



Final Technical Report

Component 2.4

Innovation for Climate Adaptation and Resilience

Name of Organization:	Tarayana Micro Finance Private Limited
Title of Project:	Technology driven microloan fund for climate adaptation of remote, vulnerable mountain communities in Bhutan
Reporting Dates	December 2021- July 2022
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Table of Contents

- 1. Executive Summary**
- 2. Background to Pilot**
- 3. Process, Progress and Results**
- 4. Challenges and Mitigation Measures**
- 5. Lessons Learned and Recommendation**
- 6. Conclusion and Way Forward**

Annexes:

Annex 1: Handover execution plan

Annex 2: An Endorsement letter or certificate of completion from the endorser.

Annex 3: Dissemination products (case studies, brochures, links to videos etc)

Annex 4: Financial Report (including transaction lists)

1. Executive summary

Tarayana Microfinance (TMF) is the microfinance initiative of Tarayana Foundation a Civil Society Organization founded by Her Majesty The Queen Mother Ashi Dorji Wangmo Wangchuck. TMF's strategic focus is on climate adaptation, through innovative products developed to help smallholder farmers in remote, vulnerable communities adapt to climate change by protecting and growing their livelihoods.

This pilot solution aimed to deliver technology-driven microloans for climate adaptation of remote, vulnerable mountain communities in Bhutan. The innovations involved were aimed at reducing the operating cost of bringing climate risk financing to remote mountain communities so much so that the operating model would be self-sustainable at scale.

The project has been a success, with Tarayana Microfinance providing financial literacy training to mountain communities, reaching approximately 280 households and processing 30 loan applications in Laya and Lungo, and developing Bhutan's first microfinance bank APIs allowing mobile banking apps to pull live loan information, borrowers to repay via the mobile banking app, and loan status to be updated in real-time following repayment without any human involvement. We have catalysed financial institutions in SAR to serve these unbanked communities by partnering with Bank of Bhutan to open savings accounts for customers in rural areas. We have improved access for Bhutanese women with 49% of our loans going to women. The innovations made as part of this pilot have allowed Tarayana Microfinance to break-even two years earlier than previously forecast.

2. Background to Pilot

i) Pilot solution

Low-cost technology driven solution to bring climate risk financing to remote mountain communities:

Tarayana Microfinance has built on Tarayana Foundation's 18 years of experience with livelihood development and climate adaptation in the most remote and vulnerable communities of Bhutan, and with the help of Oliver Wyman, an international consulting firm, developed a new, technology driven solution that addresses the barriers to climate adaptation faced by remote mountain farmers. The solution includes various inclusive product innovations and two app innovations as described above. The solution is game changing in the industry because it reduces the operating cost of bringing climate risk financing to remote mountain communities such that the operating model is self-sustainable at scale.

The solution includes:

1. Product and process innovations tailored to climate risk financing (Live in 17 of Bhutan's 20 districts):
 - a. Product innovation: repayment schedule to match harvest flow and seasonality
 - b. Product innovation: Hire purchase agreements (first in Bhutan)
 - c. Service innovation: Form filling; climate change training; business incubation
 - d. Process innovation: Outsourced mandatory pre-savings
2. App Innovation 1 (Live in 17 of Bhutan's 20 districts): Using Google's AppSheet technology, we developed an in-house low-cost fully digital credit process, integrated with our Cloud-based loan system. This solution reduces cost to serve remote communities with

climate risk financing because all interactions can be done remotely by the field officers online and offline

3. App Innovation 2: Tarayana Microfinance has partnered with Bank of Bhutan, the largest commercial bank in the country, to use their dominant mobile banking platform and their app-enabled agency banking network. This project has enabled all financial transactions to be digital, even in the most remote areas of Bhutan, thus massively reducing operating costs, and making it economically viable to bring climate risk financing to mountain communities. Smartphone users use mBOB to make repayments for their climate adaptation loans. Borrowers who do not have smartphones can make digital payments through a BOB Connect agent.

ii) Goals and objectives and how it contributes to the overall goals of innovation in climate resilience

The ultimate desired impact was that mountain communities adapt to climate change. We aimed to catalyse financial institutions in SAR to improve financial inclusion for remote, vulnerable mountain communities and their members, especially female smallholder farmers and pastoralists.

iii) Target groups and beneficiaries

The key target groups for the project were the credit availing clients from the remote villages of Laya and Lungo and the beneficiaries were the whole communities of Laya and Lungo

iv) Intended key metrics

The following metrics were used during the implementation of the pilot:

1. 2 app integrations completed: TMF Cloud to mBOB and BOB Connect
2. Reach: Number of Laya and Lungo households reached with apps to introduce possibility of microloans for climate risk adaptation
3. Output: Number of microloan applications processed in pilot communities on TMF app
4. % of Laya and Lungo microloan borrowers who use mBOB to repay loans

iv) Expected key short-term and long-term impacts, and a short innovator's profile

Short-term, we anticipate a snowball effect following this pilot where unbanked rural pastoralists, who have historically been averse to borrowing, see their neighbours benefit from our microloans, and gain the confidence to engage in the financial system themselves.

