Oddar Meanchey Community Forestry REDD+ Frontline SMS Pilot

Report prepared by

Stuart Raetz (Monitoring & Evaluation Officer)

Amanda Bradley (Program Director)

Sophal Seng (Senior IT Officer)

Channa Net (GIS Officer)

September – December 2011

Community Forestry Partnership Program, Cambodia

Contents

1. Summary

Between September and December 2011, the Pact Community Forestry Partnership program piloted *Frontline SMS*[1], an open-source mobile phone SMS (Short Message Service) communication interface. In the trial the *Frontline SMS* application *Frontline Forms*[2] was used for community forest patrol reporting by community forest management groups.

The purpose of the trial was two-fold:

- To use mobile phones for forest patrol reporting, and
- To determine the applicability of *Frontline SMS* for the Oddar Meanchey Community Forestry REDD+ project (OM CF REDD) and other Pact programs

The trial was conducted in three community forests (CFs), including Sorng Rokavorn (the 'Monks Forest'), Samaky and Romdoul Veasna. The trial was accompanied by training in the use of the *Frontline Forms* application for participating CFs. During the trial 28 patrols were accurately logged using *Frontline Forms*[3].

In relation to the basic criteria for SMS monitoring[4], *Frontline Forms*:

- Is cost effective; it is open-source and is relatively easy to set up (thus requiring limited staff time)
- Was easily used by community members for data input[5]; though there are uncertainties on the quality of data entered (see below)
- Is able to meet very basic project activity (patrol) monitoring requirements set by the Voluntary Carbon Standard (VCS)
- However, there are some limitations in data quality assessment and quality control (QA/QC) which should be addressed through development of the software or manual checking of the data. By checking with CF leaders after the submissions, Pact was able to determine that most information was logged correctly though there were several mistakes as well as cases where the same form was sent more than once. With more practice, the accuracy is likely to improve.
- Effectively integrated within the OM CF REDD monitoring system; patrol monitoring via forms complements biodiversity monitoring and enforcement reporting
- Linked with existing data management arrangements; data outputs are in cluster shared volume (csv), which is read by Microsoft Excel.

Overall the trial was found to be successful because the CF groups were able to cost-effectively send regular and timely reports to a central database where data could be easily compiled and analyzed. Furthermore, an automatic reply function built into the software made it possible for the communities to know that their message had been received.

---

[1] See http://www.frontlinesms.com/
[2] See http://www.frontlinesms.com/resources/frontlineforms/
[3] While a total of 35 patrols were reported, 7 were excluded because of double reporting.
[4] Criteria identified in an SMS scoping study by Pact CFP in early 2011.
[5] Note in this pilot community members did not use Frontline for data management, reporting or project improvement

Based on the trial findings (see 'Key Findings and Recommendations') it is recommended that the Community Forestry Partnership Program expand the use of Frontline Form to the other 10 communities in the project area. As the familiarity with the system grows, the system should be expanded to include more variables, according to local capacity and resources. It is very important that systems for data quality assessment and quality control (QA/QC) are integrated and maintained in order for the data to meet carbon accounting purposes. Finally, the feedback and response mechanisms, particularly in regards to incidents of illegal activity, need to be further developed so that communities see the effectiveness of this communication system.

2. Purpose of the Trial

In order for mobile monitoring to be useful for the OM CF REDD project it must meet the following criteria (identified in the Mobile Monitoring Report 2011):

- Cost-effective
- Utilized by community members
- Consistent with Voluntary Carbon Standard (VCS) and Climate Community Biodiversity (CCB) information requirements
- Linked to a centralized data-base administrated by one of the project implementing partners
- Integrated within the OM CF REDD+ monitoring system

The purpose of the trial is to evaluate the applicability of the *Frontline Forms* application to the OM CF REDD project. In addition this trial will document the process of setting up and using *Frontline Forms*, share key learning's and makes recommendations for utilizing this application in other Pact programs. With this in mind, this trial report will address:

- The extent to which Frontline Forms meets the monitoring requirements of the OM CF REDD+ project (see 'Summary')
- The process of setting up and using Frontline Forms (see 'Trial Process')
- Key learning's from the trial (see 'Key findings and Recommendations'[6])
- Recommendations for using and possibly scaling up Frontline Forms in the OM CF REDD project (see 'Key Findings and Recommendations' and 'Next Steps: Opportunities and Challenges').

Expected benefits of mobile monitoring are:

- Documentation of project activities (i.e. forest patrols) which demonstrate the contribution of community members in reducing deforestation and forest degradation
- Increased efficiency, reliability and reduced transaction costs in data collection and reporting
- Increased local responsiveness to events and incidents (i.e. illegal logging) in the forest
- Increased coordination between local community members and authorities (i.e. Forestry Administration) in forest protection.

---

[6] Learning's and observations are also documented throughout this report.

At this stage, the use of Frontline Forms by CF members fulfills the first two criteria; documentation of activities (patrol reporting) and efficiency in data collection. Because the central hub computer is in the Pact office in Phnom Penh and because local response mechanism have not yet been put in place, the third benefit (local responsiveness) is not addressed by the trial. However, mobile monitoring does have potential to create these benefits (this will be discussed in more detail in the section 'Next steps: Opportunities and Challenges').

3. Background to the Trial

The Oddar Meanchey Reducing Emissions from Deforestation and Forest Degradation (OM CF REDD+) project is a climate change mitigation project being implemented by the Cambodian Forestry Administration in partnership with Pact, Terra Global Capital (a US carbon development firm), and several local actors including the Children's Development Association (CDA), the Oddar Meanchey Community Forestry Federation, and 13 Community Forestry Management Committees (CFMCs).

The aims of this 30-year project are to:

- Mitigate climate change by sequestering 8.3 million tons of CO_2 over a 30-year period
- Improve local livelihoods and reduce poverty
- Protect forests and biodiversity

Documented in the Monitoring Framework (2011), the OM CF REDD+ project is required to conduct monitoring, evaluation, reporting and learning (MERL) to meet requirements set by the Voluntary Carbon Standard (VCS) and the Climate, Communities and Biodiversity Alliance (CCBA). The earning of carbon credits depends not only on the scientific assessment of forest biomass but also on effective monitoring of an extensive list of variables related to project interventions. In early 2011, Pact undertook research investigating options for mobile monitoring including a range of platforms and applications. Based on this study, it was decided to undertake a trial using Frontline Forms because of its low-cost, functionality, ease of use and applicability to the needs of patrol reporting.

