TRAINING REPORT

Training on Cleaner Fired Clay Brick Production Practices

Biratnagar, Morang

8-10 April, 2016

Prepared by:

MinErgy Pvt. Ltd.

Federation Nepal Brick Industries

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Contents

1. Introduction

Federation of Nepal Brick Industries (FNBI) in association with MinErgy Pvt. Ltd. Nepal, with support from Climate and Clean Air Coalition (CCAC) and International Centre for Integrated Mountain Development (ICIMOD), organized a training programme entitled "Training on Cleaner Fired Clay Brick Production Practices" from April 8-10, 2016 in Biratnagar, Morang. The training programme is a part of CCAC brick kiln initiative aimed at achieving substantial reductions of black carbon and other emissions from brick kilns through employing a range of technology and policy approaches. This training is the second of four training programmes, which are scheduled to be organized at four different locations across the nation.

2. Objectives

Overall Objective

- To achieve reductions in black carbon and CO_2 emissions with their related co-benefits on development and health

Specific Objectives

- Establish training and technology nodes in Nepal to increase the rate of adoption of cleaner technologies through trainings and technical assistance explicitly aimed at building technical capacity in the region to move to lower emitting brick kilns
- Enhanced capacity of entrepreneurs and workers on the cleaner brick firing practices

3. Location and Training Period

The training was organized at Hotel Everest Inn in Biratnagar, Morang between 8-10 April, 2016. The theoretical part of the training was organized at the hotel, whereas the practical sessions were carried out at brick kiln, namely:

i. Anand Itta Udhyog, Katahari, Morang

Seven resource persons (annex 1) were engaged in training delivery. Training included ten modules covering different aspects of brick production practices. Altogether, sixty two trainees participated in the training. The participants were from Morang, Sunsari, Jhapa, Saptari and Siraha districts. The list of participants is attached in the annex 2. The training schedule is attached in the annex 3.

4. Training

4.1 Opening ceremony

The notables from ICIMOD, FNBI, MinErgy and Koshi Brick Industries Association inaugurated the programme with words of welcome, appreciation and encouragement. Speaking first on the occasion, the Vice-President of FNBI, and Co-ordinator of Technology Research and Development Committee (TRDC), Mr. Dilip Kumar Agrawal said that the objective of the training programme was to help in producing cleaner and quality bricks, and to reduce cost of production for brick kiln owners all over the nation, as well as to reduce impact to environment. He shared his experience of actively practicing cleaner brick production technology in his kilns, and said he was looking further to seek improvements in his practice of the advanced and cleaner brick production technology, through the training.

Mr. Sanu Babu Dangol, the Program Co-ordinator of MinErgy Pvt. Ltd. shared about long-time involvement of MinErgy in brick kilns sector, and talked about the co-operation between FNBI, MinErgy, CCAC and ICIMOD. He explained about results of the co-operation, including preparation of brick kiln design manual, outreach programs concerning new brick production technology, implementation of the design manual, policy formation regarding brick kilns, pollution and energy monitoring in brick kilns, preparation of training manuals, etc.

Representing ICIMOD, Research Associate Mr. Pradip Dangol explained the involvement of ICIMOD in brick kilns sector for reducing black carbon emission and other air pollutants, as well as for helping brick kiln owners produce good quality bricks in lower investment.

The Chief Guest for the opening ceremony and the President of FNBI, Mr. Mahendra Bahadur Chitrakar stated that development of brick kiln sector in Nepal is possible only through practice of improved brick production technology. He acknowledged the lack of knowledge and interest in most of the brick kiln owners, regarding new technologies, and urged for the massive involvement of brick kiln operators in such training programs and in adoption of improved technologies. He stated that continuous research and development of new improved technologies in brick production will enhance the growth of brick sector in Nepal, and acknowledged that we are behind neighbouring countries in adoption of improved technologies. He told the participants about the possible revision of pollution standards by the government of Nepal, and warned the participants that the government may act against brick kilns which are not operating within the pollution standards. He also told about the concern of Ministry of Industries about lack of cleaner technology in brick kilns, labour acts and child labour. Mr. Chitrakar expressed that brick kilns in Nepal must learn about technology management, financial management and labour management. He told that the training certificate could be an authoritative document for setting up a brick kiln in future. Mr. Chitrakar urged for active involvement of district and regional brick kiln associations in the improvement and development of brick kilns, so that the Federation gets

strengthened. He voiced that brick kilns in Nepal need to improve themselves along with time, and should seek towards the transfer of the sector to future generations with pride.

