Planet's Population*. Available from: http://www.worldbank.org/en/news/press-release/2012/07/17/mobile-phone-access-reaches-three-quarters-planets-population [Accessed 26 June 2013].

- Vignare K. Options and strategies for information and communication technologies within agricultural extension and advisory services. MEAS Discu ssion Paper Series on Good Practices and Best Fit Approaches in Extension and Advisory Service Provision. Michigan State: 2013. Available from: http://agrilinks.org/sites/default/files/resource/files/MEAS%20Discussion%20Paper%201%20-%20ICT%20and%20Extension%20-%202013_03_29.pdf. [Accessed 09 June 2013]

- Brewin M. *Evaluation of Concern Kenya's Kerio Valley Cash Transfer Pilot (KVCTP)*. 2008. Available from: https://www.concern.net/sites/www.concern.net/files/resource/2011/03/kvctp_evaluation_report_08.pdf. [Accessed 7 June 2013].

- Thomson Reuters Foundation. *WFP launches phone cash transfers to reach Ivorians*. Available from: http://www.trust.org/item/?map=wfp-launches-phone-cash-transfers-to-reach-ivorians [Accessed 18 June 2013].

- The World Food Programme. *WFP Launches Mobile Phone-Based Food Voucher Pilot for Iraqi Refugees in Syria.* Available from: http://www.wfp.org/news/news-release/wfp-launches-mobile-phone-based-food-voucher-pilot-iraqi-refugees-syria [Accessed 18 June 2013].

7 Annex 1: Primary health care, family planning and nutrition

7.1 Overview of CLP's primary health care, family planning and nutrition programme

People living on the *chars* in north west Bangladesh suffer from poor health and undernutrition. Contributing factors include poor water and sanitation facilities, lack of knowledge on good hygiene practices and very limited or no access to adequate health services. To improve health conditions on the *chars*, CLP has a number of interventions that focus on primary health care, family planning and direct and indirect nutrition activities.

CLP trains paramedics to run satellite clinics that provide primary health care and family planning services to the community. Satellite clinics run fortnightly for the 18 months duration of CLP support and are available for CLP core and non-core participants. During the fortnightly clinics, paramedics are also responsible for visiting pregnant and new mothers on least four ante-natal care visits, three post-natal care visits and essential newborn care visits. CLP also trains Char Shasthya Karmis (CSKs, community health workers) who attend to expectant and new mothers in the community. CSKs register pregnant women in their area and maintain and update their health information. Information is recorded on prescription sheets and then entered onto a database.

CLP works to combat undernutrition through indirect and direct nutrition interventions. Indirect nutrition interventions work around improving our core participants' food security. This is primarily achieved by providing an income generating asset to each household on entry to the CLP programme. Health and hygiene interventions include the provision of improved water and sanitation facilities in the form of tube wells and low cost latrines. Trainings particularly on homestead gardening practices, nutrition and WASH all have a part to play in minimising factors that contribute to undernutrition on the *chars*. Direct nutrition interventions focus on children under five and new and expectant mothers. CLP's 'Direct Nutrition Intervention Project' includes nutrition education sessions for women and adolescent girls and one to one counselling. It involves the provision of iron and folic acid supplements to children under five, pregnant and breastfeeding women and adolescent girls. De-worming tablets will be given to all family members and micronutrients provided to children under five.

7.2 Existing programmes in Bangladesh

There are a number of health services in Bangladesh that are using mobile technology to enhance their existing programmes to provide improved, faster and more reliable health services. This report researched and evaluated such services to identify those that could have potential within CLP. This report will discuss two of the services researched: MAMA and the *Aponjon* initiative; and ClickMedix.

7.3 MAMA and the Aponjon initiative

7.3.1 How it works

The mobile alliance for maternal action (MAMA) is a Global Development Alliance working to improve the health of pregnant women and new mothers through the provision of accurate and up-to-date information, relevant to the cultural context and the stages of pregnancy and birth of the child.[27] The information provided is based on WHO and UNICEF guidelines. MAMA's Bangladesh brand

[27] The mobile alliance for maternal action. http://www.mobilemamaalliance.org/

operates under the name *Aponjon* "the close one".[28] For expectant mothers, two messages are sent per week from the 6th week of pregnancy to the 42nd week. For new mothers, two messages a week are sent from the date of the child's birth until their first birthday. Another member of the woman's family can also be registered as a secondary subscriber. This can be the husband or another member of the extended family, e.g. the mother-in-law. One weekly message is sent to the nominated secondary subscriber. All voice messages can be listened to as many times as needed along with messages from the previous week.

There are four options for registration, all of which are free:

i. an SMS can be sent by the subscriber with a short code: 16227;
ii. the subscriber can call 16227 and be taken through an automated menu to register;
iii. *Aponjon* themselves have 'Brand Promoters' and 'Community Agents' who can assist registration in the field; or
iv. the subscriber can call a customer service line by dialling 16227. Registration can be completed over the phone and the woman can unregister at any time.

7.3.2 Application type

The service is available on basic mobile handsets and smart phones. Messages can be voice or SMS.

7.3.3 Geographical feasibility

MAMA works in rural and urban areas. *Aponjon* started in September 2011 in 13 locations in 4 districts in Bangladesh. Their aim is to reach more than two million subscribers by 2015. Aponjon is currently partnered with NGOs in the following CLP working districts: Kurigram; Bogra; Gaibandha; Lalmonirhat; and Rangpur.

7.3.4 Audience served by technology

The primary CLP audience would be expectant and new mothers in our working areas (core and non-core) who have access to a mobile phone, as well as their secondary subscribers. Currently we know that a total of 29.5% of households we work with have a mobile phone.

7.3.5 Feasibility to partner with the service

Feasibility is high. *Aponjon* are looking to expand their partnerships with programmes in Bangladesh. They are already operating in CLP districts and use a platform which is connected to the six telecom operators in Bangladesh. Of these, *Aponjon* is currently connected with five: Grameen phone; Banglalink; Robi; Airtel; and City Cell. These five make up 98% of the network coverage in Bangladesh and *Aponjon* are currently working towards a contract with the sixth, Teletalk.

