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Training Report



**Training Courses
on
Disaster Resilient Construction and Quality Monitoring
17-19 November 2019, Thiruvananthapuram, Kerala
26-28 November 2019, Kozhikode, Kerala**

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1. BACKGROUND

According to the Post Disaster Needs Assessment (PDNA) of the Kerala floods 2018, the housing sector suffered an overall loss of INR 5,443 Crores. Although rebuilding the damaged houses poses a huge challenge, it also gives the opportunity to build back better. This requires reaching out to multiple stakeholders and orienting them on the need to adopt disaster resilient construction practices.

UNDP proposes to support the thirty government housing facilitation centres through capacity building programmes. Currently, these centres largely focus on quantitative stage-wise monitoring of reconstruction of houses and providing socio-technical facilitation. Engineers and field staff of these hubs need to be trained in disaster resilient, sustainable construction practices and quality monitoring so that they in turn guide the beneficiaries in making risk-informed decisions.

It is against this backdrop that UNDP India organized training courses for Disaster Resilient Construction and Quality Monitoring for personnel of LIFE Mission Housing Facilitation Centres (HFC), which were facilitated by RedR India.

2. OBJECTIVE

The 3-day training programme had the following objectives:

- Help familiarize Engineers and LIFE Mission Rebuild Hub Personnel on multi-hazard resilient construction techniques.
- Share good construction practices of Kerala and have common understanding on hazard resilient features.

3. ABOUT THE TRAINING

This 3-day training courses on Disaster Resilient Construction and Quality Monitoring were designed in a manner to enable participants to have better understanding of DRR concepts, and technical features of hazard resistant construction by engaging participants through brainstorming, group work and hands-on practical session, apart from class room learning. Further, a session on Quality Monitoring of the Reconstruction Process was included for participants to develop FAQs from beneficiaries regarding the reconstruction process, and modalities of conducting grievance redressal camps.

4. PARTICIPANTS' PROFILE

In Thiruvananthapuram, the training was attended by a total of 20 participants (including 8 females and 12 males). In Kozhikode, the training was attended by a total of 29 participants (including 15 females and 14 males). In both locations, the participants included Civil Engineers, Technical Assistants and Field Staff.

The list of participants has been attached at the end of the document.

5. TRAINING METHODOLOGY

In line with the Adult Learning Principles, the facilitators adopted a variety of training methods suiting the diverse learning styles of participants. An appropriate learning environment was created using available facilities and resources at the training venue. The facilitators adopted short group discussions, group activities, videos, and presentations, besides PowerPoint presentations.

As part of training methodology, the module was designed in such a way so as to have the first session of every day from Day 2 onwards on recapitulation of the key learnings of the previous day. The purpose of recap sessions was to enable the participants to summarize the important messages and learning points of the previous day.

The sessions were delivered in English and Malayalam, as suited to the participants, while the training material was developed and delivered in English.

6. TRAINING SCHEDULE

6.1: Schedule followed in Thiruvananthapuram (17-19 November 2019)

Session Number	Session Time	Session Name
DAY ONE		
1.1	1000-1100	Welcome and Introductions
	1100-1130	Tea Break
1.2	1130-1300	Need for Incorporating Disaster Resilient Features
	1300-1400	Lunch Break
1.3	1400-1500	Assessing the Vulnerability of the Site
	1500-1530	Tea Break
1.4	1530-1645	Techniques of Slope Stabilization (Structural and Non-structural, Traditional)
	1645-1715	Daily Feedback
DAY TWO		
	1000-1015	Recap of Day 1
2.1	1015-1130	Principles of Hazard Resilient Construction
	1130-1200	Tea Break
2.2	1200-1300	Hazard Resilient Design Guidelines (Features for House Size and Configuration etc.)
	1300-1400	Lunch Break
2.3	1400-1530	Hazard Resilient Features for Different Parts of the Building (Structural and Non-structural)
	1530-1600	Tea Break
2.4	1600-1730	Cost Effective and Sustainable Construction Practices
	1730-1745	Daily Feedback
DAY THREE		
	1000-1015	Recap of Day 2
3.1	1015-1130	Quality Monitoring of Reconstruction Process
	1130-1200	Tea Break
3.2	1200-1330	Feedback and Grievance Redressal Mechanism
	1330-1415	Lunch Break
3.3	1415-1545	Course Closure and Evaluation

6.1: Schedule followed in Kozhikode (26-28 November 2019)

Session Number	Session Time	Session Name
DAY ONE		
	1030-1100	Registrations and Tea
1.1	1100-1200	Welcome, Introductions and Course Expectations
1.2	1200-1230	Experience Sharing by Shelter Hub Engineer and Participants
1.3	1230-1330	Need for Incorporating Disaster Resilient Features
	1330-1415	Lunch Break
1.4	1415-1530	Assessing the Vulnerability of the Site
	1530-1600	Tea Break

1.5	1600-1715	Feedback and Grievance Redressal Mechanism
	1715-1730	Daily Feedback
DAY TWO		
	1000-1015	Recap of Day 1
2.1	1015-1130	Techniques of Slope Stabilization (Structural and Non-structural, Traditional)
	1130-1200	Tea Break
2.2	1200-1330	Principles of Hazard Resilient Construction
	1330-1415	Lunch Break
2.3	1415-1530	Hands-on Session
	1530-1545	Tea Break
2.4	1545-1715	Hazard Resilient Design Guidelines (Features for House Size and Configuration etc.)
	1715-1730	Daily Feedback
DAY THREE		
	0900-0915	Recap of Day 2
3.1	0915-1045	Quality Monitoring of Reconstruction Process
	1045-1115	Tea Break
3.2	1115-1300	Hazard Resilient Features for Different Parts of the Building (Structural and Non-structural)
	1300-1330	Lunch Break
3.3	1330-1430	Cost Effective and Sustainable Construction Practices
	1430-1515	Course Evaluation and Closure
	1515 onwards	Tea Break

7. BRIEF OF PROCEEDINGS

Although the same training schedule was used in both locations, a minor reshuffling of the order of the sessions was done for the Kozhikode training.