The chairperson of the opening ceremony and the Secretary of Koshi Brick Industries Association, Mr. Mahendra Shah closed the opening ceremony by hailing the importance of adoption and development of improved brick production technologies for the development of brick kiln sector. He requested the participants to adopt cleaner and energy efficient technology by gaining theoretical and practical knowledge from the training program.

4.2. First day

The first day of the training started with presentation by Mr. Bhisma Pandit on Brick Firing, Fuel and Combustion. He explained about brick firing process, fuels used in brick kilns, fuel characteristics and combustion process. He also explained about fuel management and heat balance for energy efficient firing and pollution reduction.

The subjects discussed during the session were:

- Volatile matter (VM) and its role in combustion
- VM content in different types of fuels used in brick kilns
- VM loss in straight line stacking and VM loss control in zigzag stacking
- Types of coal and their calorific values
- Physical and chemical test process of coal
- Air-fuel ratio for proper combustion
- Different coal mines around Nepal and India and quality of coal from these mines
- Alternative fuels for brick firing

The first session was followed by presentation on Zigzag Stacking and Brick Firing by Mr. Santosh Gautam. The module on zigzag stacking focused on difference between straight line stacking and zigzag stacking, and contrasted between natural draught zigzag stacking and induced draft zigzag stacking. Mr. Gautam highlighted the advantages of zigzag stacking on proper combustion, fuel consumption reduction, emission reduction and quality bricks production.

The module on Brick Firing focused on firing zone, calculation of fuel consumption and firing report.

The trainees actively presented their queries during these sessions. The following subjects were discussed:

- Differences between single, double and triple zigzag stacking and their features
- Ways of improvement when bricks are under-fired or over-fired
- Regulating the openings in walls for heat balance

- *Jodi, bandhan, jhiri, patan*, and their roles
- *Jodi* adjustment according to the quality of fired brick
- Firing zone length in straight line stacking and method of lengthening the firing zone
- Cooling zone length and measures for proper cooling of fired bricks
- Adoption of zigzag stacking type according to draught available and dug size
- Trial of zigzag stacking amid straight line stacking for evaluation of zigzag stacking in a particular kiln
- Thickness of raphis required for proper insulation
- Types of heat losses, and ways to minimize them
- Leakages in brick kiln and methods of preventing leakages

After the sessions on Zigzag Stacking and Brick Firing, the participants were taken to Anand Itta Udhyog, Katahari for field demonstration of zigzag stacking and firing process. The participants were handed stacking sheets to help them for clear visualization of the stacking process. Mr. Bhisma Pandit and Mr. Santosh Gautam helped them understand the components of stacking such as *paya, jhiri, jodi, bandhan, jali, tawa, gates*, etc.

Some highlights of the practical session were:

- Participants learned to stack bricks as per sheet provided
- Better understanding about the position of *bandhan, jodi, jhiri* and their importance to the brick production
- The participants learned about the position of fire in the main firing zone, fire movement pattern and distribution of heat in the different zones of the kiln including preheating and cooling zone.
- The temperatures of different subzones of firing zone were taken by the use of thermocouple device and radiation gun.
- The participants were explained about increasing or decreasing the rate of fire movement in the kiln so as to control the heat for better production.
- The use of fuel, its type and feeding patterns for the heat movement and control were also explained in the kiln.

4.3. Second day

The second day of the training programme started with presentation by Mr. Bhsima Pandit on Best Practices in Operation (Straight Line and Zigzag). He explained about the best practices in brick kilns that can be adopted for better performance of the kiln, which included brick setting, fuel mix and firing in zigzag kilns, reduction of leakages and heat losses, maintaining chimney draught, proper fuel feeding patterns in straight line and zigzag stacking, coal storage, etc. Mr. Pandit conveyed that type of stacking pattern and firing technique in any kiln are dependent on structural design of the kiln and quantity of draught available. He stressed that imitating stacking

and firing processes from one kiln to another may not work, and each kiln should be uniquely assessed. Mr. Pandit explained about advantages of building shed in brick kilns, and clarified that the cost of construction of shed is reimbursed by other cost benefits from it.

