

Gharda Institute of Technology

Khed, Ratanagiri

NAAC ACCREDITED 'B +' First NAAC Accredited College in Kokan Region

First UMA empanelled college in Kokan region



Established in 2007 by

Gharda Foundation

Chairman – Hon. Padmashree, Dr. K. H. Gharda

Review Report on

Unnat Maharashtra Abhiyaan

- **Drafted by Prof. Snehal Gujarathi
UMA and UBA Co-ordinator**



1. Introduction

1.1 Overview of Institute

The principle objective of the Gharda Foundation is to carry on activities for the benefit and development of rural India with focus on issues like health, literacy, social awareness, agriculture, technical education etc on its own or by joining hands or by helping likeminded NGO's.

Establishment of Gharda Institute of Technology (GIT) in a rural area is in line with the philosophy of Gharda Foundation. GIT began its journey in 2007 to produce good quality engineers and responsible citizens as envisaged by Padmashri Dr. K. H. Gharda, Founder and Chairman of GIT. The institute provides good infrastructure, modern equipment, advanced laboratories, experienced & dedicated teachers. The education is provided at affordable cost. Institute within seven to eight years has emerged as a premier institute in *Konkan* region.

Institute is spread over 23.16 acres of land with built up space of 32,555 sq.m. The institute has spacious buildings with ample scope for future development and expansion. The institute maintains and encourages eco-friendly campus by tree plantation, elimination of all types of wastes such as biodegradable, e-waste and reuse of wastewater. Creation of waste water treatment Plant, biogas plant is a notable work done by the institut

1.2 Unnat Maharashtra Abhiyan (UMA)

Institute shares UMA's concern about making ongoing research in engineering colleges, polytechnics, and other higher education institutes in Maharashtra more public-oriented by analyzing various day-to-day social and developmental problems in the state (for example,

rural sanitation, toilets, drainage management, drinking water, road development, evaluation and reinforcement of roads, water conservation, fuel and energy, health, drought, etc.). Aligning curricula and research with development needs will serve two purposes-

- (i) contribute to socio-economic development agenda of the state through the provision of skilled manpower (societal objective)
- (ii) enable students, researchers and faculty members to work on live socio-economic problems in an inter-disciplinary manner, leading to more well-rounded professionals with diverse skill sets (institutional objective)

As a leading engineering institution in Kokan region, UMA will help us enhance our competitive edge by facilitating the development of new research practices and protocols, new job descriptions and new avenues for inter-disciplinary professionals.

The short to medium term objectives of institute are-

1. Establishing engagement with government agencies and local bodies
2. Networking with regional institutions
3. Initiating and fostering research practice according to regional needs, sensitivities and demands.
4. Encouraging interdisciplinary teams for project work that include social science practitioners as well as science and engineering researchers.

1.3 GIT and UMA

Rigorous study all the GRs related to UMA/ UBA, under the guidance of Institute Head Dr. P.S. Joshi

- Following the GRs, with due permission Institute Head Dr. P.S. Joshi and Managing Trustee, Prof. S. S. Gujarathi and Prof. R. Kalamka revisited Collector's Office, Ratnagiri on **10th August 2016** first meeting was held at collector office with District Collector Mr. Pradeep P. Prabahkar
- Again on **26th August 2016** meeting cum discussion was held at collector office with District Collector Mr. Pradeep P. Prabahkar, for finalization of Project Topics related to rural development including the participation of GIT Staff and students. Later appointment was given for presenting the work done in the month of November 2016 for presenting the basic survey done related to suggested Projects.

Appointment always got postponed (reason was always given from collector office due to demonetization-Policy introduced by Mr. P. Modi). Despite of this few wonderful Projects were actually successfully completed and implemented at GIT. For the same Dr. K. Gharda sir sanctioned the amount of Rs. 1, 00,000/-, on 22 Nov 2016.