Welcome Introductions, Expectations, and Course Overview

Day 1 started with the welcome of participants by the RedR facilitator. For the introduction session in Thiruvananthapuram, participants were asked to form groups based on their birth

months, districts in Kerala that they hail from, smart phone brand that they use, educational backgrounds, etc. as a way to get to know one another. In Kozhikode, every participant was given a sheet to fill up information on his/her name, qualification, designation, place of



work, field experience in connection with relief/rehabilitation/reconstruction, and any memorable experience s/he has had with the LIFE Mission in the past 6 months or so, to be shared with the facilitators. Participants were then asked to write down their expectations from the training on flash cards, which were then displayed on the wall. The expectations shared by participants were mainly to learn the appropriate construction details for hazard resistant shelters in Kerala.



The facilitator then asked participants to set ground rules, like keeping mobiles on silent mode, ensuring punctuality, respecting others views etc., so that the training can be conducted in a smooth manner. A Training Management Team (TMT) was formed, who would help facilitators conduct the training smoothly, by following ground rules, managing regrouping and arrangements during and after the breaks, taking feedback from participants and facilitating recap of previous day. The TMT would change every day and be responsible for the above mentioned tasks for a day.

Experience Sharing by Shelter Hub Engineer

In Kozhikode, this session was facilitated by Mr. Jishnu Karunakaran, UNDP Shelter Hub Engineer based in Kalpetta, Wayanad for UNDP's Shelter Project in Kerala. During the session, he shared with participants' his experience of heading the shelter hub in Wayanad in post-flood housing reconstruction, for participants to be able to better relate to the aspects of disaster resilient construction in a better manner, and become more aware of the important role they play as HFC personnel in housing recovery.



Need for Incorporating Disaster Resilient Features

The main objective of the session was to build a common understanding on various hazards and their impacts on building components. However, as it was important to have common understanding on various Disaster Risk Reduction (DRR) terminologies among participants, the session was initiated with a discussion on Hazards and Disasters.

In this session, participants were asked if they knew the differences between the terms, Hazard and Disaster. Building on the different perceptions held by participants on these terms, the facilitator emphasized on the need to have a common understanding of these terms in



context to the training course. The facilitator then explained the definitions of these terms and participants illustrated examples of various hazards. Participants were also engaged in a game that demonstrated various aspects of planning and coordination in preparing for various hazards.

The terms like Risk, Vulnerability and Capacity, were also discussed with participants to enable them to get a clear understanding. The interrelation between these terms was explained by empirical formula of **Risk= Hazard x Vulnerability/ Capacity.**

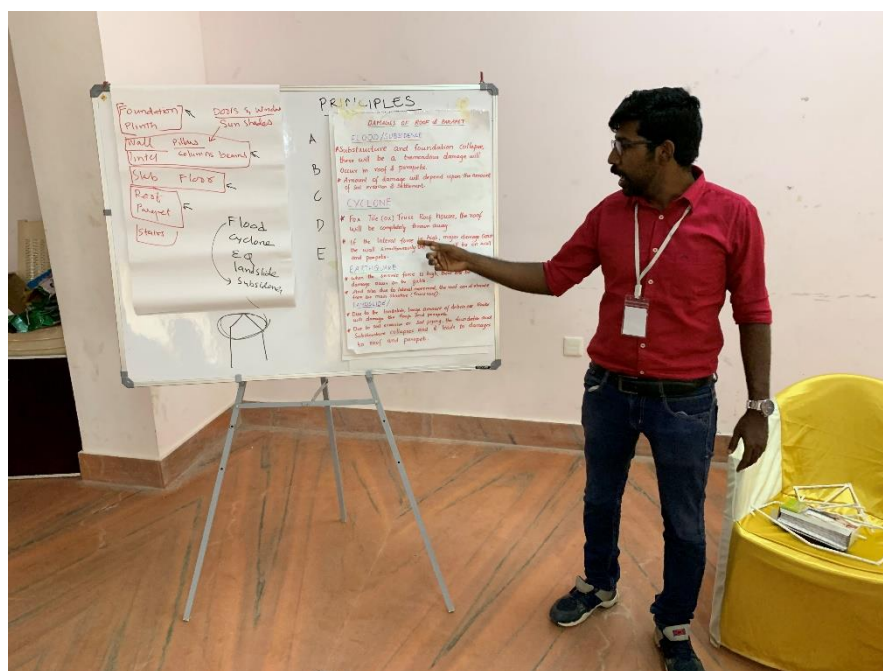
Participants were shown a series of photographs of damage induced by floods and landslides in Kerala, and asked to identify the damages. The facilitator then



discussed the forces acting on buildings in various hazards like earthquake, flood, cyclone, landslide etc., and how it affects the behaviour of a structure. The need for incorporating hazard resilient features to save lives and reduce damage to assets was emphasised upon.