Patrol reporting was selected for the trial because it is an ongoing activity in many of the 13 participating community forestry areas, even before carbon revenues flow to the project. Furthermore, community patrolling of the forest areas is perhaps the most important activity in preventing deforestation under the REDD+ initiative, and is thus critical to monitor effectively. As part of the OM CF REDD+ project, forest patrols are conducted at each of the 13 community forestry (CF) sites. While it varies from site to site, patrols are conducted from a daily to weekly basis. Groups of villagers typically travel through the forest either on foot or by motorbike or tractor depending on the terrain and condition of pathways. However, documentation on patrols is limited and uneven, with some communities conscientiously filling in a patrol log book after every patrol, while others neglect to do this regularly. Even if the patrols are logged, it is difficult and inefficient for this data to be transferred for general project reporting since copies are difficult to make in the village and burdensome to send to the provincial town or Phnom Penh. Communities also lack skills in compiling and analyzing their patrol data to observe trends in patrol efficacy and resource use, both which are quickly computed through the use of Excel once the data is compiled. Three CFs were

selected for the trial based on their capacity and reported frequency of patrolling; Sorng Rokavorn, Samaky and Romdoul Veasna.

4. Trial Process

The trial consisted of the following stages:

- **Scoping.** Conducted during early 2011 a range of SMS monitoring platforms and applications were canvassed and assessed for their applicability.
- **Set up.** During September 2011 the trial was set up with financial support from Pact Program Advancement. Materials were purchased, including handsets and modem. Frontline was tested and installed on a computer in the Pact office in Phnom Penh. A form was created on *Frontline Forms* for reporting patrols and translated to Khmer. Local NGO CDA was engaged to assist with training and Community Forestry groups were selected. Simple training materials were developed.
- **Training** was conducted between the 13th and 15th of September in Oddar Meanchey. First CDA was introduced and trained in *Frontline Forms*. After which the three CFs – Samaky, Sorng Rokavorn and Romdoul Veasna – were trained to use Forms. Training was interactive and practical. During training the CFs were also given supporting tools including hard-copy patrol, biodiversity and enforcement forms. Training and instructions on using the tools was provided to the CFs – see Annex A.
- **Follow up and support** was provided to the participating CFs; calls were made to each CF following training.
- **Data collection** was then conducted by the 3 CFs; with patrols being logged by participants over a three month period; between mid September and the 20th of December.
- **Patrol data** was then collated and reported back to the CFs following the trial. CFs then provided feedback on the results (see section 'Feedback from Trial Communities').
- **Evaluation.** The trial was evaluated by the CFP team to document the process of establishing the trial; determine the applicability of Frontline Forms to the OM CF REDD project; and document key learning's and recommendations for using and scaling up Frontline Forms.

Inputs

The total budget allocated by Pact Program Advancement for the Frontline Forms Trial was $3,889 including overhead costs for CFP. Actual costs for the trial were $2040.20. This included the purchase of the external modem (@$45) and four Khmer enabled telephones (@$80 ea), three of which were distributed to the communities and one which was kept for testing. Also included are the travel costs for the training in each community.

In addition, human resource inputs into the trial were:

- Senior IT Officer; approximately 40 hours
- Monitoring & Evaluation Officer; approximately 60 hours on a voluntary basis[7]
- Training assistant / GIS Officer; approximately 5 hours

---

[7] With support from the AusAID program.

- Local partner CDA also spent approximately 24 hours in setting up the trial
- Time volunteered by CFMCs to conduct patrols

Setting up Frontline Forms

After Frontline was installed and materials were purchased, the form was created and translated into Khmer with the following information:

- Patrol ID; i.e. 001.
- Date of patrol (day, month & year)
- Time of patrol
- Number of people on patrol
- X waypoint of starting location (UTM)
- Y waypoint of starting location (UTM)
- Time spent patrolling
- Amount of fuel used (liters)
- Tick box if you observe:
    - Illegal activity
    - Wildlife
    - Fire

All data inputs were numeric because it is not possible to enter responses on handsets in Khmer (though the form itself was in Khmer). See Annex A for patrol form in English.

Once the form was created on the central hub computer it was sent and installed on the client handsets using the process outlined in the video tutorial for Forms.

http://frontlinesms.ning.com/video/video/show?id=2052630%3AVideo%3A10947

Once the Form was installed on each phone, tests were conducted in the Pact office by sending completed forms to the central hub computer. During this stage, the form was edited and re-installed on the phones.

Training

Training was conducted in Oddar Meanchey between the 13th and 15th of September. During this period 8 participants were trained in the use of Frontline Forms.

- Two CDA staff were trained to use the Frontline SMS system and Frontline Forms on mobile handsets.
- CDA staff were trained to train community monitors in using Frontline SMS and Frontline Forms.

- Two CF members at three sites (six in total) were trained by CDA staff to use mobile phones to report forest patrols using the Frontline Forms application. During the CF training, a Pact staff member was present to provide technical assistance and support.

Training materials and protocols developed by Pact for community members to support patrol reporting. See Annex for training materials.

Follow up and support

Follow up training support was provided to CFs by calling them at intervals of a couple of days after training and at weekly intervals during the first 4 weeks of the trial, and at fortnightly intervals during the last two months. Early calls were particularly important to ensure adoption of text messaging. No trial participants were habitual users of text messaging prior to the trial, making early follow up calls critical for adoption. Interestingly, all users understood and found the application easy to use during training, but no participants logged a patrol until the follow up calls were made a couple of days later.

Data collection

Data was collected over a three-month period from the 14th of September until the 20th of December at three sites: Sorng Rokavorn (the 'Monks forest'), Romdoul Veasna and Samaky.