UMA was very young at this stage for private institutes. And our institute was not yet officially emplaned under UMA (during December 2016). Though working for rural problems statements whole heartedly recognition of institute was must. For the same **Prof. S. S. Gujarathi and Institute head Dr. P.S. Joshi attended the meeting regarding participation in UMA/ UBA at VJTI, Mumbai on 2 December 2016.**

For around six months from then worked on collection of documents and filling the mandatory forms required for empanelment under UMA. In the month of April 2017 CTARA , IIT , Bombay Authorities (whole and soul of UMA) visited GIT, physically verified all the documents and infrastructure our institute. Finally in month of August 2017, GR dated 5 July 2017 was released reflecting GIT's official identification under UMA.

Since then work started to expand as well as involvement of faculties and instate resources along,

- Projects like Third Party Assessment of Jalyukt Shiver Works: Ketki village was handed to Prof. V. R. Kasar and Prof. Y. R. Kulkarni .Prof.S. S. Gujarathi acted as team member along with Mast. Swarop Nachankar, Mat. Abhishek Khetale participated in field survey and part of report writing. For this Project we were also funded with Rs. 8, 000/- , as survey allowance from Water Conservation Dept. GOM.
- Another Project was Third Party Assessment of Rural Water Supply Scheme: Dalvatne village, which was initiated and completed by Prof. R. I Hujare and Prof. V.D. Kamble.

Above mentioned projects were highly appreciated by CTARA dept., Water Conservation Dept. GOM , Water Sanitation Department GOM, UNISEF and others.

As a result of this hard work GIT was awarded with one more new GR dated 6th March 2019, which emphasis on GIT as official node to conduct Third Party Assessment of JalyuktShivarworks (which will be a paid bid). And most important on based on this GR, we are at stage of signing an MOU with Ratnagiri current District Collector Mr. Sunil Chavan.

Our Institute is also collaborated with Tribal Research Institute, Pune, under the guidance of CTARA, as part of UMA, from June 2018. Now we (TRT committee) are actively working on development of Schedule tribes in our Kokan region. For the same we have received a fund of Rs. 79,500/-, just at survey stage. Further funds will be released as we actual conduct courses for the candidates, which will be helpful for them to earn their livelihoods.

Recently conducted one dayworkshop under UMA, 'Techno economic Assessment Micro Small Medium Enterprises (MSME). 44 participants (2 faculties + 2 students) from overall Maharashtra participated. Workshop was co-ordinated by Prof. S. S. Gujarathi under the guidance of Dr. P. Joshi, in collaboration with CTARA, IIT Bombay and DTE

Officially College got empanelled under UMA in 2017, as mentioned in GR dated 5 July, 2017. Since then college is rigorously under UMA.

2. Key Projects under UMA

Mechanical Engineering	
Sr. no.	Title of the Projects
1	Design and Development of Cork fitting machine
2	Improvisation of Chilling plant : Efficiency
3	Design of Shell and Tube type Heat Exchanger
4	Study and Design of Hydraulic Test Bench
5	Planning and Design of Bio- Digester Toilet system for Indian Railways
6	Design and Development of Low Cost Houses using Composite materials

Chemical Engineering	
Sr. no.	Title of the Projects
1	Design, treatment and reuse of waste water from industries (waste water>50,000lit.)
2	Collection and reuse of Coconut shells : Bio fertilizer
3	Study of fluidization characteristics for Carbochlorination reaction
4	Study of behavior of Chelating agents for perception and inhibition of cations in specified conditions

Electronics and Telecommunication (EXTC) Engineering	
Sr. no.	Title of the Projects
1	CCTV improvement for monitoring and security
2	Energy Benchmarking of Commercial Office Building
3	Automation of conference hall of collector office
4	Garbage bins monitoring and collection
5	Developing economical Blind stick
6	Realization of Photonic Crystal structure as sensor
7	RIFD Based wireless shopping cart for super market
8	Attendance system by facial identification

Computer Engineering	
Sr. no.	Title of the Projects
1	Development of Efficient Billing system for City Cool Ice cream Parlor
2	Development of Android Employee Tracker
3	Development of Crime reporting system for Mandangad Police station
4	Development of search Engine for LAN
5	Development of Bus Pass Android App
6	Development of Website for Ratnagiri Tourism