Assessing the Vulnerability of the Site

In this session, participants were made to understand the meaning of vulnerability to disasters and the do's and don'ts while selecting sites for constructing houses. A broad aspect of vulnerability in general was shared with the participants, the four main categories being physical, economic, social and environmental. Hazard maps related to the state of Kerala were shown to participants. In the context of housing, the facilitator discussed the various parameters that should



be considered before selecting the site to ensure that the houses being constructed will be safe from hazards, as far as possible. Parameters for site selection while constructing houses on slopes and in hilly regions were also discussed by showing various slides. The key learning

point that the facilitator emphasized upon was that in all new constructions the choice of material and technology will need to be based on the prevailing multi-hazard conditions in the construction areas, so that whatever is constructed should remain safe not only during floods but also in the event of other natural hazards if and when they strike the area.

Techniques of Slope Stabilization

The main aim of this session was to explain how slope stabilization helps prevent landslides and reduce the effects of landslides in case of disasters. The participants were taught about the meaning of the term, the purpose of stabilization, and the four types of slope failures. After the facilitator explained that landslides are the main effects of slope failures, participants were motivated to share and discuss various causes for such effects which include deforestation, risky slope, increased loading, slow weathering of rocks, soil erosion due to floods, construction of building on top of slopes, etc. Following this, the traditional and modern ways for stabilization of slopes were discussed, and a video on a modern technology for slope stabilization was also shown to the participants.

Principles of Hazard Resilient Construction

This session began with participants working in groups to enlist various types of potential damages to building elements in various hazards. Once the damages were listed, the facilitator introduced participants to a simple method of categorising the mitigation measures or hazard resilient features in terms of ABCDE- i.e. Anchorage, Bracing, Continuity, Ductility and Enhancement. It was explained to them that this categorisation is only for easy recalling while the participants go on to deliver trainings to others. This was followed by a discussion on the details for each term.



- a) **Anchorage:** Participants were introduced to the concept and functioning of an anchor and how this helps building components in times of severe forces acting on them during hazards. Plastic straw models were used to demonstrate effectiveness of a good anchor in foundation. Need of anchorage for roof was also discussed.

- b) **Bracing:** The facilitator explained the function of bracing. Need for bracing in a building as hazard resilient feature was discussed. Participants were given plastic straws to make a frame with bracings. The various details of good bracing were discussed and demonstrated using the frames made by participants and showing photographs.
- c) **Continuity:** Importance of connection and continuity of building frame was discussed with participants at length. Vulnerability of connection in times of hazard forces were also discussed and some of the common damages of corners and connections were shown to participants. The ways to strengthen and secure connections were discussed.
- d) **Ductility:** Facilitator explained the differences between elasticity and ductility, and importance of this property of a material was discussed. The emphasis was



laid upon how ductility of frame can save lives during hazards.

After discussing ABCD as principles of hazard resilient practices, the participants were asked to refer to the list of damages they had prepared earlier on in the session. They were asked to identify damages that may be avoided or mitigated using this ABCD formula. Participants acknowledged that most of the structural damages could be addressed by applying these principles. Only the damages induced by external factors such as site protection needed other measures. The facilitator summed up the session by explaining that these factors can be taken care of in the fifth principle of Enhancement, which would be covered in the following session.

Hazard Resilient Design Guidelines (Building Orientation)

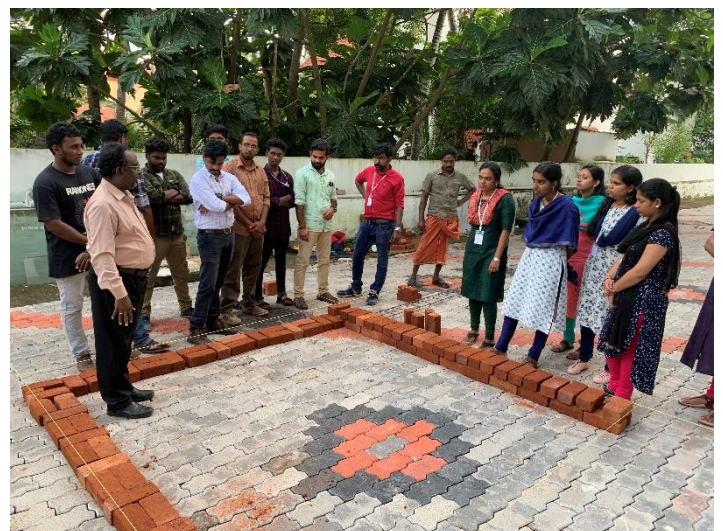
This session dealt with the orientation of building, shape, size, recommendations on span lengths, height of walls, location and dimensions of verandah, openings etc., which affects the behaviour of structure in times of hazards. The site specific protection measures such as drainage, retention walls, access to site, and adding disabled-friendly features were discussed using photographs and sketches.



Hands-on Session

For the hands-on session, participants were asked to work on shelter layout and brick masonry, following which they were shown reinforcement details for the RCC band. Participants were also asked to demonstrate different kinds of bonds like stretcher bond, header bond, English bond, Flemish bond, and rat trap bond. The standards and good practices regarding brick work, mortar mix, reinforcement details, connections etc., were discussed on the site.

Upon the request of participants, common retrofitting details were discussed in the class room. This helped them understand the retrofitting techniques for various hazards.





Glimpses from the Hands-on Sessions conducted in Thiruvananthapuram and Kozhikode

Hazard Resilient Design Guidelines (Structural and Non-structural Measures)

Having taught various lessons about hazard and disasters, the aim of this session was to help participants understand the resilient features to be incorporated in various parts of the house. After sharing about two types of structures namely framed structures and load bearing walls, it was discussed about foundation, basement, superstructure, roof and other finishing works. The participants were asked about the general precautions to be taken with regard to depth of foundation and height of basement for flood-prone areas. The importance of keeping electrical boxes and switches above flood level was also stressed upon. The participants learnt about the importance of vertical reinforcements to be provided at corners and junctions of walls, providing bands at plinth, lintel and roof levels, and these were explained in detail during hands-on session.