During the trial 28 patrols were accurately logged overall, with 10 at Sorng Rokavorn, 6 at Romdoul Veasna and 12 at Samaky. Data was synthesized by removing patrols that were double reported. On average 8 patrollers spent 10 hours and 51 minutes during a patrol and used 8.17 liters of gasoline. There were 11 reports of illegal activity, 5 reports of wildlife sightings, and 3 reports of fire. See table below.

	Samaky	Sorng Rokavorn	Romdoul Veasna	Total/Average
Patrols logged	12 patrols	10 patrols	6 patrols	28 patrols
Number of participants per patrol (average)	8	5	14	8 patrollers (ave)
Time spent patrolling per patrol (average)	5 hrs 33 mins	10 hrs 58 mins	7 hrs 33 mins	10:51 (ave)
Gasoline used per patrol (average)	4 liters	9 liters	12.1 liters	8.17 liters (ave)
Total Reports of illegal activity	0	5	6	11
Total Reports of wildlife	0	3	2	5
Total Reports of fire	3	0	0	3

Feedback from Trial Communities

After the completion of the trial, Pact conducted follow up interviews by telephone with the community leaders in order to check data accuracy, learn about the community experience in using the system, and get their feedback on how to improve it.

- **Samaky CF**

In Samaky CF, the community leader Ms. Mol Nen was strongly supportive of the SMS system because it allowed her to transmit information very quickly to other stakeholders.[8] She said that she

---

[8] The project envisions using Frontline SMS to send urgent reports from the communities to a provincial mobile enforcement unit, local NGO partners and the CF Network through a built-in alert system;

would like to see the system continue and be expanded to all the CFs in the province. When asked whether the total of 12 patrols for her CF was accurate, she claimed that in fact 17 patrols had been conducted; however, it was not possible to verify this number with the community logbook due to lack of time to return to the communities. In regards to fire in the area, it was confirmed that there were two fires in November which were outside the CF area, but the report of a fire in October was a mistake. These discrepancies require further investigation and consideration.

- **Sorng Rokavorn CF**

In the case of Sorng Rokavorn CF, the community leader, the Venerable Bun Saluth, was also in favor of the SMS system and recommended that it be expanded; however, he had some suggestions. First, he said that sometimes when a report was sent there was no confirmation[9], so he wasn't sure if the report had been transmitted. He also lamented the fact that it was necessary to make both a written report and an SMS report which seemed like double work. If the SMS system can be relied on, he would prefer not to have to write a report. He also highlighted some shortcomings with the forms as follows:

- If a patrol team splits into 2 or 3 groups then it is not easy to record the results from each group. The solution to this would be asking the group leaders without handsets to provide information to the Chief upon return to the village.
- There should be separate forms for recording details of multiple illegal activities encountered. The form should include a place to record confiscated items, GPS coordinates, and people involved (both offenders and those who cooperate with the community in the case).
- Some patrols are longer than 24 hours. There was confusion how to enter hours for multiple days in the form.
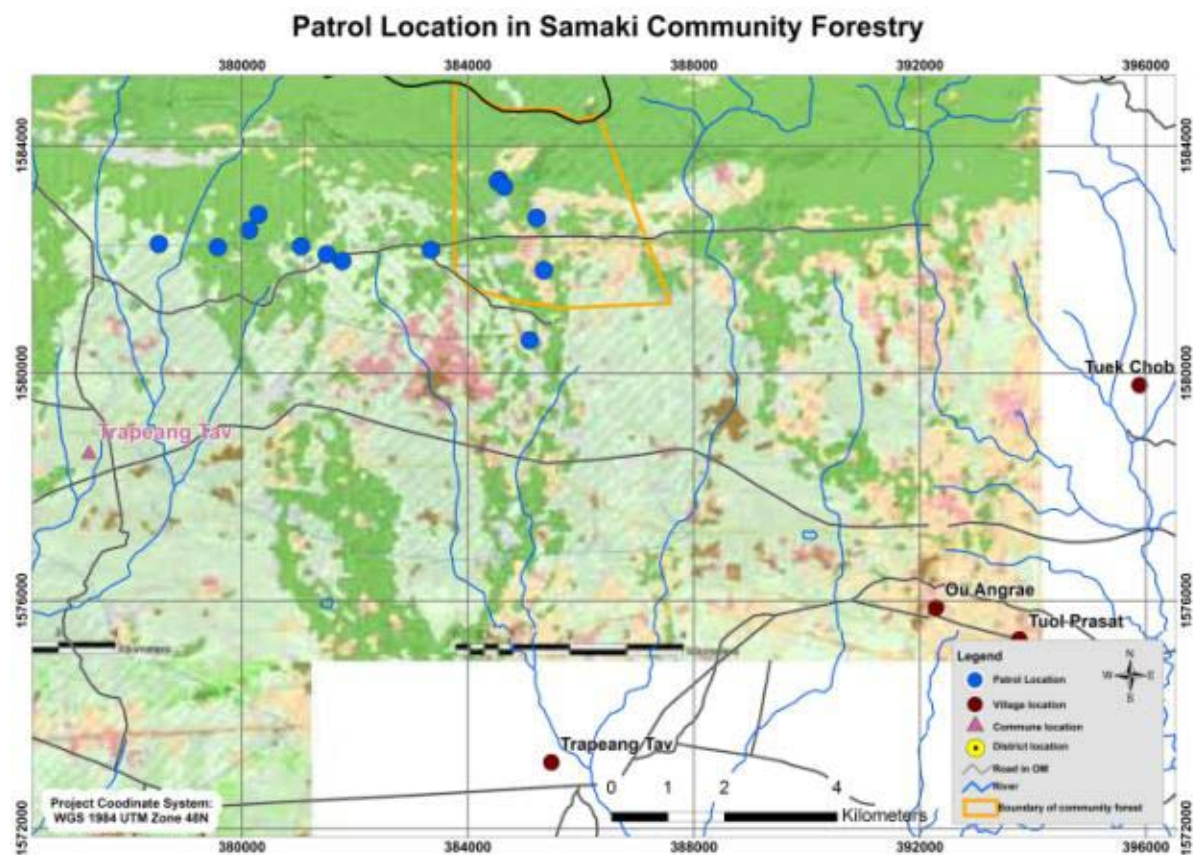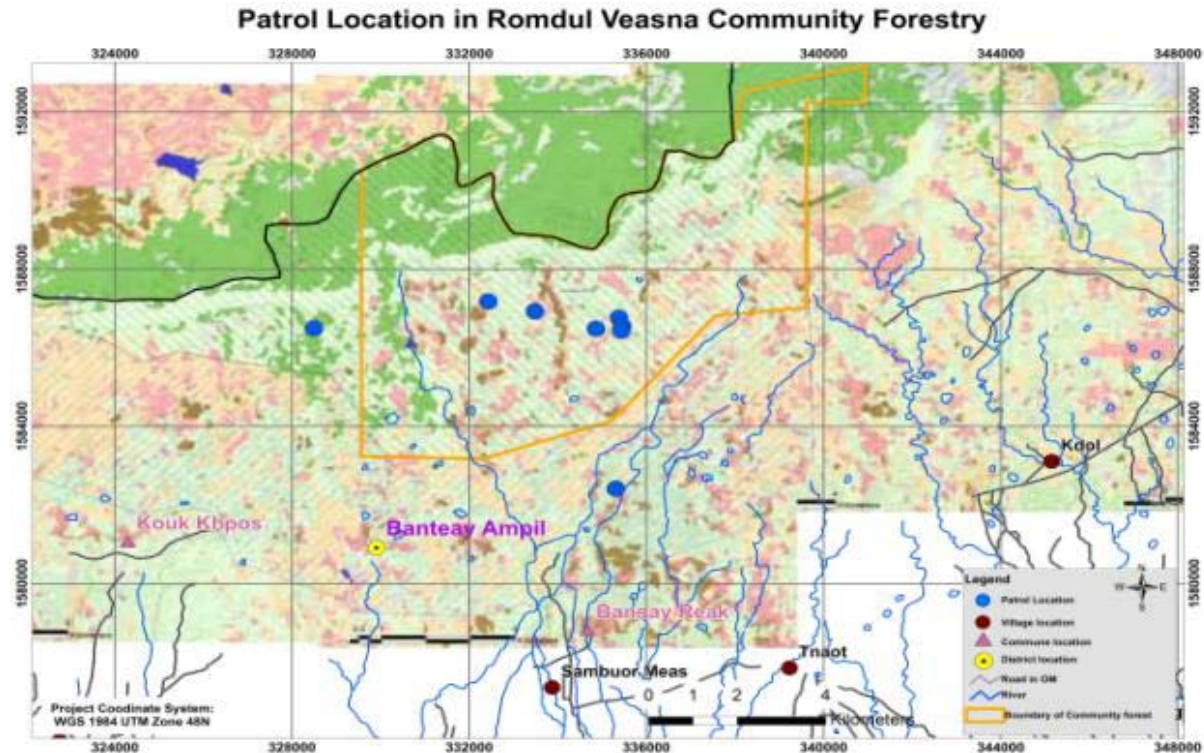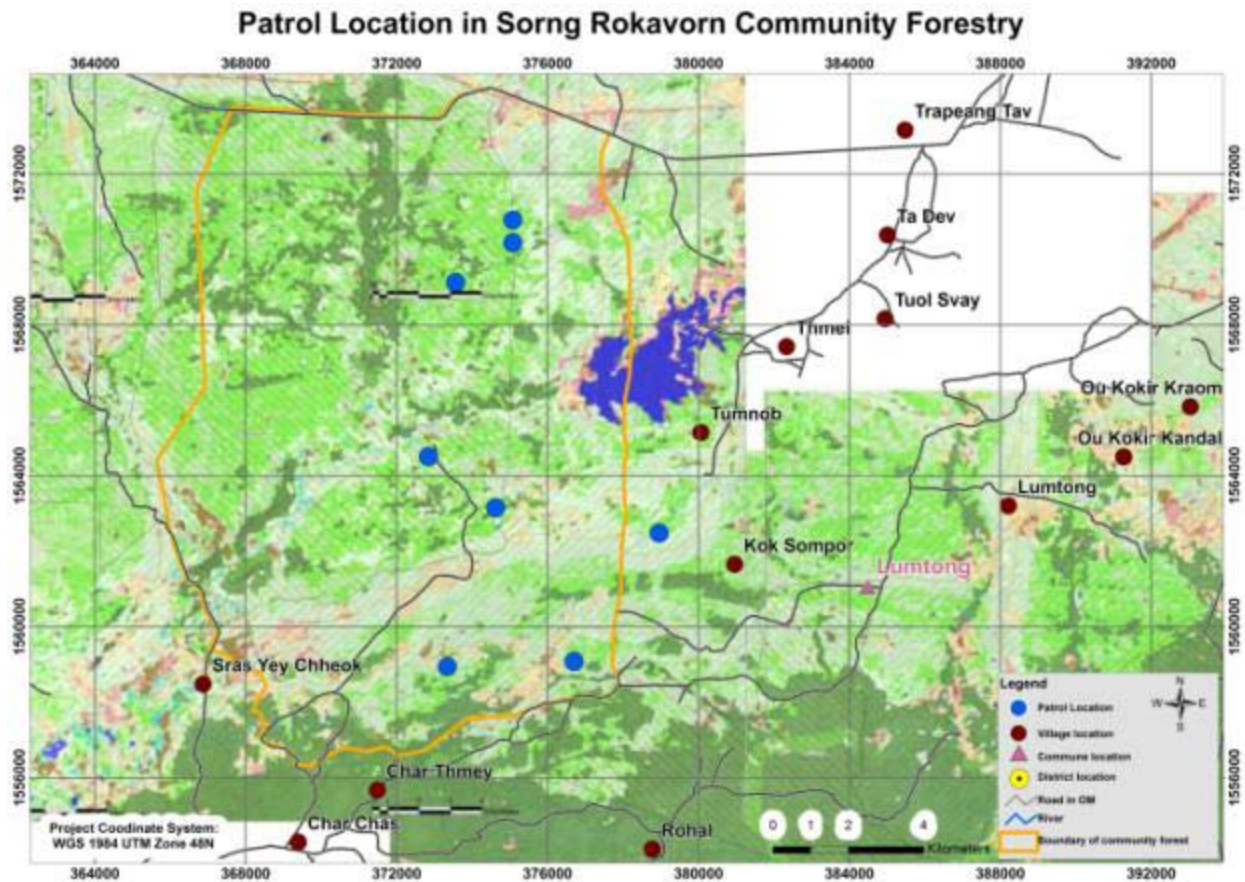
- **Romdoul Veasna CF**