7.3.6 Resources required

Time: CLP's role would mainly be in facilitating a partnership between *Aponjon* and our partner IMOs and therefore time would be required for this in the implementation stage. It would be necessary to assess how involved CLP would have to be at this stage. *Aponjon* "Brand Promoters" also help in registering women, therefore this would minimise time needed from CLP staff. If CLP's involvement is necessary, we can demonstrate the service during the satellite clinics' Health, Education and Nutrition sessions. Independent of the level of engagement needed from CLP in this initial phase, our overall our main role would be to facilitate a partnership between *Aponjon* and our IMOs.

[28] The *Aponjon* Initiative. http://aponjon.com.bd/index1.php

After subscribers have signed up, CLP would not have to manage the service. Another advantage is that all the messages have already been developed as part of the *Aponjon* services and therefore there would be no need for input on CLPs side to design material relating to the service.

Financial: Cost to *char* resident: The cost to receive a voice call or SMS is BDT 2.30, including VAT. *Aponjon* offer messages free of charge to 20% of primary and secondary subscribers who are classed as underprivileged, due to having low socio-economic status. Cost to CLP: The main cost incurred by CLP would be staffing costs involved to initially register women, again this could be minimised if we use *Aponjon's* Band Promoters. The costs of using the Brand Promoters would have to be evaluated against the costs of using CLP staff. After this initial stage, there would be no costs to CLP.

7.3.7 Technical simplicity

For the *char* resident: The service is operated through basic mobile handsets and would only be available to women who already own mobile phone or who have access to one in their household. Therefore they would already be familiar with using the phone and using voice or SMS. Expectant and new mothers could always partner with someone they knew who had a phone in order to receive messages, however this may become complicated due to the costs involved in receiving messages. For CLP: Once mothers are registered to the service there is no additional support needed to run the service so CLP will not need to provide any extra technical support.

7.3.8 Scale

The service has the potential to reach all expectant and new mothers in our working areas. The costs of the service could remain a problem for those who cannot afford to send text messages regularly however this could be compensated in some way, through further investigating *Aponjon's* free service to 20% of subscribers.

7.3.9 Sustainability

Subscribers will only be part of the service for up to two years. The sustainability of the service in our working areas will depend on how well known we are able to get the service known to the *char* residents. *Aponjon* helps to create links to local health services which will help make *char* residents aware of the availability of such health services. Creating links is an important way to ensure the overall sustainability of CLP's impact after phase out.

7.3.10 Relevance and added value to CLP

The service works though voice and SMS making it relevant to people living on the *chars*, who are largely illiterate. For those who are literate, the service is in Bengali language. People on the *chars* who do own phones will probably own basic mobile handsets which this service can operate on. In terms of adding value to CLP's existing programme, it will complement our overall primary health care and family planning initiatives and components within our Direct Nutrition Intervention Project. Messages sent to subscribers contain information on good health and hygiene practices, how to prevent infections, what illnesses to be aware of and the symptoms to look out for, nutrition and vaccination advice, oral rehydration, infant feeding, how to look after themselves during pregnancy and when to seek care for their child once it is born. These areas build on the help and advice CSK's and paramedics provide to pregnant women in our communities. Between CLP's fortnightly visits, this service will allow good health practices and behaviours to be reinforced. The option for a separate message to be sent to the woman's husband enhances CLP's inclusive approach to improving our participants' livelihoods. With regards to costs and time taken to implement; the number of people that potentially could be reached; and the benefit the service would bring makes this a viable option.

7.4 ClickMedix

7.4.1 How it works

ClickMedix is a service aimed to provide health workers a tool to deliver timely and accurate health care advice; record patient information; and monitor patient records.[29] The software consists of questionnaires that are designed to relate to areas of child health, infant health and family planning. All information is fed back to a central database where a physician will review the data and provide necessary health advice. Each patient is given a unique ID number and all information regarding that patient is stored on their record. Details about the visit e.g. date, patients first and last name, the district they are sending the information from are all recorded. Information is inputted about the patient's condition which allows for some simple diagnosis to be made on the spot, particularly regarding nutrition status. For more complex health complaints, remote health consultants/physicians will review symptoms and feed information back to the health worker. Storing patient information over time allows certain symptoms or diseases to be tracked. Pictures of the ailment can be taken and either be sent to the main database for remote diagnosis or it can aid the health worker to identify the problem.

7.4.2 Application type

The service is available as a free downloadable app that works on iPhones, iPads and Android smart phones. It can be created in any language.

7.4.3 Geographical feasibility

Once logged in there is no need to be connected to Wi-Fi and data can be entered and saved on the person's record. Access to the database also does not require Wi-Fi once initially logged in. If feedback from a physician is required they can respond to the enquiry which can be accessed the next time Wi-Fi is available.

7.4.4 Audience served by technology

The service will be operated by CLP's CSKs, who would have to be provided a smart phone with the application downloaded to it. Through the CSKs, current CLP core participants will benefit from the service.

7.4.5 Feasibility to partner with the service

Very feasible as ClickMedix is currently looking to partner with other programmes.

7.4.6 Resources required

Time: To digitalise our current process and back-date paper records so that everything is digitally recorded would take less than one week to complete. Paper records can be scanned into the application which will be managed by ClickMedix with staff from CLP overseeing the process if deemed necessary. We would have to obtain consent from beneficiaries to use their data within the service which would take time. Time will be needed to carry out a feasibility study, train CSKs on the app and to monitor the service following implementation. Time would also be required to tailor the health questionnaires to our specific requirements.

Financial: Cost to *char* resident: There will be no costs incurred by the *char* resident. Cost to CLP: Costs are very dependent on the level of service we would require. The level of service can be worked out based on available funding or according to a set-up fee + per user/per month. An estimate

[29] ClickMedix website: http://clickmedix.com/

was provided based on a hypothetical pilot scheme of setting up 100 CSKs. The cost to set up a service of this size would be approximately US$ 1000 with a running costs of US$ 5 dollars per user/per month. To digitalise back-dated records would be an additional cost of approximately US$ 5,000-10,000. To make the whole service offline would cost approximately US$ 10,000. This was not seen to be very necessary as health workers would usually record patient data and provide basic health advice, they would not generally need access to the whole database. CLP would incur costs in providing smart phones that are compatible with the software. In addition to the costs of the service, CLP would have to provide training to CSKs on using the app. Monitoring following implementation would also incur additional staffing and resource costs.