Cost Effective and Sustainable Construction Practices

This session dealt in the various alternative construction technologies and practices relevant to the context of Kerala. The facilitator, with the help of images, videos and group discussions, explained emerging and well established alternative and cost effective construction practices which included Rat Trap Bond, various types of materials used in walling and roofing, Aerated Autoclaved Cement (AAC) blocks, bamboo elements and others. A few cases of good

construction practices post floods in Kerala was also discussed. Participants also shared their experiences working with pre-fab material and other material.

Quality of Material and Importance of Tools

This session aimed at enabling participants to learn the quality of material to be maintained during construction, and the field tests to check quality at site, to ensure that the materials being used are as per the required standards. The message that was communicated to participants was that, while it is not possible to have or to carry tools and equipment that are used to test the various qualities of materials at laboratories in the field, it is still possible to ensure the quality by various field tests without any tools and equipment. The facilitator showed videos and explained the various field



tests for cement, sand, coarse aggregate, bricks, steel, timber, etc. The facilitator also discussed the various tools required and their importance in construction with the participants. The key learning point that these tools help in executing the work as per the standards, in time and by maintaining good workmanship, was emphasized upon. In Kozhikode, samples of good quality bricks, concrete, cement, sand, and coarse aggregate were shown to participants for them to get a better understanding of how to visually assess the quality of material when on field.

Feedback and Grievance Redressal Mechanism

This session was facilitated by Mr. Anoop from LIFE Mission, through a participatory method, to enable participants to discuss the issues faced by beneficiaries during reconstruction, that they have come across in their experience. Further, participants were encouraged to share the beneficiaries' Frequently Asked Questions (FAQs) related to reconstruction, and discuss the modalities of conducting grievance redressal camps.



Course Closure and Evaluation

The training programme in both locations was concluded with participants filling out the RedR India standard training and trainer evaluation forms, certificate distribution and vote of thanks by UNDP, KESNIK and the RedR India facilitators. In Thiruvananthapuram, the closing ceremony was attended by U.V. Jose, CEO, LIFE Mission, and in Kozhikode, by the Deputy Collector for Disaster Management.



Day 1 Daily Feedback by TMT

Thiruvananthapuram (17/11/19)

1. Sessions are highly interactive.
2. Videos helped understand the concepts better.
3. Would be good to have more practical sessions and less theory.
4. Time management for the sessions to be better.
5. A little difficult for Non-Engineers to understand technical terminology.

Kozhikode (26/11/19)

1. Good sessions; interactive sessions.
2. It would be good if facilitators gave examples while explaining technical terms so non-technical participants can understand better.
3. The projector and screen to be placed in the front and not sideways, so participants at the back can see better.
4. Slides to have more pictures, facilitators to give more examples during sessions.
5. Good games and energizers in between sessions.

Daily Feedback by TMT

Thiruvananthapuram (18/11/19)

1. Hands-on session very good; helped understand the techniques better.
2. Communication from the trainers'/ session content to be simpler for non-technical participants. Some of the theory was difficult to understand; too technical. Would be

good to have some practicals in between/ during theory sessions.

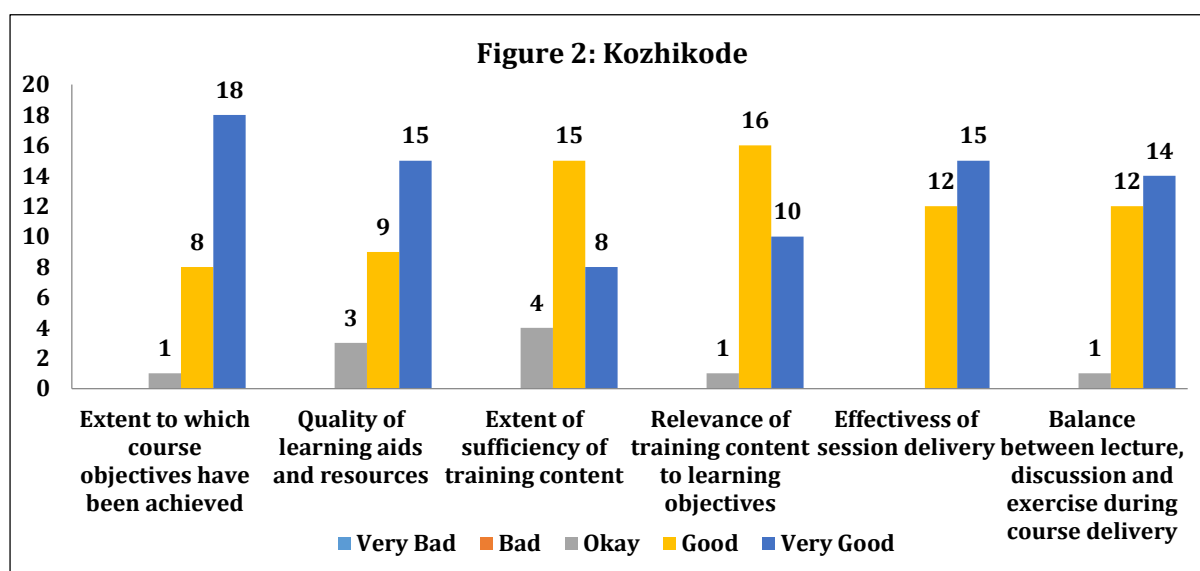
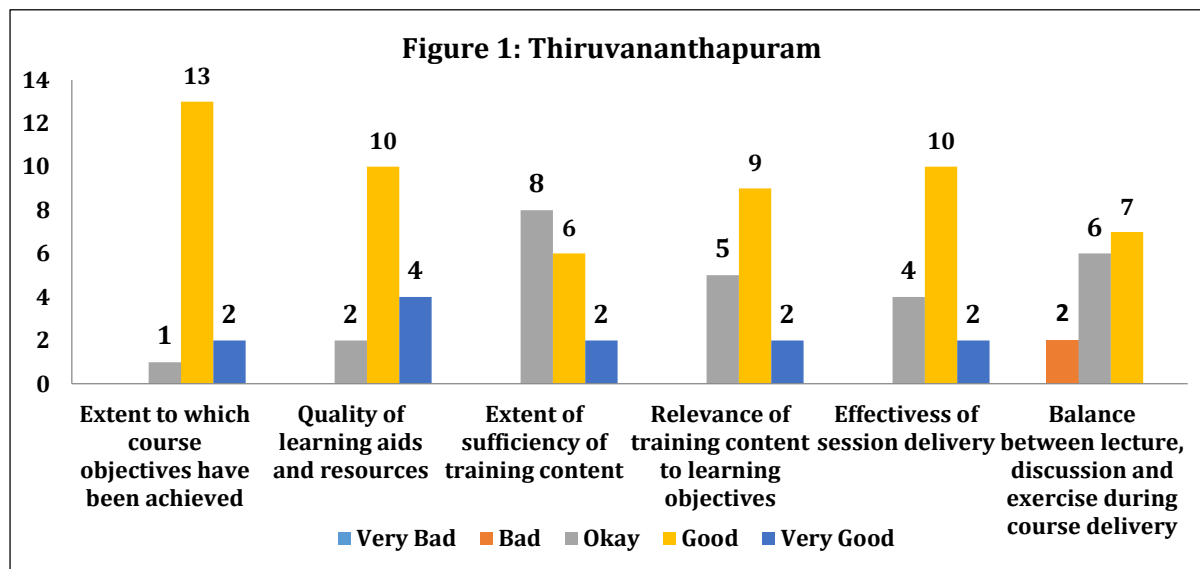
3. Would be good to have the key learning points highlighted during/at the end of sessions.
4. PPTs to have less text and more pictures and illustrations.
5. Would be good to have working models to understand ideas better.
6. Would be good to have some knowledge on flood prevention measures/disaster preparedness measures.