The CF Chief in Romdoul Veasna CF confirmed that in fact 6 patrols had been conducted during the trial period and that the number of patrollers, hours in the field, and gasoline used were all accurate. He was in favor of the system and said that he appreciated the immediate confirmation of receipt of the submission. He suggested that the data should be forwarded to other key stakeholders such as the Forestry Administration and the Provincial Governor's office in order for them to take action on the issues reported. With regards to the incident report on wildlife, he noted that the box had been checked not because of sightings of wildlife in the forest, but rather encounters with hunters who were transporting wild boars and barking deer that they had killed. A separate form should be developed to elaborate on these incidents. The CF Chief also said that he was eager to delegate the monitoring work and train someone else in the community to manage the telephone and data entry.

---

[9] The reason the confirmation was not received is probably because the report was sent while outside the telephone coverage area.

Location of Patrol Starting Points

The communities were asked to take GPS coordinates for the starting point of their patrols. Looking at the results, it appears that there was some confusion about precisely when to take this point, since some "starting" points are both far outside the CF and deep inside. However, the trial demonstrated that with further instruction, it is possible for communities to collect and transfer this geospatial data.

Patrol Location in Romdul Veasna Community Forestry

Patrol Location in Samaki Community Forestry

Patrol Location in Sorng Rokavorn Community Forestry

Data use

The data collected during the trial contributes to the reporting requirements for the VCS and CCB under the OM CF REDD+ mosaic methodology. This methodology requires the regular collection of data covering a wide range of variables to track the efficacy of forest protection strategies in reducing deforestation and degradation.

5. Findings

Key findings and recommendations

The key findings and recommendations of the trial are outlined in the Table below.

Finding	Recommendation
1. **Modem.** A robust GSM modem (connected via USB) is necessary to provide a reliable connection; a Huawei modem was recommended and worked well. Problems were encountered when the Frontline application was run on a computer without the modem driver installed.	*Use a GSM modem (as opposed to a phone connected via USB) with the Frontline central hub computer; modems are more reliable. Install the Huawei driver onto the PC before using the modem to connect to Frontline SMS on the central hub computer.*
2. **Phones.** Khmer-script enabled *Nokia 5130 Xpress* phones are compatible with *Frontline Forms* and have a simple user interface. The phones also allow composition of messages in the Khmer language. The process of designing and uploading the form was easy enough.	*To find the right phone compatible with Frontline Forms shop around and test the phone before purchasing in bulk.*
3. **Central hub computer.** Frontline runs on one computer which must be left running (sleep mode okay with monitor turned off). When installed on a laptop, the modem continually overheated, this problem was fixed when transferred to a desktop PC.	*Install the Frontline SMS software on a PC <u>not</u> a laptop. Installing the Frontline central hub computer on a laptop was useful during the field visits for set up and demonstration; however, following set-up it is recommended to install Frontline on a PC to avoid overheating and modem failure.[10]*
4. **Setting up Frontline** is relatively simple but requires relevant technical support and assistance. Practical advice provided by other users was also very helpful in the set up.	*Budget for and include technical personnel in the team for Frontline.*
5. **Setting up Frontline Forms.** Customizing the Frontline Form in Khmer script involved several iterations to ensure that questions were worded appropriately and within the word limit (140 characters). The trainer found that making changes to the Form while in the field was difficult and time consuming.	*Ensure that Frontline Forms is set up, finalized, and saved before it is downloaded to client phones and taken into the field. Changes can be made easily to a form that is backed up, but if the form is not backed up then changes can only be made a maximum of 3 times.*
	Keep Forms simple and clearly worded using

---

[10] It was suggested that a USB cable could be used in conjunction with the laptop in order to control overheating, though this strategy was not tested.a

	local language and phrasing.
6. **Fields for data entry** in Forms is in English, despite the Form itself being in Khmer.	*Unless users can enter responses in English, all response fields need to be either numerical, check boxes, or coded (numerically). Allow for more characters in translation. Consider software development in the future to make entry in Khmer language possible.*
7. **Adoption of technology.** Participants understood and grasped the use of *Frontline Forms* with ease, however the application and the use of mobile phones to text was unfamiliar to them.	*Provide training and support to participants commensurate to their level of experience using mobile phones.*
8. **Follow up** support and clear, simple training materials were necessary to ensure adoption of technology.	*Provide follow up support and technical assistance to participants; i.e. phone calls to clients on an as-needed basis.*
9. **Quality control**. Data entered needs to be checked for accuracy. Without further software development, *Frontline Forms* cannot automatically validate data that is entered.	*In order to satisfy quality control and verification requirements, Frontline Forms needs to be supported by a manual reporting system; which will be used to cross check data reported via Forms. Explore data verification possibilities with Frontline and consider software development for this purpose.*
	Consider options and applications to update automatic data validation to Frontline Forms including OBCD[11].
10. **Local use** of monitoring results in this trial was limited because the central hub computer is based in Phnom Penh. Having the central hub computer based centrally (in Phnom Penh) enabled the trial to be set up and managed with greater ease.	*In order to increase local use, responsiveness, ownership and use of data, Frontline should be administered and used at a provincial level (i.e. based in the CDA office in Samraong). A message alert or e:mail forwarding system should also be explored in order to inform all stakeholders on urgent incidents.*
11. **Managing expectations** of CFs is an issue when bringing in costly phones into the community. Difficulties were faced with one CF expecting additional resources to conduct patrols; which Pact was unable to provide. This issue is potentially exacerbated by the fact that one phone (@USD$80) is worth far more than the average monthly wage in the	*Develop a clear understanding with community groups on the expectations and requirements for mobile monitoring including expected commitment, benefits, available support and resources. The phone should be viewed as tool for the project and not a personal item.*