7.4.7 Technical simplicity

For the *char* resident: The service runs on smart phones so there would be a level of technical capacity required. The app is designed to be very basic with clear instructions, however training of CSKs would be necessary. For CLP: No advanced technical capacity would be required. The database has been created by ClickMedix and therefore no technical capacity or time is required to modify this. ClickMedix also provides ongoing IT support which is included in the price.

7.4.8 Scale

The reach of the service will depend on how many CSKs we equip with the phones. Potentially all of our core participants could be reached. The service could be extended to non-core participants as well.

7.4.9 Sustainability

There are ongoing costs involved to run the service, which was approximated at $5 per user/per month which would pose a problem for its sustainability post-CLP.

7.4.10 Relevance and added value to CLP

This service would allow us to gather real-time information regarding the health status of our participants. Customised questionnaires could be designed to focus on specific areas of our primary health care, family planning and nutrition programmes. Diagnosis can be made on the spot for nutrition related concerns and for simple health problems that may not be detected or may take longer to detect through our current system. This would help to tackle health problems at the early stages and could improve overall health conditions in our working areas. Although some Wi-Fi connectivity is required, most components of the service can run without Wi-Fi which is particularly useful on the *chars* where Wi-Fi can be problematic. If we were eligible to apply for a grant under the mNutrition initiative this would reduce the overall costs of implementing the programme.

The main problem with the service is regarding its sustainability. Although CSKs are set up by CLP to continue working in their communities, the ongoing costs required per user, after CLP phased out the service would not sustain. Other key problems come from the level of technical sophistication required to operate the service and once CLP is not available to monitor the service this could lead to difficulties.

7.4.11 Evaluation

No services were found directly related to nutrition however ClickMedix would help identify problems based on nutritional status and *Aponjon* ties in good dietary practices in their messages. After an evaluation of the costs and benefits of ClickMedix, it is not recommended that CLP continue with this option. Initial and running costs would be high as well as for additional staff required for training and monitoring the service. Weighing this up against the added value it would bring to the CLP it is not recommended that CLP continue with this option. Aponjon would provide a complementary

service to CLP's programme. With regards to costs involved, time taken to implement, the number of people that potentially could be reached and the benefits the service would bring, makes this service a workable option. Therefore it is recommended that we look into extending the *Aponjon* service within CLP working areas.

7.5 Recommendations

- A needs assessment should be conducted to assess the potential usefulness and benefit of the *Aponjon* service to the *char* residents in our working areas
- Contact *Aponjon* to understand options relating to (1) the benefit to *char* women; (2) the implementation of the service, including the possible reduced cost to women of low socio-economic status; and (3) required levels of engagement both from *Aponjon* and CLP
- Dependent on levels of engagement required a pilot can be decided on, with the potential to test which level of engagement is most well received by the *chars* people
- CLP should communicate with other NGOs in Bangladesh who are using the service e.g. The Smiling Sun and BRAC.

8 Annex 2: Market information

8.1 Market information needs of char producers

Char producers require information about two types of markets - input markets and output markets. Input market information is information about production inputs which producers purchase. Typically this includes information about who is selling the inputs, where and at what price. Output market information is information about buyers of their products. This includes information about who wants to buy, what they want to buy, where they want to buy it, in what volumes and at what price.

The sectors that this report focuses on are those in which the Chars Livelihoods Programme's market development project intervenes. These are the milk, beef and fodder sectors. Producers in these sectors require different types of inputs and sell different kinds of outputs. As such, the market information they require is also different. The exact market information needs for each sector are outlined below. Due to the similarities in inputs required for milk and beef producers, these sectors are covered in the same section.

8.2 Market information needs of milk and meat producers

8.2.1 Input market information requirements

The key inputs about which milk and meat producers require market information, as well as the information they require, are listed below:

Input service provider type	Market information required
Cattle feed sellers (Ready feed and improved fodder)	• Location • Quality of stock • Present stock levels • Prices • Contact details
Artificial insemination service providers	• Location • Quality of service • Price • Contact details
Cattle health service providers	• Type (paravet/LSP or veterinary technician) • Location • Quality of service • Price • Contact details

8.2.2 Output market information requirements

The outputs about which milk and meat producers require market information, as well as the information they require, are listed below:

Output buyer type	Market information required
Milk buyers (particularly goalas, large formal sector buyers)	• Location • Quality requirements and preferences • Volumes required • Prices • Contact details
Beef cattle buyers	• Location • Quality requirements and preferences • Volumes required • Prices • Contact details

8.3 Market information needs of fodder producers

8.3.1 Input market information requirements

Input service provider type	Market information required
Seed and cutting sellers (Jumbo and Napier grass)	• Location • Quality • Present stock levels • Prices • Contact details
Fertiliser and pesticide sellers	• Location • Quality • Present stock levels • Prices • Contact details
Irrigation service providers	• Location • Volumes they can supply • Prices • Contact details

8.3.2 Output market information requirements

Output buyer type	Market information required
Fodder buyers (Fodder paikers and larger traders)	• Location • Quality requirements and preferences • Volumes required • Prices • Contact details

8.4 Existing market information services in Bangladesh

There are several services which provide some form of information about crop and livestock input and output markets. The following section provides a brief description of each service and suitability for *char* milk, meat and fodder producers.

8.4.1 Krishibazaar "2474"

Krishibazaar is an IVR (Interactive Voice Response) service operated by Banglalink. Two main services are offered. Firstly, customers can listen to prices of agricultural produce in 18 major markets of Bangladesh. Secondly, customers can 'browse' through voice messages recorded by different traders in order to find information about products or services. This information is categorised by product type, price and location, to facilitate searching. The recordings include contact information which makes it possible to call the service provider who placed the advert. The cost for both of these services is 30 paisa per second (excluding VAT).