Great enthusiasm was shown by the trainees in discussion during this session. The discussion focused on the following subjects:

- Advantages of shed in kilns - ground heat loss minimization, prevention of abruption in firing due to rain, greater production, etc.
- Feeding of different fuels in different subzones of firing zone in zigzag kiln
- Comparision of fuel consumption in straight line FCBTK and zigzag FCBTK
- Coal particles size for proper combustion
- Possible areas of leakage in brick kiln, its effects and prevention
- Factors affecting chimney draught
- Occurrence of white substrate in fired bricks
- Internal fueling and charcoal application

There was a short presentation by Mr. Nabin Chaudhary, the Managing Director of Yours' Technology (YT) on Brick Management System (BMS) software. He presented about various features of the software, its application for easy and efficient brick kiln management and about the collaboration of YT and TRDC/FNBI for the development, trial and distribution of the software among various brick kilns in Nepal.

The next session included presentation by Mr. Sanu Babu Dangol on Soil Preparation. He presented on brick making process, types of soil, soil quality, soil testing and soil preparation. Mr. Dangol advocated on the importance of soil selection and soil preparation for good quality of fired bricks. Some of the queries by the participants during this session were:

- Reasons behind the occurrence of cracks in green bricks
- Soil ageing process
- Internal fueling method
- Types of fuels that can be used as internal fuels
- Ways of prevention of high shrinkage in fired bricks

Mr. Tonil Maharjan presented on Design and Construction of Improved Fixed Chimney Bull's Trench Kiln. He highlighted different aspects of new design and process followed to develop new kiln design. He explained about dug size, chimney design, *miyana* design, outer wall design, dug floor construction and centrifugal fan. Various queries related to the centrifugal fan were presented by the participants. The queries included efficiency of the fan, speed of rotation, structure of the fan, fibre coating, cost of manufacturing, etc. The subjects of discussion mainly included cost of construction as per new kiln design, technical support provided by FNBI for the

implementation of the new kiln design in various parts of the country, and methods of retrofitting straight line FCBTKs to convert them into zigzag FCBTKs.

The module on Occupational Health and Safety and Environment was presented by Mr. Sagar Adhikari. He explained about the importance of occupational health and safety in brick kilns and environmental issues associated with brick kilns. Mr. Adhikari stated that improvement in occupational health and safety of the workers in the kilns, would result in greater efficiency in production and lower hazard costs, which directly benefit the brick kiln owners. He also conveyed about the environmental emission standards that are set by the government for all types of brick kilns in Nepal.

Some of the subjects that were discussed during this session were:

- Child labour and its impact on child development and child rights
- Child care centers and schooling of children in brick kilns
- Availability of safe drinking water for workers in the kilns
- Personal protective equipments (PPEs) and their costs
- Position of porthole in chimney for emission measurements
- Policies of Nepal Government on Occupational Health and Safety
- Benefits of occupational health and safety

4.4. Third day

On third day of the training programme, officials from the Office of Small and Cottage Industries, Morang attended the program. Speaking on the occasion, Mr. Om Prakash Parajuli and Nitya Raj Aryal, interacted with the participants about registration process of brick kilns, Initial Environmental Examination (IEE), Environmental Impact Assessment (EIA), renewal process, pollution regulation for FCBTKs, equal payment for male and female labours, etc.