---

[11] http://www.frontlinesms.com/wp-content/uploads/2010/06/FrontlineSMS-for-Data-Collection-without-Forms1.pdf

project area.	
12. **Potential for REDD+ Monitoring.** The monitoring data requirements for REDD+ projects (referred to as 'MRV' – monitoring reporting and verification) registered with the Voluntary Carbon Standard are highly demanding. Frontline SMS systems have the potential to make data collection more efficient and cost effective.	*A staged approach to introducing variables to communities is recommended in order not to overwhelm with data requirements at the beginning. Start simple and build the system up over time as capacities increase.*
13. **Linking SMS submissions with response.** The trial communities logged 11 reports of illegal activity, but as yet there is no alert system in place to provide immediate response to incidents reported. To achieve the overall goal of improving forest protection and maintain community motivation, it is necessary to close this communication loop.	*Pact will explore the possibility of developing software functionality to provide automatic alerts to project stakeholders (Forestry Administration, mobile enforcement unit, etc.). Pact will also develop a separate Frontline form for reporting on illegal activities in more detail.*

Technical issues

- **Editing Forms.** *Frontline Forms* is capped at 3 edits per form. In order to edit a form more than three times, it is necessary to create a backup form, which can then be used for further Form edits. During the process of Form development, it was necessary to edit the form several times, particularly during the translation stage; Khmer script uses many more characters than English.
- **Modem overheating.** During the early stages of the trial *Frontline Forms* was installed on a laptop. The modem consistently overheated while used on a laptop (possibly because it rested against the desk, or because that particular laptop model could not cool itself effectively). When transferred to the PC, this ceased to be an issue, and the modem ran and received messages without any problems.
- **Double reporting.** Trials were consistently double (even triple) reported. This was simply because when the user sent the completed form to the central hub computer, the form went back to the submit button, making double reporting an easy mistake. When the form was received by the central hub computer a note was sent back to the client stating that the form was received, however the note was in English. It is important to note that the form will not send until in a telephone reception area. If the user has not received a response, he/she should check the reception on the phone and then wait for confirmation to come once they return to their village (where they have phone reception). If they do not receive confirmation, they may try to send again, which only queues more forms in the "outbox". In the future, as the system develops, patrol leaders could send additional forms to provide important details on illegal activities, fires, or wildlife sightings. Frontline can store multiple forms and allow the user to submit multiple types of information in an easy format.

Cultural factors

- Adoption of technology. Participants had never or rarely used mobile phones for text messaging before. While they appeared to understand the Forms quite well and were able to demonstrate use quite easily during training, actual use for patrol reporting after the training was slow to get started. Along with the efficient data collection benefits of the system, there is also a benefit in boosting the technical literacy of the project beneficiaries which is particularly worthwhile in view of the long-term nature of the project.

Weaknesses

- Quality control and automatic verification of data collection
- Central hub computer is based on one computer

6. Next Steps: Opportunities and Challenges

Based on the experience in the three communities, the system may be scaled up for expanded use and improved as follows:

- **Expansion to other 10 Communities in the Project Area**
  Over the next 6 months, Pact intends to expand the coverage of the system to the other 10 communities in the project area. This will necessitate purchase of additional phones, field training, and ongoing financial support for telephone charges. The local phone company (Mobitel) offers monthly plans for 40 text messages and 40 local calls within the network for $3. For higher volume, a plan for 80 text messages and 80 calls is available for $5 per month. If Cambodia's national REDD program decides to use SMS messaging for its monitoring reporting and verification systems (MRV), it would be wise to negotiate with telephone service providers for a tailored usage and payment plan.

- **Improved accuracy of data**
  Additional work is needed to ensure the accuracy of data received. There is a natural learning curve in the use of SMS text messaging among the community members. Once community monitors are nominated and paid a stipend for their work, there will also be increased accountability for the data. From a technical standpoint, Pact will look to integrating automatic data verification through increased functionality of the software.

- **Using data for improved forest management**
  Analysis and mapping of field data is likely to reveal trends and provide insight into improving forest management. It is important that communities are involved in data synthesis and analysis so that they can plan their forest management activities accordingly.

- **Increasing data variables**
  Pact will develop new forms for reporting on illegal activities, wildlife sightings, and fires. Forms may also be used for other related REDD project activities (i.e. assisted natural regeneration, biodiversity monitoring). These additional variables will be introduced gradually as local capacity increases. When carbon revenues become available, there will be ongoing stipends for selected community monitors to support the data collection and monitoring work..

- **Improved Response and Coordination**

It is very important that data and information is used not only to satisfy VCS and CCB reporting requirements, but also to improve response and coordination among stakeholders towards more effective forest management. Communities need to witness prompt attention to the issues on the ground. This goal requires a more generalized approach and suite of activities; however, the Frontline SMS system is an important part of this strategy in supporting timely information sharing among partners. Particularly on urgent issues such as illegal activities and fires, Frontline SMS has the potential to serve as an early warning system. Once carbon revenues become available, a mobile enforcement unit will be set up to provide backstopping support on enforcement to the local communities. The Frontline system could serve to inform all stakeholders on urgent issues and activate the mobile enforcement unit to take action.

The current enforcement system is based on the time-consuming transfer of handwritten reports through official channels. It will take some time before electronic reports are recognized and utilized as an official call for action. In the meantime, the transfer of information through the Frontline system will serve as an informal information sharing mechanism and early warning system. Pact will explore the possibility of sending alerts by e:mail or text message to a wider group of users as well as linking the data to a website to provide additional information and mapping of incidents.

- **Automatic Geospatial Data Sharing**
  It would be very useful if geo-referenced data such as locations of illegal activity and fire could be automatically mapped and displayed online so that project stakeholders can immediately see the location of these activities. It is recommended to discuss with Frontline to determine what additional programming would be necessary to make this function possible.