In theory, the agricultural prices service has the potential to provide producers with information that can increase their bargaining power or improve decision making about what to sell, where and when. However, there are several factors which limit the benefits for *char* milk, meat and fodder producers. Most significantly, it only provides information about prices at 18 markets in Bangladesh. It is likely that the majority of *char* producers do not sell to any of these markets, which means that pricing information provided is not locally accurate.

There is some potential that *char* producers across all sectors could use the second service to locate input service providers. However, this is reliant on many local service providers recording messages about their services. At present, this does not seem a reliable enough prospect for CLP to start promoting the service to *char* producers. It is also important to note that both services are limited to Banglalink customers.

8.4.2 Cell bazaar

Cell bazaar is a 'virtual marketplace' where sellers list products and services they want to sell and buyers can search through these and contact the sellers. The service works on mobile phones and on the internet. Potentially, this could provide a useful source of market information about inputs which are available to be sold. However, at present there are very few crop or livestock input dealers in the country who are advertising their products through Cell Bazaar. During the research period, searches for 'fertiliser' returned no results and searches for 'seeds' returned only four results, of which none were Jumbo or Napier seeds. At present, this suggests that the service offers little or no useful market information for *char* producers. However if the number of input dealers and buyers posting information increased dramatically, and these input dealers were operating close to the *chars*, this could potentially be a useful source of market information.

8.4.3 Banglalink channel i krishi news "3646"

Banglalink channel i krishi news "3646" is a news programme which customers can access on their mobile phones by dialing 3646. These programmes may include some features which provide market information, though this depends entirely on the content selected by the editors on a given day. As such, it cannot be relied upon as a continuous or searchable source of input or output market information for *char* producers.

8.4.4 Banglalink Krishi Jigyasha "7676"

Banglalink Krishi Jigyasha "7676" is a livelihoods advisory service which mobile phone users can access. The customer calls an advice line and they speak directly to an advisor who can provide answers to questions about 67 livelihoods topics, including topics relating to livestock and crop production. However, it does not include real-time market information about input or output markets.

8.4.5 e-krishok

e-krishok is a crop and livestock information and advisory service operated over the internet and telephone. Primarily the service is operated through a network of designated information centres, which provide mobile phones and computers which farmers can use to access the service. It is also possible to access the service over the internet, using a computer or mobile phone with internet facilities. The service is not currently available for the public to independently access via mobile phones without internet facilities. As such, it does not fall under the remit of this report, though may be worth consideration by CLP more broadly.

8.4.6 Agricultural Market Information System (AMIS)

Although internet searches frequently return information about the Agricultural Market Information System (AMIS), it is important to note that this is no longer active in Bangladesh.

8.5 Recommendations

- None of the current options should be pursued at present, because there are no mobile-based market information services which offer significant value to *char* milk, meat and fodder producers
- The market information products and services available in Bangladesh are constantly changing. As such, CLP should keep abreast of new developments and scope their relevance for *char* producers

9 Annex 3: Agricultural extension services

9.1 Introduction

In Bangladesh, overall productivity of livestock and crops is low. During its 18 month support period, CLP ensure that core participants are exposed to a transfer of technological information on crops, livestock and poultry. They help to provide input support, training, exposure visits and establish demonstration of good practices to core participants through CLP's IMOs. CLP also trains Livestock Service Providers (LSP) in the working area and links them with the Department for Livestock Services (DLS) who are responsible for providing veterinary support to the farmers in the community. CLP also provide training for core participants on homestead gardening and trains participants on best practices in growing a variety of fruits, vegetables and spices. They are able to use their produce for household consumption and any surplus can be sold at the market, providing a valuable additional income. CLP also helps to establish compost pits and provides training to participants in how best to produce compost. Homestead gardens provide an important supplementary livelihood and therefore after the period of CLP support, their sustainability is important. Continued availability of technological information on crops and livestock production is essential for sustaining the improved livelihoods of CLP's participants once they graduate from the programme.

In CLP working areas, coarse textured soils, low water holding and low nutrient capacity of the land as well as a lack of quality seeds, fertilisers, pesticides, farm equipment, irrigation, extension services and marketing are the main reasons for low productivity of crops. Problems in increasing livestock production are similar for the majority of areas in the country with the most significant constraints being nutrition, animal health, animal productivity/genetic make-up of the animals, extension of information, provision of finance to small scale producers and marketing. Livestock produced on the *chars* have a low level of productivity, mainly because their diet is generally at or below maintenance levels and all of the food is used for maintenance rather than production of livestock products. In addition, low productivity of crops and livestock occurs in *chars* due to lack of access to communication and transportation networks, lack of adequate infrastructure, lack of access to health and basic services, and limited income opportunities.

A study by the World Bank identified four areas where mobile technology can promote agricultural and rural development:

- better access to markets, disease and climate information;
- better access to extension services;
- better market links and distribution networks (by linking buyers and sellers, and facilitating accounting and traceability);
- better access to finance, including credit, insurance and payment methods (Qiang et al. 2011).

A study conducted by Kashem (2009) shows that the main uses of mobile phones in agricultural extension included getting to know the market-prices of crops, receiving information regarding seed-variety and fertiliser and pesticide availability. Farmers using mobile communication reported significant savings of both time and money.

Incorporating mobile phone technology in CLP for transferring information related to livestock and crops production has several potential needs and benefits which are summarised below:

- It can increase small holder productivity in crops and livestock;
- It can link poor farmers to urban, regional and global markets;
- It can help poor farmers' participate in higher-value agriculture;
- It can help farmers to manage risk in livestock and crops production;
- It can help to promote and include smallholders in agricultural innovation;
- It can help to improve services and governance for the rural poor; and
- It can help to make agricultural markets more efficient and transparent.