Civil Engineering	
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Sr. no.	Title of the Projects
1	Post analysis of geometric design on Khed-Chiplun Highway (N.H.-66)
2	Analysis and design and construction of Earth Rammed structure
3	Replacement of coarse aggregate by treated Coconut shell aggregates
4	Analysis of Flood Risk and Pollution in Shiv river with its effects on Vashishthi River using QGIS
5	Guidelines and Structural audit of Masonry Bridge
6	Increasing Efficiency and modification of STP at Chiplun and utilization of treated water
7	Development of Artificial pond in Agricultural field for Kharif crops
8	Use of Plastic Waste in Road construction
9	Study on Quality survey and control measures of Sangmeshwar- Sakharpa Road
10	Rural Water Supply scheme(Dalvatne 1 Lakh liters Capacity) Assessment
11	Rural Water Supply scheme(Dalvatne 25 Thousand liters Capacity) Assessment
12	Jalyuktashivar Assessment

2.1 Brief Summary of Highlighted Projects

1. CCTV Improvement for Monitoring and Security

Client/ Stakeholder- Police department, society

Sponsored/ Non-sponsored- Self-funded

Abstract-Face recognition is the mostly used technology today among all biometric techniques. In addition to the conventional methods like security purpose or commercial use, new detection methods using image processing technology with CCTV cameras have been reported. This project deals with the system using the single click through the CCTV cameras and detect the multiple faces present over there. These techniques can be used to increase the efficiency of face recognition. This system only requires existing CCTV footage to sort out some images which are sufficient to display the face of the person clearly and recognize it. The strength of using video in the system is to monitor large and open spaces. The novel system also gives the opportunity to adjust the system by applying more number of cameras which will help in implementation of system according to different areas required, so that the efficiency and accuracy can be optimized. The improvement in the quality of CCTV footage using image processing algorithms will definitely save the cost and give better performance which can be used in Police Department for suspect detection, motion identification, etc.