Annex A: Patrol form

Patrol ID	Date	Start time (24 hour)	Patrol leader (name)	Number of people on patrol	Waypoint (start)	Area patrolled	Fuel used (Liter/s)	Time spent patrolling	Incident report		
									Enforcement	Biodiversity	Fire

Annex B: Training materials

របៀបប្រើទូរស័ព្ទប្រាន់ខ្សាញ (Frontline)

សូមអនុវត្តន៍តាមការណែនាំខាងក្រោមដើម្បីផ្ទេរទិន្នន័យនៃការត្រួតពិនិត្យព្រៃឈើទៅក្នុងមជ្ឈមណ្ឌលថតឯកសារ។
ពត៌មានរបស់អ្នកគឺមានសារៈសំខាន់ណាស់ និងបានប្រើសំរាប់ពិនិត្យមើលលើតំរុងសួទានការបាន។
សូមអគុណសំរាប់កាសហាការបស់អ្នក បើមានចំងល់សូមទំនាក់ទំនងមក អ្នកស្រី នេត ចណ្ណា តាមរយៈ
ទូរស័ព្ទលេខ 092 858 091 ។

1. របៀបបើកទូរស័ព្ទ

ចុចលើពាក្យ **មឺនុយ**

ចុចចុះក្រោមរួចចុចលើពាក្យ **កម្មវិធី**

ចុចលើពាក្យ **កាតអង្គចងចាំ**

ចុចលើពាក្យ **Form**

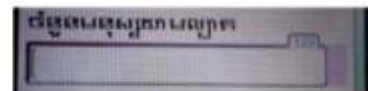ចុចលើពាក្យ **Frontline Form SMS**

ចុចលើពាក្យ **Enter New Data**

អ្នកនឹងឃើញសារនិយាយថា

'Your SMS was sent. Please wait for a reply'

ចុច 'OK'

ដើម្បីបិទកម្មវិធីសូមចុចប៊ូតុងដាក់ទូរស័ព្ទចុះ៖

រួចជ្រើសរើសយកពាក្យ ក្រម
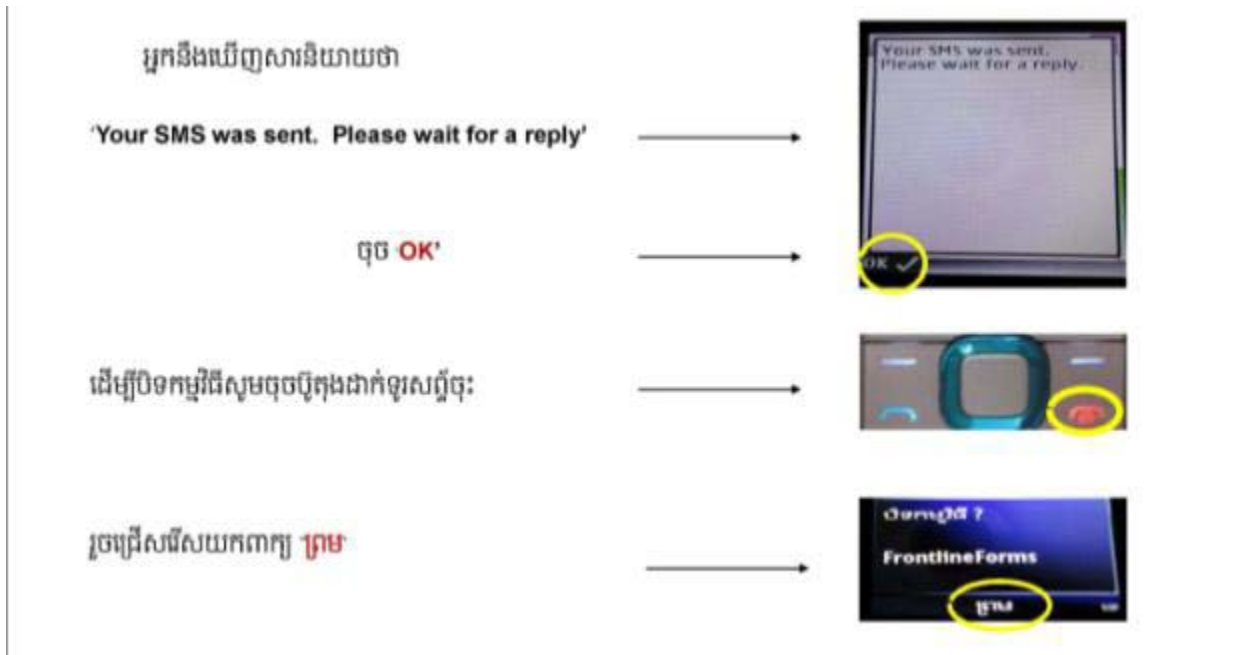
2. ការប្រើប្រាស់ទម្រង់

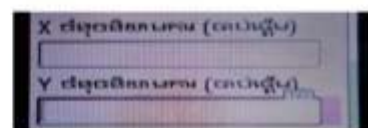នៅក្នុងទម្រង់សូមរាយបញ្ចូលដូចខាងក្រោម

- លេខសំគាល់ចំណុចយាមល្បាត

- កាលបរិច្ឆេទ(ថ្ងៃ/ខែ/ឆ្នាំ)

- ពេលវេលាចាប់ផ្ដើម (២៤ ម៉ោង)
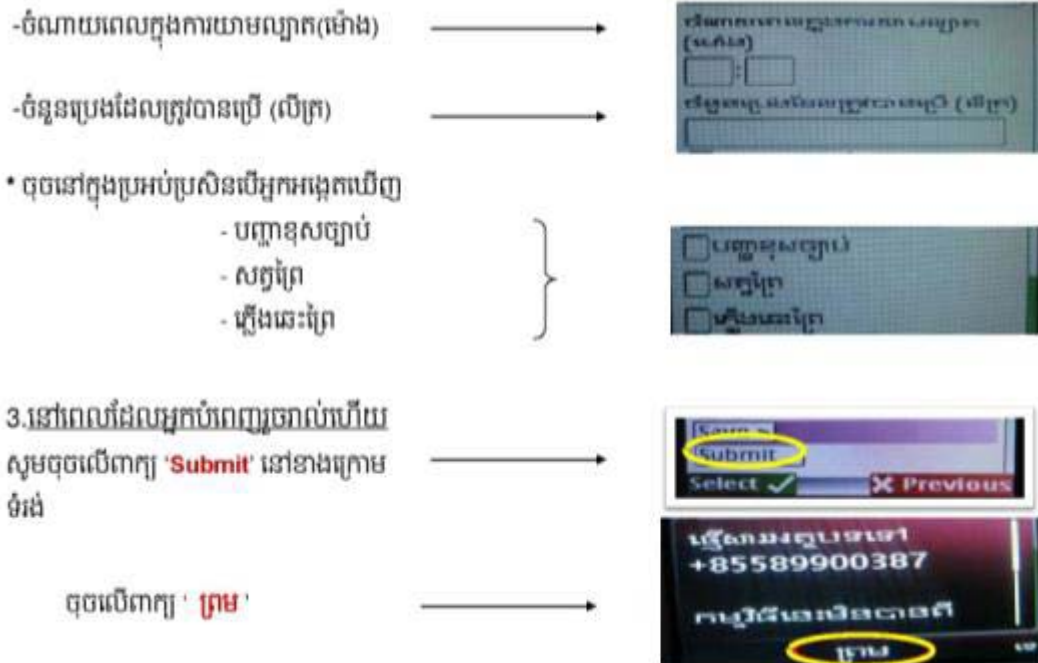
- ចំនួនមនុស្សយាមល្បាត