9.2 Agricultural extension services in Bangladesh

Agricultural extension services in Bangladesh aim to educate farmers through the dissemination of information relating to technologies, techniques, methods and ideas. Agricultural extension services, which encompass public and private sectors, NGOs, research, academic institutions and farmers themselves, are the main actors involved in information transfer. Timely and accurate information is necessary in order for farmers to make the right choices and achieve their desired outcomes. Farmers have different types of information needs, ranging from weather forecasts, inputs (seeds and fertilisers), improved cultivation practices, pest and disease management and prices. The agriculture sector in Bangladesh largely comprises small-scale farmers. Extension clients who require face-to-face interaction often live in geographically dispersed areas. This results in high costs, limited outreach and poor sustainability.

Farmers lack access to relevant and timely information, knowledge about new technologies, skills and practices. As a result, smallholder farmers are vulnerable to crop related diseases and suffer from low productivity. To address these issues, collaborative (public, private and NGO) agricultural extension service initiatives through mobile phone technology have been adopted in Bangladesh.

Public organisations such as the Department of Agricultural Extension (DAE), DLS and the Agricultural Information Service (AIS) play a key role in transferring agricultural technology, particularly relating to crops and livestock. DAE under the Ministry of Agriculture (MoA) is the main department responsible for carrying out extension activities on crops at the grassroots level. DLS under the Ministry of Fisheries and Livestock (MoF&L) is mainly responsible for activities related to livestock development and the control of livestock diseases, which includes the extension of livestock services. AIS under the MoA uses a variety of media to create awareness of new technologies among farmers, which assists in boosting agricultural productivity.

Seven services were identified to be operating providing agricultural extension in Bangladesh: e-Krishok; Banglalink's helpline service; Banglalink - Union Parishad Information Centre; Pallitathya Kendra; e-Krishi; Agricultural Market Information System (AMIS)-Bangladesh; and Bangladesh Friendship Education Society (BFES). Of these three were observed to be the most relevant to the CLP.

9.2.1 e-Krishok

The Bangladesh Institute of ICT in Development (BIID), in collaboration with Katalyst (a multi-donor development initiative) and Grameen Phone (a leading telecom operator), launched e-Krishok 2008. E-Krishok offers information and advisory services through mobile phones (call back and SMS) and email. All information is sourced from the government and private sectors, at which point e-Krishok

collates and disseminates this information directly to farmers. Farmers receive two SMS on request, tailored to their needs, at a cost of US$0.03 per SMS. A second service enables farmers to receive a call from a BIID information officer to respond to their immediate needs (US$0.07 per minute), and four SMS messages, containing relevant information regarding their question. e-Krishok aims to bridge the information gap that exists within the agriculture sector to build awareness and increase the capacity of farmers to use ICT-enabled information and advisory services. BIID is also working to demonstrate the potential of the existing mobile networks to connect small-scale farmers with e-Krishok services.

Initially, the service was tested through a pilot at Grameen Phone Community Information Centers (CIC) in ten locations in Bangladesh. In 2009, it was replicated in 100 CIC locations across the country, and by February 2010 e-Krishok had enlisted over 15,000 farmers and provided information and advice on crops, fisheries and livestock to 8,000 farmers. This initial success led BIID to introduce e-Krishok as a service package (providing an information and advisory extension service and market linkage) across Bangladesh's network of telecentres and through input retailers nationwide. Now available to any information centre with internet facilities or a mobile phone, the service has expanded to cover the entire country; it is now available at 350 centres and by 2012 had approximated its reach at 500,000 farmers.

BIID has a team of "business promoters" (BP) to link farmers to the technology. BPs send farmers' queries and input information through email, or link farmers directly to BIID agriculture experts over the phone. To improve the sustainability of the project, BIID has partnered with various organisations, including input suppliers who provide content for e-Krishok and local retailers. In return BIID promotes their products to farmers for a small cost (Angelico, 2012).

This service is not however available to members of the public via their mobile phones, only through designated information centres. As such it is not appropriate for CLP participants and therefore is not currently a viable option for CLP to take further at this point.

9.2.2 e-Krishi

The AIS, under the Ministry of Agriculture, established *e-krishi*, a web based service designed to disseminate agricultural technologies and information (*www.ais.gov.bd*). The primary audience are farmers in Bangladesh and as such the website is all in Bangla language. The web site provides agricultural information and technology to farmers and has options for users to post comments, questions and suggestion with experts on hand to provide feedback within 24 hours. E-Krishi contains detailed production technology of almost all the crops cultivated in Bangladesh. In addition to the vast information on crops, basic information on fisheries and livestock are also available. Electronic copies of materials produced by AIS are also available from the website such as Krishikotha, Somprosharon Barta, posters, leaflets and books, as well as different agri-technology based documentaries (*www.ekrishi.com*).

Due to this being available only as a web based platform, it could be accessed via smart phones however the level of smart phone ownership on the *chars* is low and as such this would not be applicable to the people CLP work with. As such CLP will not pursue the service any further at this time.

9.2.3 Banglalink's helpline service

With Katalyst's support, Banglalink entered the market for rural ICT-based information services in late 2008 with their *Jigyasha 7676* agricultural helpline. The helpline operates 24 hours a day to provide callers with expert solutions to their agricultural queries on poultry, fishery, livestock and vegetable, fruit and flower farming. Within the first 3 months of the service 180,000 individual users had used the service, reaching nearly 2,000 calls per day (*http://www.katalyst.com.bd*). The service currently generates on average, 170,000 monthly calls, from approximately 120,000 individual agri-professionals. This level of calls shows that the service is widely used and is providing a useful service to farmers.

A second service linked to Banlgalink's helpline service is called Krishibazaar (Agriculture Market), where people can buy and sell agricultural products, cutting out the middleman and ensuring the producer keeps more of the revenue from their sale. To register to the service, customers dial "2474". They can then either record their agricultural product information available for trading, or browse through other customers' uploaded information. They are then able to call up the trader instantly using the service to complete the trade. Product information is available by category, price and location to allow the user to tailor the information they receive. Due to poor literacy levels in the country, the programme uses voice prompts to guide both buyers and sellers step-by-step through the whole process.