After the words from government officials, Mr. Pradip Dangol presented on Weather Forecast. He explained about the importance of use of weather forecasting in brick kilns for smooth operation and minimization of production loss due to rainfall. The subjects of interaction during this session were:

- Types of rainfall and their forecasting
- Use of weather forecasting websites and applications, and their accuracy

The module on Kiln Management was presented by Mr. Tonil Maharjan. Mr. Maharjan explained about infrastructure and physical planning, administrative management, operational and financial management. He highlighted the importance of kiln management for better efficiency and better economy of the brick kilns. Mr. Dilip Kumar Agrawal also spoke on kiln management and shared his experience of first starting of FCBTK. He shared his experience of copying the technology from Bengal, India, and told he had low production for two years. He shared his

experience of obtaining good production capacity after switching to zigzag technology. Mr. Maharjan and Mr. Agrawal advocated on the importance of new improved technology and good kiln management for economical and energy efficient production of better quality bricks, and pollution reduction from kilns. They made light on the fact that straight line FCBTK technology can be converted to zigzag FCBTK technology in relatively low investment, which would be paid back in short time.

The final module on Mechanization was presented by Mr. Sanu Babu Dangol. He highlighted potential mechanization options at different brick production processes. He conveyed to the participants through his presentation that brick kilns abroad are fully mechanized, which has enhanced the production capacity of those kilns. He explained about the availability of various machines used in kilns for different purposes in Nepal, and shared briefly the history of development of green brick machine by Innovative Machineries Nepal Pvt. Ltd. The participants posted several queries during the presentation, some of which were:

- Price of green brick machine in Nepal
- Quality of bricks produced by the machine
- Manpower required for operation of the machine
- Feasibility of high-end mechanization in brick kilns in Nepal

4.5. Closing ceremony

At the end of the training programme, a training evaluation form, attached in annex 4, was distributed to the trainees to collect their feedback and response.

At last, a short, formal closing ceremony was conducted. Marking the end of the training programme, the President of Jhapa Brick Industries Association, Mr. Yogendra Thapa, thanked FNBI for organizing the training programme. He told the training was beneficial to all participants, and urged for organization of such training programmes in future too.

The Secretary of Koshi Brick Industries Association, Mr. Mahendra Shah, appreciated the quality and practicality of the training programme. He thanked all the participants, FNBI, ICIMOD, MinErgy and the trainers.

The Vice-President of FNBI, and Co-ordinator of TRDC, Mr. Dilip Kumar Agrawal regretted over limited number of participants in the training. He requested the participants to spread the knowledge gained by them to other brick kiln operators through their respective district associations.

5. Training Evaluation

Training evaluation was done by the trainees based on training evaluation sheet distributed just before the closing session. The participants expressed overall satisfaction on the training programme. The major feedbacks in the evaluation sheets are as follows:

a. The course content of the training programme was adequate and useful but the duration of the training was short.

b. The quality of instruction of the trainers and practicality of the contents in presentations were good.

c. There was adequate interactions and discussions among the trainers and trainees.

d. The logistic arrangements were satisfactory.

e. Trainees were satisfied with the training program and most of them expressed confidence to be able to adopt new knowhow and skills in their kilns.

f. The major learnings of the trainees included reduction of fuel consumption, soil preparation, reduction of emissions, occupational health and safety, new kiln design, mechanization, alternative fuels and zigzag technology.

g. Suggestions were made for making the duration of the training programme longer and for time-to-time organization of such trainings.

h. Suggestions were made for more practical demonstration, for organization of interaction and experience-sharing programmes among brick kiln owners all over Nepal, and mobilization of technical team for technical assistance.

i. Participants felt they require more understanding on soil preparation, leakage reduction, and conversion of straight line FCBTK into zigzag brick kiln.

j. The participants expressed their interest in mechanization including green brick machine, centrifugal fan, and transport mechanism for green and fired bricks.

The average ratings of participants on various training aspects are presented below:

Sections		Average rating
A. Curriculum		
1	The course content was relevant and adequate	4.14
2	The materials distributed were adequate and useful.	3.95
3	The course was organized in a logical manner	4.19

4	I will be able to apply what I learned.	4.23
5	Did the field visit support the course objectives?	4.09
6	Duration of training	3.76
B. Resource Persons		
7	Overall quality of instruction	4.14
8	The presentations were interesting and practical	4.00
9	Participation and interactions were encouraged	4.19
10	Adequate time was provided for questions and clarifications	4.29
C. Logistical Arrangement		
11	Organization of the training/workshop	3.95
12	Accommodation	4.45
13	Travel arrangement to the Field	4.19
14	Food Arrangement	4.29
D. Training/workshop specific questions		
15	How do you rate the training/workshop overall?	4.32
16	The training/workshop is useful to me and I will apply the learnings and will share with staff back home	4.35