Kozhikode (27/11/19)

1. Hands-on session very good.
2. Session on disaster-resilient construction good.
3. Group exercises/activities during sessions very good.
4. Would be good to include session on retrofitting.

8. TRAINING EVALUATION

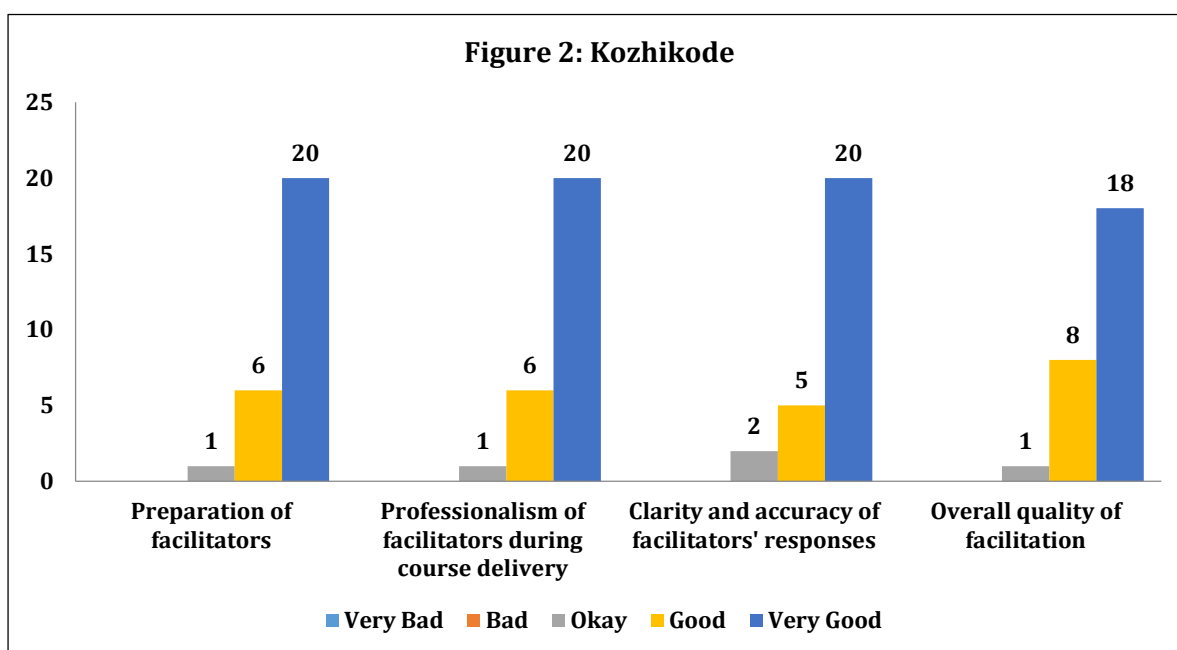
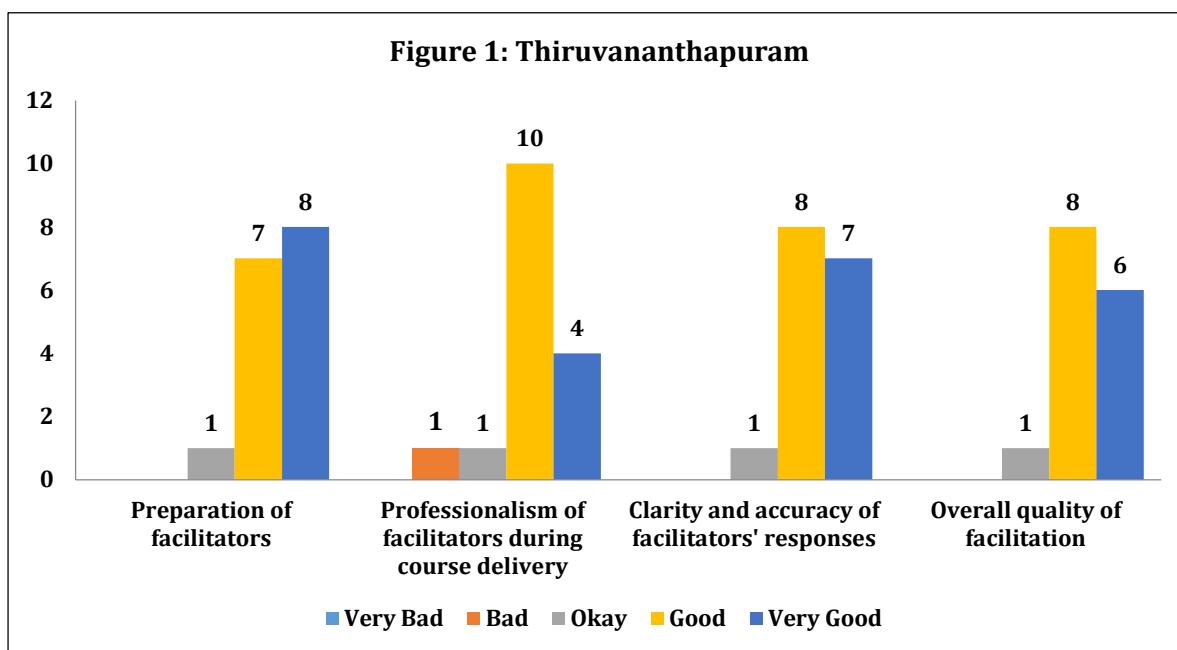
1. Evaluation of Course Objectives and Delivery