9.3 Analysis of services

The fact that e-krishok is not available to farmers to individually access through their mobile phones, and e-krishi being a web-based service, the only service that is really applicable for CLP is Banglalink's helpline service. The benefit of this service is that it has already been designed and is operational, thus minimising time and resources required from CLP. Further, knowing that a large number of farmers are using the service provides a good indication that the service really is useful to farmers.

The CLP programme is tailored to work with largely illiterate rural farmers and aims to bring them up to a basic level of knowledge once they leave the programme. As such, the service would act to complement the current work CLP does rather than going beyond the scope of the programme. In terms of sustainability, once farmers are aware of the service and opt to use it, knowledge that we have passed on during CLP will more likely sustain due to the reinforcement of good practices. Having access to a source of information, such as pricing, will also help ensure their livelihoods remain stable over time.

CLP's role would be to make farmers aware of the service. Depending on the level of engagement the service provider is willing to have, CLP could help to promote the service. One way would be through CLP's trainings or demonstration groups within the Market Development project. There, the service could be demonstrated in an interactive way to show its usefulness and relevance. The three main groups would be: formal training; yard meetings; and follow up support through house visits. Posters could be created to complement demonstration sessions, detailing the services: what they provide; costs involved; and contact details. Posters could be put up at Social Development, VDC and CBC meetings as well as in shops and bazars on the *chars*. Creation of posters would require minimal time and resources but should be partnered with demonstration sessions to increase their effectiveness. .

9.4 Recommendations

The following recommendations were made:

- CLP should contact the Banglalink to assess the likelihood of them coming to our working areas and promoting the service themselves.
- CLP should make core participants aware of the existence of Banglalink's helpline service and the services it provides. CLP should promote the use of the service though CLP training sessions and demonstration groups.
- CLP should use Village Development Committees (VDC) and Chars Business Centers (CBC) as a base for promoting the service. VDCs, in particular, already have contact information of various services available to the *char* people and so it seems an appropriate reference point for agricultural extension information.
- VDCs are also linked with influential persons in the community who could pass on the information within their village. CBCs would be an ideal platform to inform farmers directly about the service.
- Services are always changing and as such CLP and Maxwell Stamp should keep up to date on new developments in this area. Relevant staff including those in CLP's MLU should sign up to the *e-agriculture* newsletter. This could influence any further direction that could be taken regarding mobile technology in agricultural extension.

All recommendations will require follow up from the Markets and Livelihoods Unit.

10 Annex 4: Microfinance

10.1 Background and scope of this review

Microfinance encompasses micro-credit, micro-savings and micro-insurance. At present, CLP's strategy for developing microfinance on the *chars* is focused on micro-credit and micro-savings. During the 18-month engagement with the programme, core participants receive support to develop Village Savings and Loans Associations, which help participants to save small amounts and to access small amounts of credit. During this period, core participants are not encouraged to access larger quantities of credit, due to the risks involved.

However, CLP is working to facilitate the development of micro-credit service provision by NGOs and the private sector, in order to assist graduated Core Participant Households, as well as the broader *char* population, to access loans for productive purposes. Particular emphasis is being placed on promoting micro-credit to 'business group members' who participate in the market development project. These individuals are a mixture of former Core Participant Households and members of the broader *char* population.

To develop provision of micro-credit on the *chars*, the CLP is adopting a market facilitation approach. This involves CLP working with different NGOs and private sector actors to help them recognise the commercial opportunity which the *char* micro-credit market represents and to successfully and sustainably overcome the barriers to accessing those opportunities. It is important to note that, at present, CLP is focusing most efforts on market facilitation with NGOs.

With this in mind, this review is focused on assessing the potential for NGOs to provide micro-credit through mobile technology. It should also be noted that it is extremely unlikely that any organisation would be willing to use mobile technology in order to carry out the application and screening process for micro-credit. The main reason for this is the difficulties carrying out verification processes without visiting the applicant's home. As such, this review is focused on the potential for mobile technology for loan distribution and repayment.

10.2 Existing products and services in Bangladesh

10.2.1 Mobile cash transfer services: how it works

In Bangladesh, there are currently 17 banks which provide mobile banking services. These services make it possible for mobile banking clients to transfer cash to each other via their mobile phones. In the case of NGO micro-credit service providers, which are the focus of this review, this would mean that the NGO would pay a client their loan through mobile cash transfer. It could also mean that the client repays the loan through the same route.

To set up an account, the client must present a National Insurance card, provide two passport photos and submit a form. The client must also purchase a SIM, though they do not require a mobile phone. When a client receives the transfer, they need to visit an agent of the mobile banking service provider in order to collect the cash. They collect the money from the agent by presenting their SIM, entering their PIN and making an electronic transfer to the agent's mobile. The agent then hands cash to the client. For Bkash, the cost of this transaction for the client is currently 1.85% of total transaction value.

The agents are typically small shop-keepers. At present, 27% of Bkash agents live on the *chars*. The remainder are either based close the *chars* so *char*-dwellers can visit them or they visit the *chars* 1-3 times per month.

10.2.2 Geographical feasibility and audience served by technology

For any micro-credit service provider, the outreach of the mobile transfer service they can offer is largely determined by the agent network of the bank carrying out the transfers. At present, the agent networks are fairly weak in the *char*s. For example, CLP aimed to use the service to cover as many Core Participants Households as possible. However, CLP could only reach 8,000 out of a total of 15,000 households in cohort 2.4 through mobile transfers. The main reason that CLP could not use Bkash transfers for 47% of households was the weak agent network in these areas.

It is also important to note a number of additional barriers to the number of *char*-dwellers who would utilise this service in practice. Firstly, it is necessary to present a National Insurance card in order to open an account. However, many people living on the *chars* do not possess a National Insurance card. The process for opening an account also requires the applicant to provide two passport photos. For *char*-dwellers this involves spending time and money travelling to the mainland. Finally, completing the application form often poses significant challenges for *char*-dwellers. The net effect is that the application processes are likely to deter many *char* dwellers from signing up to use mobile banking for receiving or paying back micro-credit loans.