- X ចំណុចនិយាមការ (ចាប់ផ្ដើម)
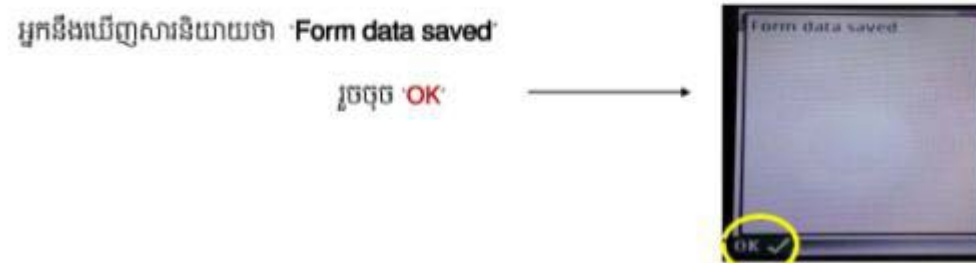- Y ចំណុចនិយាមការ (ចាប់ផ្ដើម)

21

-ចំណាយពេលក្នុងការយាមល្បាត(ម៉ោង) ⟶ [image: form field with time boxes]

-ចំនួនប្រេងដែលត្រូវបានប្រើ (លីត្រ) ⟶ [image: form field]

• ចុចនៅក្នុងប្រអប់ប្រសិនបើអ្នកអង្កេតឃើញ
    - បញ្ឆាខុសច្បាប់
    - សត្វព្រៃ
    - ឈើងនេះព្រៃ
⟶ [image: checkboxes]

3.នៅពេលដែលអ្នកបំពេញរួចរាល់ហើយ
សូមចុចលើពាក្យ 'Submit' នៅខាងក្រោម
ទំរង់ ⟶ [image: menu showing Save, Submit, Select, Previous]

    ចុចលើពាក្យ ' ព្រម ' ⟶ [image: phone screen +85589900387, ព្រម]

4.ដើម្បីរក្សាទុកទម្រង់ទុក

ប្រសិនបើអ្នកមិនទាន់ចង់ផ្ញើទម្រង់ដែលអ្នកបានបំពេញរួចរាល់ហើយនោះ អ្នកក៏អាចរក្សាទម្រង់នោះទុក ហើយផ្ញើ
នៅពេលក្រោយក៏បានៗ ក្នុងករណីសំខាន់ណាស់ ដើម្បីបំពេញទម្រង់មុនពេលនិង
ក្រោយពេលយាមល្បាតៗ អ្នកក៏អាចធ្វើបៀបនេះបានផងដែរប្រសិនបើទឹកខ្សែងទូរស័ព្ទរបស់អ្នកគ្មានសេវាៗ
សូមធ្វើបៀបនេះ៖
ក្រោយពេលវាយបញ្ចូលព័ត៌មានយាមល្បាតចូលទៅក្នុង

ទម្រង់រួចហើយ ចុចចុះក្រោម រួចចុចលើពាក្យ 'Save' ⟶ [image: menu showing Save, Submit, Select, Previous]

អ្នកនឹងឃើញសារនិយាយថា 'Form data saved'

    រួចចុច 'OK' ⟶ [image: phone screen "Form data saved", OK]

5. វិធីផ្ញើសារដែលបានរក្សាទុក

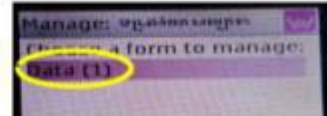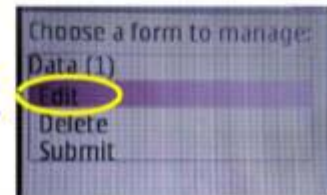ចុចចុះក្រោម រួចចុចលើពាក្យ 'Manage Data'

ចុច លើពាក្យ 'ទិន្នន័យមាលម្ភាគ'
បន្ទាប់មកនឹងឃើញអក្សរ

'Choose a form to Manage' ហើយចុចលើពាក្យ 'Data'

បន្ទាប់មកចុច 'Edit' ប្រសិនបើអ្នកចង់កែ ឬ បំពេញពត៌មាន
បន្ថែមមុនពេលផ្ញើសារចេញ
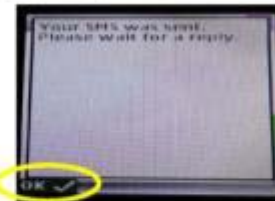

បន្ទាប់មកទម្រង់និងត្រូវបានបង្ហាញ

ចូលបំពេញនៅក្នុងទម្រង់ហើយបន្ទាប់មកចុច 'submit'
ដើម្បីផ្ញើសារចេញ

អ្នកនឹងឃើញសារនិយាយថា 'Your SMS was sent,
please wait for a reply'
ហើយចុច 'OK'

ដើម្បីបិទកម្មវិធីសូមចុចប៊ូតុងដាក់ទូរស័ព្ទចុះ៖

រួចជ្រើសរើសយកពាក្យ 'ក្រម' ។