In Thiruvananthapuram, regarding the extent to which course objectives were achieved, 13 participants (65%) rated good, 2 participants (10%) rated very good and 1 participant (5%) rated okay. The relevance of training content to learning objectives was rated good by 9 participants (45%), very good by 2 participants (10%), and okay by 5 participants (25%). The balance between lecture, discussion and exercise during course delivery was rated good by 7 participants (35%), okay by 6 participants (30%) and bad by 2 participants (10%)

In Kozhikode, 18 participants (62%) rated very good, 8 participants (28%) rated good and 1 participant (3%) rated okay for the extent to which course objectives were achieved. The relevance of training content to learning objectives was rated very good by 10 participants (34%), good by 16 participants (55%) and okay by 1 participant (3%). The balance between lecture, exercise and discussion during course delivery was rated very good by 14 participants (48%), good by 12 participants (41%), and okay by 1 participant (3%).

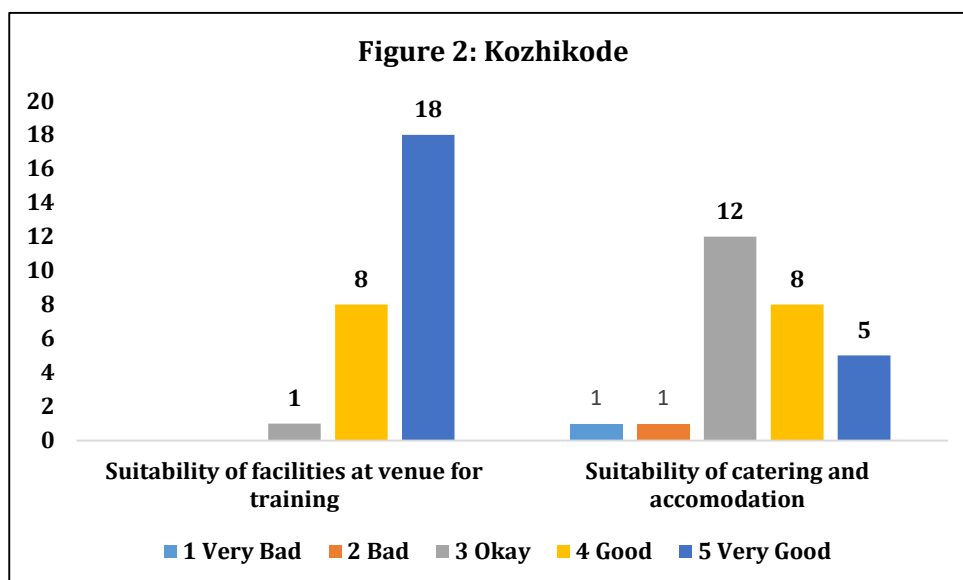
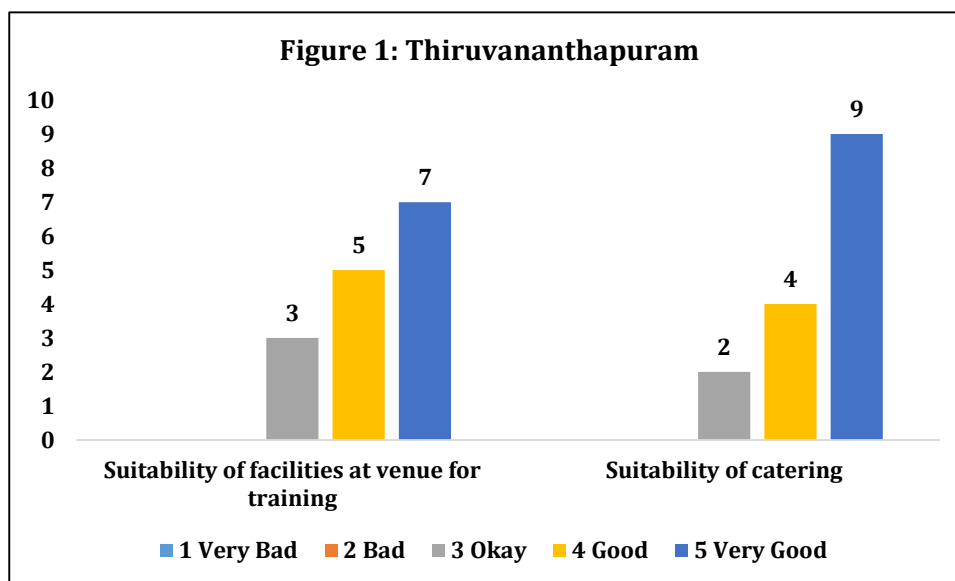
2. Evaluation of Facilitators