Long-term, we anticipate rural farmers living more prosperous lives, where they have improved crop yields thanks to more efficient farming methods (e.g. through the use of our power tiller hire-purchase scheme), and are less vulnerable to the impacts of climate change.

3. Process, Progress and Results

i) Project implementation:

The project implementation has been led by a dedicated Project Manager, with support from international digital consultants from Oliver Wyman, and a Credit Officer from Laya with local language, social, and cultural knowledge.

We have worked closely with the key stakeholders to successfully complete the project, including several trips to the focus region, and regular communication with:

1. The various management divisions of Bank of Bhutan (including the CEO) and their vendors
2. The district head and local leaders of Laya and Lungo
3. The unique communities of Laya and Lungo

We have followed our process timeline outlined in the initial Scope of Work:

Activities	Month							
	Dec	Jan	Feb	Mar	April	May	June	July
1. mBOB and BOBConnect to Cloud integration								
BOB to onboard their vendor; business analysis of the process design which was previously agreed between BOB and TMF; code design	█	█	█					
API coding of mBOB				█	█			
API coding for BOB Connect				█	█			
Integration testing						█	█	
2. TMF Cloud to mBOB integration and migration								
Business analysis of agreed process design; code design				█				
API coding TMF side					█	█		
Integration testing, user acceptance testing						█	█	
Deployment in Laya and Lungo; trouble shooting							█	█
3. Operational deployment of technology solution for climate risk financing								
AV Documentation of the highlanders access to micro finance and its processes	█	█	█	█	█	█	█	█
1st visit to consult district head and community, test App on site , savings drive		█						
2nd visit Video-based financial literacy training and climate risk financing introduction through TMF App			█	█				
Credit processing, disbursement of climate adaptation loans , financial monitoring			█	█	█	█	█	
3rd visit Conduct midterm monitoring					█			
4th visit to deploy mBOB integration in Laya and Lungo							█	█
5th visit Conduct final monitoring								█

ii) Key outputs/outcomes, major achievements against each output/outcome contributing to the goals and objectives, and visible early-stage impacts

The key outcomes we have delivered under this project are:

1. Bhutan’s first microfinance API-based app integration in Bank of Bhutan’s mobile app that pulls live loan information from the TMF cloud that allows customers in real-time to:
 - a. View their due payment amount
 - b. View their due payment date
 - c. Make payments
 - d. Close loans
 - e. API-based app integration with Bank of Bhutan’s mobile app that writes to the TMF cloud database when a repayment has been made, automatically deducting the due amount without any human intervention, thus massively reducing the administrative burden on TMF staff. This will give us the capacity to continue to grow our loan portfolio, without increasing headcount

2. Reach: We have reached approx. 280 households in Laya and Lungo to introduce microloans for climate risk adaptation. Notably, despite the coronavirus outbreak in early 2022, we continued to reach them via novel methods including:
 - a. Producing financial literacy and climate risk financing videos
 - b. sharing these important Financial Literacy and climate risk financing videos through various official and unofficial social media groups such as Whatsapp, Telegram, wechat which are commonly used by the communities
 - c. Local ambassadors, enterprising and influential members of the communities

3. Output: 30 microloan applications processed in pilot communities on TMF app

4. Challenges and Mitigation Measures

As COVID 19 had seriously hampered the nation and people of all walks of life, TMF faced its fair share of problems as the initial work plans from December to February had to be carried out only after the lockdowns were eased. As gatherings of any sort were banned, community consultations were mainly carried out with in-person visits and had to rely on the social media platforms to spread the information such as the financial literacy and providing climate risk credit processing. With the help of the LG and influential members of the communities, TMF was able to penetrate and provide basic ideas of the project and received numerous supportive inputs during the whole of the project.

The integration aspects of the project were also hampered as the partner bank BOBL had to also divert all manpower and assets to improve the quick digital services to their clients during the lockdowns and were unable to execute the signed MOU as agreed to better serve the nation during this crisis. Nonetheless, BOBL had stepped up the activities along with their vendor to keep true to the agreement thanks to our engagement with the CEO.