10.2.3 Feasibility to partner with the service

For an MFI to set up an account and transfer funds from this account would not require a formal partnership. However, CLP found that creating a formal partnership with BKash made it much easier to troubleshoot logistical issues associated with using the service on the *char*s. For example, CLP was able to create an agreement where an alternative arrangement was possible for unblocking SIM cards for which typing an incorrect PIN had caused the account to be blocked. Standard process is for clients to call a hotline and answer a series of questions in order to unblock the SIM. However, this proved challenging and costly for many *char* dwellers. Instead of calling the hotline, CLP has an arrangement where the details of these individuals are sent to Bkash each month, who then unblocks these SIMs.

It is difficult to generalise about how easy it would be for different NGOs to form a partnership with a mobile banking service provider. However, it is possible to say with reasonable certainty that this would be dependent on factors such as:

- Size of the NGO client base and likely volume of transactions
- Nature of the special agreements required by the NGO
- Time commitments required by the mobile banking service provider

10.2.4 Resources required

i. Time to manage and implement

It is difficult to generalise about the time required for an NGO to switch to mobile cash transfers rather than manual distribution and collection of loans. This depends on factors such as

- The number of clients
- The specific systems used by the different mobile banking service providers
- The operational models used by the NGO
- The number and severity of operational issues encountered

However, it is reasonable to assume that successful implementation of mobile cash transfers requires significant mid or senior-level staffing to undertake negotiation of partnerships and to troubleshoot operational issues.

On the other hand, it also has the potential to reduce the volume of low-level staffing required for distribution and collection of loans. Though it should be noted that these reductions are not guaranteed. For example, if these staff stop distributing and collecting loans, but must continue with household loan monitoring visits, there may be a very small reduction in overall staffing requirements.

ii. Cost-benefit analysis

The shift to mobile transactions is more of an inconvenience and a cost to *char*-dwellers than a benefit. Particularly, time and money must be spent making transactions that were formerly simple, cost-free and quick. Time and money is also required for the application process and purchase of a SIM (approximately 150 BDT). However, one benefit is that *char*-dwellers can access the broader benefits of mobile banking, such as collecting remittances from friends or family working in cities.

For the NGO providing micro-credit, the shift to mobile cash transfers has some potential to reduce transaction costs involved in distributing and collecting loans. However, as the previous section outlined, there may not be an overall reduction in low-level staffing and there may well be an increase in mid to senior-level staffing requirements. As such, it is not safe to assume that the net effect will be a reduction in costs. Furthermore, any inconvenience or costs incurred by the *char*-dwellers in the process of receiving and repaying loans has the potential to lose the MFI clients, which would also reduce income.

10.2.5 Technical simplicity

The mobile technology underpinning the transfers is now well-established and unlikely to fail. The transactions themselves, because they are processed by the agent, should also be relatively easy for the *char*-dwellers. However, the issues about the application process mentioned above have proved to be very difficult for *char*-dwellers and have required CLP to take responsibility for taking passport photos and providing assistance with completing application forms. Another issue faced is that on average roughly 1% of clients forget their PIN each month and are unable to resolve this problem without CLP support.

10.2.6 Scale

As was mentioned under the 'Geographical feasibility' section, the scale is limited by the agent coverage. It is difficult to make any meaningful generalisations about whether the scale justifies the costs. This is a question which each NGO must analyse and decide about for their own specific case.

10.2.7 Sustainability

If the model managed to deliver a reduction in transaction costs for the NGO, without sufficiently inconveniencing *char*-dwellers to the point that they were lost as clients, then it would be financially sustainable for the NGO. However, as detailed under the 'cost benefit analysis' section, it is not guaranteed that any reduction in transaction costs will be achieved by using mobile cash transfers in place of manual distribution and collection of loans.

10.2.8 Relevance and added value to CLP

If transaction costs are reduced, this has the potential to increase the profitability of NGOs providing micro-credit to *char* dwellers. If increased profitability is achieved, it could increase the sustainability and outreach of micro-credit on the *char*s. However, the scale of this increase is dependent on the scale of the reduction in transaction costs. As detailed above, it not guaranteed that any reduction in transaction costs will be achieved by switching to mobile cash transfers.

10.3 Recommendations

- CLP should ensure all NGOs providing micro-credit to *char* dwellers are aware of mobile cash transfers as an option for distributing and collecting loans
- CLP should inform all NGOs providing micro credit that mobile cash transfers have some potential to reduce transactions costs, but this is not guaranteed
- CLP should advise NGOs to conduct profitability, risk and feasibility analyses for their own situation
- On request, CLP should provide information about experiences with implementing BKash stipend transfers on the *char*s, in order to assist NGOs with profitability, risk and feasibility analyses

11 Annex 5: Disaster resilience

There are many potential areas which mobile technology could be used to increase disaster resilience on the *char*s such as early warning systems; information dispersal after disasters; and in carrying out risk assessments. The main restriction for CLP is that it does not have the capacity to start from scratch a mobile technology project. This means that if we are to implement a programme we will need to work in partnership with a project that is already being carried out.

Following a review of early warning systems in Bangladesh, only one early warning system was selected as a potential viable partnership for mobile technology implementation. This would be working with the mobile networks, Grameenphone and Teletalk, government agencies: Disaster Management Bureau of Bangladesh; the Flood Forecasting and Warning Centre; and the Bangladesh Meteorological Department, as well as the Department for International Development (DFID) sponsored Comprehensive Disaster Management Programme Phase II (CDMP (II)) with the United Nations Development Programme (UNDP).

11.1 Grameen Phone, Teletalk and the Disaster Management Bureau of Bangladesh.

Grameenphone and Teletalk, are working with the Disaster Management Bureau of Bangladesh; Flood Forecasting and Warning Centre; and the Bangladesh Meteorological Department to provide early warnings with the UNDP's CDMP (II) for cyclones and floods to all 14 coastal districts.

As can be seen in the below table Grameen phone has by far the most subscribers and is probably the case on the *char*s.