In Thiruvananthapuram, the clarity and accuracy of facilitators' responses was rated very good by 7 participants (35%), good by 8 participants (40%), and okay by 1 participant (5%). The overall quality of facilitation was rated very good by 6 participants (30%), good by 8 participants (40%) and okay by 1 participant (5%).

In Kozhikode, 20 participants (69%) rated very good, 5 participants (17%) rated good and 2 participants (7%) rated okay for the clarity and accuracy of facilitator's responses. The overall quality of facilitation was rated very good by 18 participants (62%), good by 8 participants (28%) and okay by 1 participant (3%).

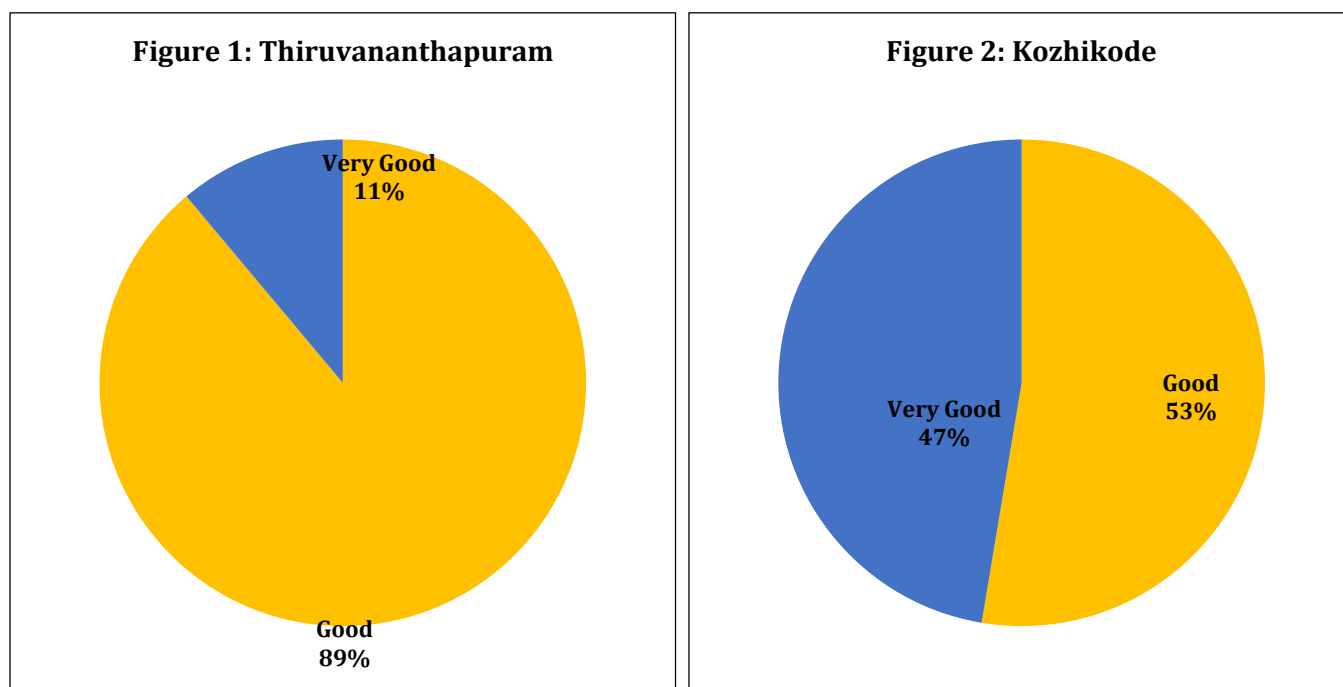
3. Training Administration and Venue



The suitability of facilities at the venue in Thiruvananthapuram for training was rated very good by 7 participants (35%), good by 5 participants (25%) and okay by 3 participants (15%). 9 participants (45%) rated very good, 4 participants (20%) rated good and 2 participants (10%) rated okay for the suitability of catering.

The suitability of facilities at the venue in Kozhikode for training was rated very good by 18 participants (62%), good by 8 participants (28%) and okay by 1 participant (3%). The suitability of catering was rated very good by 5 participants (17%), good by 8 participants (28%), okay by 12 participants (41%), bad by 1 participant (3%) and very bad by 1 participant (3%).

4. Overall Programme Rating



As the graphs indicate, in Thiruvananthapuram, 11% participants gave the 3-day course an overall rating of very good, while 89% participants rated the programme good. In Kozhikode, 47% participants gave the course an overall rating of very good, while 53% participants rated the same good.