5. Lessons Learned and Recommendation

During the execution of the project, TMF was able to truly understand the value of digitising all components of our operations. Due to our search for operational excellence, despite repeatedly thinking we had reached capacity (in terms of the number of loans we could disperse each month), we always managed to find efficiency gains through digitisation. For example, we have almost entirely removed any manual data entry following the application stage thanks to cloud-based integrations between our databases.

Another key lesson we observed was the criticality of local knowledge and expertise. Without partnering closely with local community leaders we would not have understood the specific local challenges we needed to solve e.g. the causes of cultural barriers to borrowing, the specific products each community needed, and how to build trust. We expect the local community leaders to be invaluable going forward in ensuring our customers continue to thrive by ensuring their business challenges are identified early so that they can be resolved before it becomes too late.

6. Conclusion and Way Forward

We consider this project to have been hugely successful in achieving our objective of:

- Increasing financial inclusion in underserved, remote mountain communities
- at low operating expense (previously unachievable with non-digital methods);
- Catalysing other financial institutions in SAR to engage with rural communities. Bhutan's largest bank, Bank of Bhutan, has partnered with us to enable these unbanked communities to open savings accounts, and get mobile banking capabilities which saves them days of travel where they previously made in person transactions;
- Ensuring the acceleration of financial inclusion of women. 49% of our borrowers are female

Most critically, the digital-first pilot solution we have built has allowed us to scale (400% YoY gross loan portfolio growth) with only minimal OpEx increases. This has allowed us to breakeven two years earlier than forecast at TMF's inception. Being a self-sustaining fund will allow us to keep

serving rural communities for years to come, and continue to grow.

Going forward, our digital-first pilot solution has been built to scale to other rural communities:

- We have trained all our field officers, each dedicated to a different rural community, to use our mobile app that allows paper-free loan applications. The evidence of success with this is that all field officers have migrated to exclusively using the mobile app for new applications;
- Our API's are built with scalability in mind; they are capable of 50,000 requests per day (>1,000 times more than required at our current scale);
- Our TMF app, combined with our API integrations with the Bank of Bhutan's mobile banking app, and our highly automated loan decisioning process, will allow us to scale to more customers without increasing our operating costs and head count. We have seen evidence of this already with our loan book growing 400% in the last 12 months, without needing to increase our headcount;
- We have commenced knowledge-sharing with other microfinance institutions in Bhutan so that they can adopt similar digital-first processes. This will amplify our impact on underserved communities

Annexes:

Annex 1: Handover execution plan

There is no formal handover given the nature of our project. However, to ensure the continued success of the pilot we will:

- Continue to liaise with the local community leaders to run financial literacy drives using our training videos
- Continue to stay synched up with the Bank of Bhutan to ensure our app integrations are updated as necessary
- Expand our reach beyond our pilot communities to other similarly remote, vulnerable communities

Annex 2: An Endorsement letter or certificate of completion from the endorser

- *Pending: endorsement will be sent as soon as Interim District head returns to Gasa following emergency trip away (expected within 7 days)*

Annex 3: Dissemination products (case studies, brochures, links to videos etc)

- Video for Financial Literacy: [open here](#)
- Video for Progress report and community visit to Gasa: [open here](#)
- Video for Products and loan processing: [open here](#)

Annex 4: Financial Report (including transaction lists)

Table 1: Summary of costs

Total Project cost (US dollar currency)	
Cost component	Cost
Remuneration for staff as per Table 2 below	31,290.00
Reimbursable expenses as per Table 3 below	96,000.00
Reimbursable expenses as per Table 4 below	12,660.00
TOTAL	139,950.00

Table 2: Remuneration

Position	Amount
Project Manager	17,430.00
Field Officer	13,860.00
TOTAL	31,290.00

Table 3: Breakdown of technology costs

Item No.	Description	Amount
1	Bank of Bhutan integration fee	1,500.00
2	Technical consultancy and software development	94,500.00
TOTAL		96,000.00

Table 4: Breakdown of other reimbursable costs

Item No.	Description	Amount
1	Transportation	1,500.00
2	Ponies	1,000.00
3	Hotel/Farm house	1,610.00
4	Meals	900.00
5	Stakeholder Meeting	1500.00

6	Awareness with communities	650.00
7	Documentary video	5,000.00
8	Communication Expenses	500.00
TOTAL		12,660.00