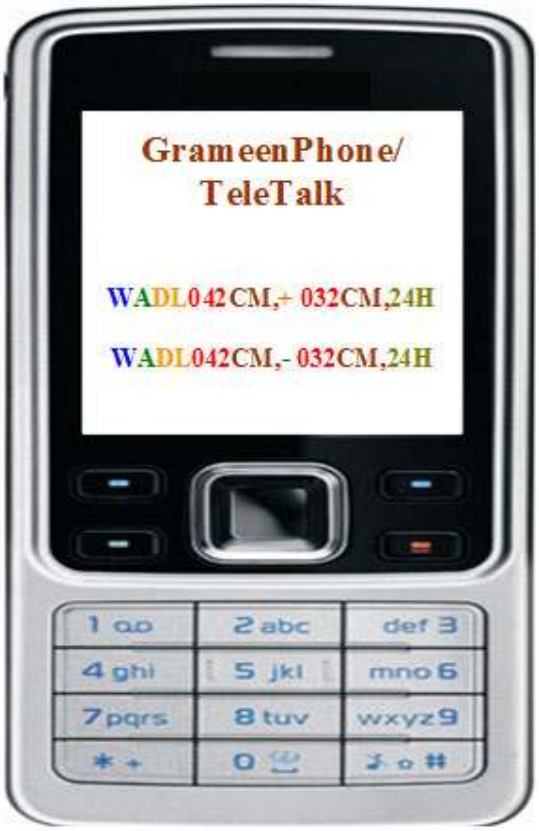
Table 3: Number of subscribers (in million) of major phone operators, 2011

Operator	Active Subscribers (in million)
Grameen Phone ltd	33.824
Banglalink	20.202
Robi	14.488
Airtel	5.045
Citycell	1.730
Teletalk	1.141
Total	**76.434**

Here is the description of the project from the Disaster Management Bureau website:

Cell Broadcasting can serve as an extremely useful addition to the conventional public warning methods, especially in Bangladesh where there is the continuing significant penetration of the mobile technology. The disaster-related information, early warning and coordination message is delivered to an individual mobile screen in a specific targeted geographical area. For this purpose DMB has signed a MoU with the Grameenphone ltd. and Teletalk Bangladesh ltd. on 04 June 2009 for piloting 20-character messages in the Cyclone prone Cox's Bazar and flood prone Sirajganj. A message format within 20 characters is developed with the help of Bangladesh Meteorological Department (BMD) and Flood Forecasting and Warning Center (FFWC) as shown in Fig-1. Following the successful completion of the pilot implementation the Grameenphone agreed to scale up the pilot project to 14 coastal districts (Cox's Bazar, Chittagong, Feni, Noakhali, Laxmipur, Barisal, Bhola, Patuakhali, Khulna, Bagerhat, Phirojpur, Sathkhira, Jalokhati and Chandpur). After the technical

development of Grameenphone network, it will possible to disseminate 80 character messages to the communities of the selected area. Another MoU will be signed between GP and DDM by this year.



W - Water level (পানির উচ্চতা)
A - Above (উপর)
DL - Danger Level (বিপদসীমার)
CM - Centimeter (সেঃমিঃ)
+ Increasing (বাড়ার সম্ভাবনা)
- Decreasing (কমার সম্ভাবনা)
24 H - Next 24 Hour (পরবর্তী ২৪ ঘন্টায়)

** যমুনা নদীর পানি সিরাজগঞ্জ পয়েন্টে বিপদসীমার ৪২সেঃমিঃ উপর দিয়ে প্রবাহিত হচ্ছে।

** আগামী ২৪ ঘন্টায় যমুনা নদীর পানি সিরাজগঞ্জ পয়েন্টে ৩২সেঃমি বৃদ্ধি অথবা কমার সম্ভবনা আছে।

11.1.1 Relevance to CLP

Currently CLP districts are not being covered although Sirajganj, a CLP1 district, was part of the initial pilot. Giving CLP HHs more time to react to oncoming disasters will mean less loss of assets, creating greater resilience to shocks and so more sustainable livelihoods.

11.1.2 Application type and audience served by technology

The focus audience for this would be all *char* dwellers. HHs would not need to have a mobile phone, only live near someone who has a Grameen phone subscription who can then spread the word to their community through word of mouth.

11.1.3 Geographical Limitations

Only potential limitation would be the ability to get a phone signal. This is generally not a problem on the *char*s but could be checked.

11.1.4 Feasibility of partnering with service/using their technology

The fact that Sirajganj was not included in the second part of the pilot, implies that the northwest *char*s are not seen as high a priority relative to the coastal areas. CLP would need to convince potential partners that *char* dwellers are in need of early warning systems.

11.1.5 Resources required

If CLP were to take this option, contact would have to be made with GP and other partners to discuss a deal. Once it was agreed we'd need to build in time and resources for updating and including this information in our regular programme roll-out, including train people in how to read the messages. It is possible that a representative from our partners could come along to the *char*s to assist in training households in using the service. Very little resources would be required once the project is running as the information to be disseminated will have been already collected by the Flood Forecasting and Warning Centre and the Bangladesh Meteorological Department. Grameen phone and Teletalk would be distributing to communities via their network. Would need to ensure great enough density of Grameen phone subscribers on the *char*s.

11.1.6 Time to manage and implement

Time to manage and implement is dependent on how quickly partnership can be built up with Grameen phone and Teletalk as well as UNDP.

11.1.7 Cost-benefit analysis

There may be initial startup costs but until contact has been made with Grameen phone / Teletalk and UNDP difficult to predict. It is beneficial for Grameen phone if CLP is promoting the use of grameen phone contracts.

11.1.8 Staffing

Once project started, very little staffing is needed as information gathered is performed by government and the dissemination of information is done by mobile networks.

11.1.9 Recommendations to CLP

To await the results of a study currently being undertaken at CLP. If a gap is found with access to early warning systems then contact will be made with potential partners of Grameenphone and Teletalk, and the government agencies Disaster Management Bureau of Bangladesh, the Flood Forecasting and Warning Centre; and the Bangladesh Meteorological Department and the UNDP to discuss feasibility of extending their programme into the CLP working districts.