Annex 1: Team of Trainers

Name of Trainer	Organization	Module
Bhishma Pandit	Consultant/ICIMOD	Brick Firing, Fuel and Combustion Best Practices in Operation (Straight Line and Zigzag)
Sanu Babu Dangol	MinErgy	Clay Preparation, Drying and Brick Size Mechanization

Tonil Maharjan	TRDC, FNBI	Kiln Design, Layout, Retrofitting and Planning Kiln Management
Sagar Adhikari	MinErgy	Occupational Health Safety and Environment
Pradip Man Dangol	ICIMOD	Weather Forecast
Santosh Gautam	TRDC, FNBI	Zigzag Stacking Pattern(Natural and Induced) Zigzag Firing
Dilip Kumar Agrawal	Brick Entrepreneur/ TRDC	Zigzag Stacking Pattern(Natural and Induced) Zigzag Firing Kiln Management

Annex 2: List of Participants

S.N.	Name	Industry/ Address	Phone No.
1.	Mahendra Bahadur Chitrakar	FNBI	9851033467
2.	Badri Karki	FNBI	9841374925
3.	Ganesh B. Pachhera	FNBI	9813758925
4.	Amar Maharjan	FNBI	9841444948
5.	Nabin Chaudhary	Yours Technology, Kathmandu	9851158091
6.	Dipesh Ray	Yours Technology, Kathmandu	9844433742
7.	Om Prakash Parajuli	CSIO, Biratnagar	9842070277
8.	Nitya Raj Aryal	CSIO, Biratnagar	9852029711
9.	Murari Regmi	Ajanta Itta, Koshi	9802724205
10.	Bhim Ghimire	AB Brick and Tile Industry	9852031953
11.	Naresh Agrawal	Krishna Pranami Itta	
12.	Dhruba Chaudhary	555 Brick, Morang	9852028255
13.	Dharmendra Shrestha	Jaya Baba Ita Udhyog	9852020983
14.	Dilip Kumar Agrawal	Anand Ita, Morang	9801020105

15.	Arth Lal Chaudhary	ABI, Simriya	9852028997
16.	Jaya Prakash Yadav	ABI, Simriya	9804741680
17.	Krishna Goswami	ABI, Simriya	9807322446
18.	Chandrapal Mistri	ABI, Simriya	9812358785
19.	Krishna Thapa	Jaya Banglamukhi	9842057957
20.	Ashok Magar	ABI, Simriya	9852020898
21.	Shyam Luitel	Jaya Shree Ita Karkhana, Itahari	9852046666
22.	Rajan Timsina	Shree Pancha Laxmi Itta Udhyog, Itahari	9852048050
23.	Yogendra Thapa	Pancheswor Ita udhyog, Jhapa	9852670457
24.	Sitaram Bhattarai	Shivashakti Ita Udhyog, Jhapa	9852676030
25.	Prabesh Kumar Shah	Utshav Ita Bhatta Udhyog, Biratnagar	9802025695
26.	Ramhari Pokharel	Birat Ita Bhatta Udhyog	9842050311
27.	Ashok Bhagat	ACC Ita	9852033461
28.	Dilip Mandal	ACC Ita	9635486202
29.	Mahendra Shah	Jay Nepal	9852021778
30.	Ramesh Bhagat	New ACC Itta Udhyog	9842361575
31.	Chandra Bhushan Yadav	Durga Itta	9852031580
32.	Shree Prasad Bhagat	ACC Ita Udhyog, Morang	9852025308
33.	Laxmi Bhattarai	Pashupati Ita, Jhapa	9852655777
34.	Khadga Prasad Niraula	Gorakhnath Ita, Jhapa	9842632076
35.	Om Nath Gautam	Janaki Itta, Jhapa	9852674661
36.	Chetan Singh	Pragati Itta, Jhapa	9861445660
37.	Devendra Gupta	Utshav Itta	9852025995
38.	Ashok Karn	ABI Itta	9852028993
39.	Manoj Shah	Sagar Itta	9842839599
40.	Yamuna Prasad Shah	Balajee Itta	9842225497
41.	Santosh Shrivastav	Om Ganesh Itta	9852832102
42.	Padam Basnet	Utsav Utta, Biratnagar	9852030419
43.	Lekhnath Pokhrel	RMC Itta, Biratnagar	9802793544
44.	Kishor Rajbanshi	RMC Itta, Biratnagar	9807003577
45.	Subodh Shiwakoti	RMC Itta, Biratnagar	9804302849