Qualitative Feedback from the Participants in Thiruvananthapuram

1. Would be good to have more visuals and videos in sessions.
2. Very effective training.
3. Time management of sessions to be better.
4. Sessions on the 3rd day were interesting with more videos and pictures included.
5. Hands-on session on Day 2 was very interesting.

Qualitative Feedback from the Participants in Kozhikode

1. Liked the exercises, practical session and presentations.
2. Liked the hands-on session and group discussions.
3. Very interactive sessions.
4. Presentations were simple to understand for participants from non-technical backgrounds too.
5. The interaction between trainers and trainees was very good, more than trainers they were like our co-learners.
6. Practical session helped in grasping more information in less time; would be good to include more such sessions in such training programmes.
7. Helped recollect the learnings from my Engineering days, and gained a lot of new information as well. This will definitely help me in my career as a Civil Engineer.
8. Time duration for the course too short, would be more effective if site visits can also be included in such training courses.
9. Training would have been more effective if facilitators spoke Malayalam.

10. A more detailed session on retrofitting should have been included.
11. Would be better if the slides in PPTs had more visuals and less content.
12. Accommodation was suitable but food could have been better.

9. LIST OF PARTICIPANTS

10.1: Thiruvananthapuram Training (17-19 November 2019)

Sl No	Name	Designation, Hub	Phone number Email id	17 th , Sunday	18 th , Monday	19 th , Tuesday
1	Jomin P Jose	Engineer Paravur hub -ERK	9020804774 jominpjose4774@gmail.com		—	—
2.	Syam. K.C	Field Staff Parakkudavu. -ERK	9946527448 Syam ke yf@gmail.com		—	—
3.	Abraham Binu	Field Staff Paravur Hub -ERK	8943481135 abrahambinu 2@gmail.com			
4.	Deepa pulpakaran	Engineer. Alangad-Hub- ERK	9896072716 uma.00027@gmail.com			
5.	KRISHNA PRIYA.V.S	Engineer Parakkudavu Hub -ERK	9544876613 krishnapriyavs123@gmail.com			
6.	RESNI.P.K.	ENGINEER Moolapally Hub, ERK	9846556131 resni.pk@gmail.com			

Sl No	Name	Designation, Hub	Phone number Email id	17 th , Sunday	18 th , Monday	19 th , Tuesday
7	MANU PRIYAN .M.S.	ASSISTANT, hub? ENGINEER, TUM.	7558975199. manupriyanms@gmail.com			
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9.	ARYA MURALEEDHARAN	ASSISTANT ENGINEER ALAPPUZHA.	9495152276. aryamurali34@gmail.com			
10.	AMANDHUKUMAR . N.S.	FIELD ASSISTANT. ALAPPUZHA	7356261605			
11.	ANTONY SIMON	FIELD ASSISTANT ALAPPUZHA	7034151707 geoogle16@gmail.com			
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13.	SHEEBA .F.	TECHNICAL ASSISTANT ALAPPUZHA	9747267151 sheebagustin@gmail.com			
14.	SIFI KOSHY	ASSISTANT ENGINEER. Pulikeezhu Hub Pathanamthitta	8157825175 sifikoshy@gmail.com			
15.	ARYA LEKSHMI.S.	TECHNICAL ASSISTANT Ejanthood Hub Pathanamthitta	8281604026. aryalekshmi26@gmail.com			

**Training on Disaster Resilient Construction and Quality Monitoring
November 2019 | Thiruvananthapuram & Kozhikode, Kerala**

SI No	Name	Designation, Hub	Phone number Email id	17 th , Sunday	18 th , Monday	19 th , Tuesday
16.	LIGINA SARA VARGHESE	TECHNICAL ASSISTANT. Pulloppeezhu Hub Puthanambalatta	9497338956 mily.sara.varghese14@gmail.com	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
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18.	TOMSON PETER	FIELD Technical Assistant	7556979317 tomsnpeter100@gmail.com	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
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20.	KRISHNAPRIYA V.S	HUB ENGINEER KARAKKADU, ERNAKULAM	9546676813 krishnapriya.v.s@gmail.com	<i>[Signature]</i>	<i>[Signature]</i>	
21.	Keppa Padmakumar	Hub engineer Alangad Hub, Ernakulam	9446672716 uma00029@gmail.com	<i>[Signature]</i>	<i>[Signature]</i>	
22.	Saibeesha.S	Field Assistant vellanad hub.	9995737008 thrippalaxan@sathw@gmail.com		<i>[Signature]</i>	<i>[Signature]</i>

10.2: Kozhikode Training (26-28 November 2019)

SI No	Name	Designation, Hub	Phone number Email id	26 th Nov, Tuesday	27 th Nov, Wednesday	28 th Nov, Thursday
1	Anusul Sonny	Technical Assistant IDOKKI HUB	9847236152 anususan16@gmail.com	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
2	Sandhya mal P.B	Grid Assistant IDOKKI HUB	9847354706	<i>[Signature]</i> 554349973@gmail.com	<i>[Signature]</i>	<i>[Signature]</i>
3.	FAISAL ABU.	TECHNICAL ASSISTANT KOZHIKODE, KODUVALY HUB	9446608903	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
4	E.R. ARSHI	Engineer (CE) KOZHIKODE, Koduvally Hub	9567941689	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
5	Gayathri Babu	Engineer, Mala Hub Thrissur	8086950172	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
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7	Praveenkumar	Hub engineer Kulapetta Hub	9744466529	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>

**Training on Disaster Resilient Construction and Quality Monitoring
November 2019 | Thiruvananthapuram & Kozhikode, Kerala**

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