46.	Durganand Prasad Shah	Jay Shiva Itta	9842839469
47.	Rajesh Kumar	Sandesh Itta Udhyog, Babiyabirta	9852020350
48.	Pappu Pandit	Om Ganesh Itta, Siraha	
49.	Motilal Raut	Balaji Itta, Siraha	
50.	Ramudgar Yadav	Ajant Itta	
51.	Mohammad Khalit	Ajant Itta	
52.	Raghu Shah	Balaji Itta	
53.	Hari Dahal	Utsav Itta	
54.	Mahesh Yadav	Dipak and Pradip Itta, Jhapa	9801410073
55.	Gangu Sahani	Dipak and Pradip Itta, Jhapa	
56.	Dharani Chaudhary	Ankit Itta	9802724294
57.	Tilakdhary	555 Itta Udhyog, Morang	
58.	Bijay Kumar Das	Raj Itta Udhyog, Saptari	9852820595
59.	Rajib Kumar Ray	Star Itta, Morang	9807318109
60.	Kishor Kumar Ray	Star Itta, Morang	9807320917
61.	Parvej Hussain	Star Itta Bhatta Udhyog	9814387786
62.	Birendra Prasad Yadav	Himal Itta, Jhapa	9842466542

Annex 3: Programme Schedule

Training on Cleaner Fired Clay Brick Production Practices

Programme Schedule

Day 1	**9.00 - 10.00**	**10.00 - 10.30**	**10.30 - 11.30**	**11.30 - 13.00**	**13.00 - 14.00**	**14.00 - 15.00**	**16.00 – 20.00**	
	Inauguration	Tea break	M1: Brick Firing, Fuel and Combustion (BP)	M2: Zigzag Stacking Pattern(Natural and Induced) (SM/SG)	Lunch	M5: Firing Theory (SM/SG)	M2 & M5: Zigzag **Practical** - Stacking Pattern (Natural and Induced) & Firing (SM/SG)	
Day2	**9.00 - 11.00**		**11.00 - 11.30**	**11.30 - 13.00**	**13.00 - 14.00**	**14.00 - 15.00**	**15.00 - 15.30**	**16.00 -**
	Review of Day 1	M4: Best Practices in Operation (Straight Line and Zigzag) (BP)	Tea break	M3: Clay Preparation, Drying and Brick Size(SBD)	Lunch	Software and Data Management (NC)	M6: Kiln design, Layout, Retrofitting and Planning -TM	Tea Break
Day 3	**9.00 - 10.00**	**10.00 - 11.00**	**11.00 - 11.30**	**11.30 - 12.30**	**12.30 - 13.30**	**13.00 - 14.00**	**14.0 - 14.30**	**14.30 -**
	M8: Occupational Health Safety and Environment (SA)	M7: Kiln Management-TM/DA	Tea break	M10: Miscellaneous Policy	Lunch	M9: Mechanization (SBD)	M10: Miscellaneous Weather Forecast (PD)	Closing

BP: Bhishma Pandit; SBD: Sanu Babu Dangol; SM: Shyam Maharjan; TM: Tonil Maharjan; SA: Sagar Adhikary; DA: Dilip Agrawal; NC: Nabin Chaudhary; SG: Santosh Gautam; PD: Pradeep Dangol

Annex 4: Evaluation Form

तालिम/कार्यशाला मुल्याङ्कन फारम

विषय	सफा इटा उत्पादनका लागि अभ्यास तालिम
मिति	फागुन २९- चैत्र १, २०७२
आयोजक	नेपाल इटा उद्योग महासंघ र मिनर्जी प्रा लि

कृपया तल प्रस्तुत गरिएका सुचीहरुमा आफूलाई उपयुक्त लागेको अंकलाई गोलो घेरा लगाईदिनुहोला । ५ अंकले सबै भन्दा उत्तम र १ अंकले कम/खराब भन्ने जनाउँछ ।

पाठ्यक्रम		कम				बढी/राम्रो/अतिराम्रो
1.	प्रस्तुतीहरुको सान्दर्भिकता र पर्याप्तता	1	2	3	4	5
2.	वितरित तालिमका सामग्रीहरुको पर्याप्तता र उपयोगिता	1	2	3	4	5
3.	तालिम कोर्सको उपयुक्त ब्यवस्थापन	1	2	3	4	5
4.	तालिममा सिकेका ज्ञान सिप र अवधारणालाई व्यवहारमा प्रयोग गर्न सक्ने क्षमता	1	2	3	4	5
5.	स्थलगत भ्रमणले तालिमको उदेश्य पुर्ति गर्न कत्तिको सहयोग भयो ?	1	2	3	4	5
6.	तालिमको अवधि	1	2	3	4	5

स्रोत ब्यक्ति (Resource Person)		कम				बढी/राम्रो/अतिराम्रो
7.	समग्र प्रस्तुति र प्रस्तुतकर्ताको गुणस्तरियता	1	2	3	4	5
8.	प्रस्तुतिहरुमा रोचकता र प्रयोगात्मक पक्ष	1	2	3	4	5

9.	तालिममा उपस्थित ब्यक्ति र प्रस्तुतकर्तासंगको प्रश्नोत्तर सहभागिता र उत्साहजनक सहभागिता	1	2	3	4	5
10.	प्रश्नोत्तरका लागि छुट्याईएको समयको पर्याप्तता र प्राप्त जवाफमा स्पष्टता	1	2	3	4	5

		कम			बढी/राम्रो/अतिराम्रो	
	कार्यक्रम व्यवस्थापन					
11.	तालिम/कार्यशाला संचालन	1	2	3	4	5
12.	बासको प्रबन्ध	1	2	3	4	5
13.	स्थलगत भ्रमणको लागी यातायातको सुविधा	1	2	3	4	5
14.	खानाको प्रबन्ध	1	2	3	4	5
	तालिम संग मात्र सम्बन्धित प्रश्नहरु	कम			बढी/राम्रो/अतिराम्रो	
15.	समग्रमा यो तालिमलाई कसरी मुल्याङ्कन गर्नुहुन्छ ?	1	2	3	4	5
16.	यो तालिम मेरोलागि उपयोगी छ र म यहा बाट फर्केपछि तालिममा सिकेका ज्ञान र सिप मेरा कर्मचारीहरुसंग सह कार्य गरेर प्रयोगमा ल्याउाछु ।	1	2	3	4	5

थप टिप्पणी

1. यो तालिमले तपाईको अपेक्षा पुर्ति भयो ? भयो भने या भएन भने कसरी ? कृपया उल्लेख गर्नुहोला ।

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2. यो तालिमबाट तपाईले के प्राप्त गर्नुभयो ? कुनै ३ मुख्य उपलब्धिहरु सुचिबद्ध गरिदिनुहोस ।

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3. यस तालिमबाट तपाईलाई कुन पक्ष सबैभन्दा बढी उपलब्धिमुलक लाग्यो ? र कुन पक्ष कम उपलब्धिमुलक लाग्यो ?

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4. यस तालिमलाई अझ सशक्त बनाउन के कुरा थप वा परिवर्तन गर्नुपर्ला ?

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5. तपाईलाई तालिमको कुन पक्ष/पाठ्यक्रम / प्रसङ्ग मा अझ बढी जानकारी चाहिन्छ ?

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6. आफ्नो उद्योगमा कुन पक्ष यान्त्रिकरण गर्न चाहनुहुन्छ ?

7. अन्य केही टिप्पणी / विचार

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Annex 5: Some Photographs

Photograph 1: Inauguration of the training programme

Photograph 2: Participants of the training programme

Photograph 3: Discussion session during the training

Photograph 4: Practical demonstration of zigzag stacking

Photograph 5: Temperature measurement of firing zone

Photograph 6: Closing ceremony