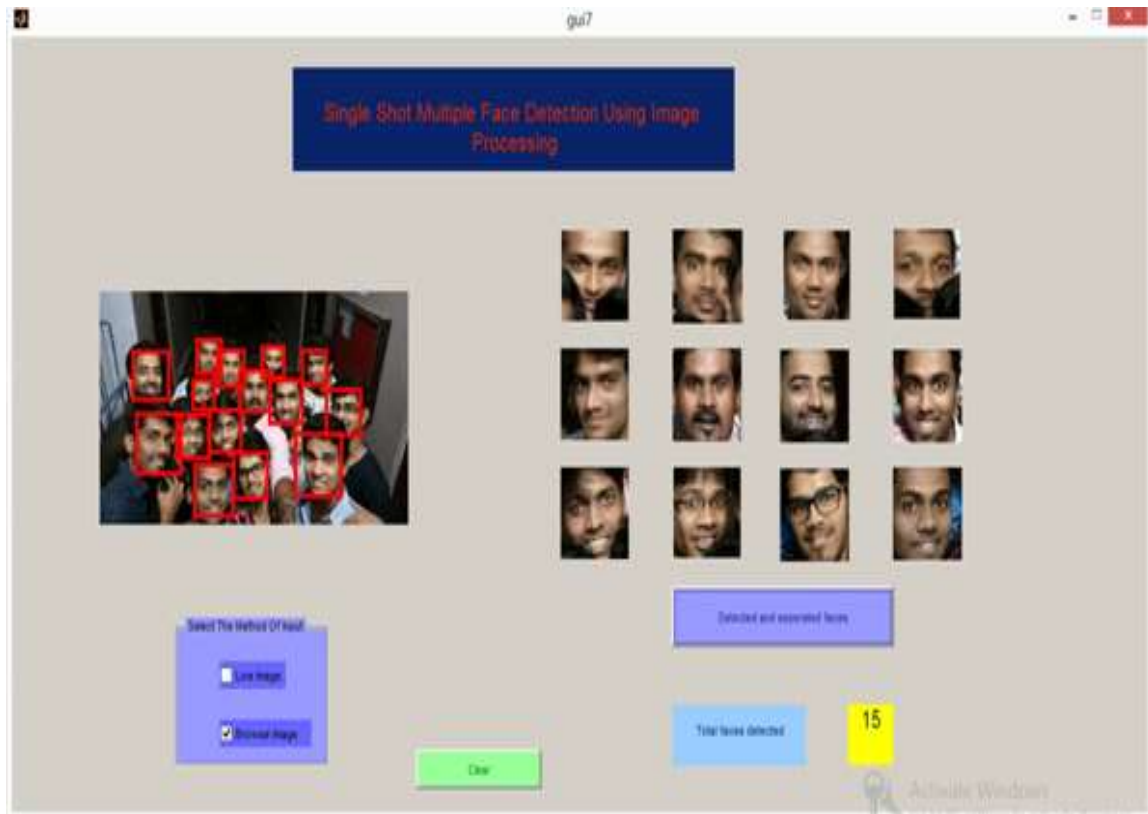


Image 1 – Single shot Multiple Face detection using Image processing

2. Room Automation

Client/ Stakeholder- Society

Sponsored/ Non-sponsored- Self-funded

Abstract- Everyone fantasies a home where all the appliances and devices work on their own without having the need for a user to intervene. This is a small step towards achieving that. Wouldn't it be great when you no longer have to use a switch to turn ON a lamp when you walk into a room, or better yet when you forget to turn it OFF, it automatically turns OFF by itself when you leave the room?

This project makes use of very simple components and microcontroller, lamps, fans or other appliances in his/her room activated automatically when he/she normally walks into the room. This idea surely brings the comfort in living of human and also saves the energy as well as the cost of electricity bill.

- ✓ College funded this project and successfully implemented at 108 stations (Washrooms, bathrooms, etc.) approximate amount around 2 Lakhs.
- ✓ Project students passed out in 2017 and started their own consultancy named Escalate Electricals & Electronics.



Image 2 – Automation of Principal's cabin



Image 3 – Room automation console

3 Garbage Bin Monitoring System

Client/ Stakeholder- Society, Sanitation department

Sponsored/ Non-sponsored- Self-funded

Abstract-Many times, in our city, the garbage bins or dustbins placed at public places are overloaded. It creates unhygienic conditions for people as well as ugliness to that place leaving bad smell. To avoid all such situations a system called IoT based Smart Garbage Monitoring System is proposed. This is very innovative system which will help to keep home & cities clean. This system monitors the garbage bins & informs about the level of garbage collected in the bins via web page, mobile apps.



Image 4 – IoT based designed components

4 Development of Economical Blind Stick

Client/ Stakeholder- Society

Sponsored/ Non-sponsored- Self-funded

Abstract-Blindstick is an innovative idea designed for visually impaired people for improved navigation. We here propose the advanced blind stick that improves visually

challenged people to navigate with ease with advanced technology. The blind stick is integrated with ultrasonic sensor for obstacle detection, pair of electrodes for water detection at certain height and the metal strip for locating the stick if it is fallen from hand. The presence of obstacle is indicated by using buzzer with various patterns. The stick is advanced with emergency button i.e. the GPS-GSM module are interface with PIC controller for sending the users current location information to his care takers in case of an emergency



Image 5 – Obstacle detection by using Buzzer with various patterns

5 Development of Website for Ratnagiri

Client/ Stakeholder- MTDC, society

Sponsored/ Non-sponsored- Self-funded

Abstract-Kokan is well known for its beauty and culture. Tourism is one of the largest growing market focused around pristine natural as well as cultural environments. It includes mainly costal, temples, greenery which is soul of this region

Sustainability considers tourism in its environmental, socio-cultural, economic and experimental dimensions. The guiding principle for sustainable tourism development is to minimize the negative impacts of tourism in order to maximize visitor enjoyment and local benefits.

After acknowledging importance of tourism designing and developing of attractive website was felt, specifically for Ratnagiri district.

- ✓ **This project is appreciated by MTDC Dept., Ratnagiri in this month**
- ✓ **To be presented to District Magistrate/ Collector, Ratnagiri, very soon.**

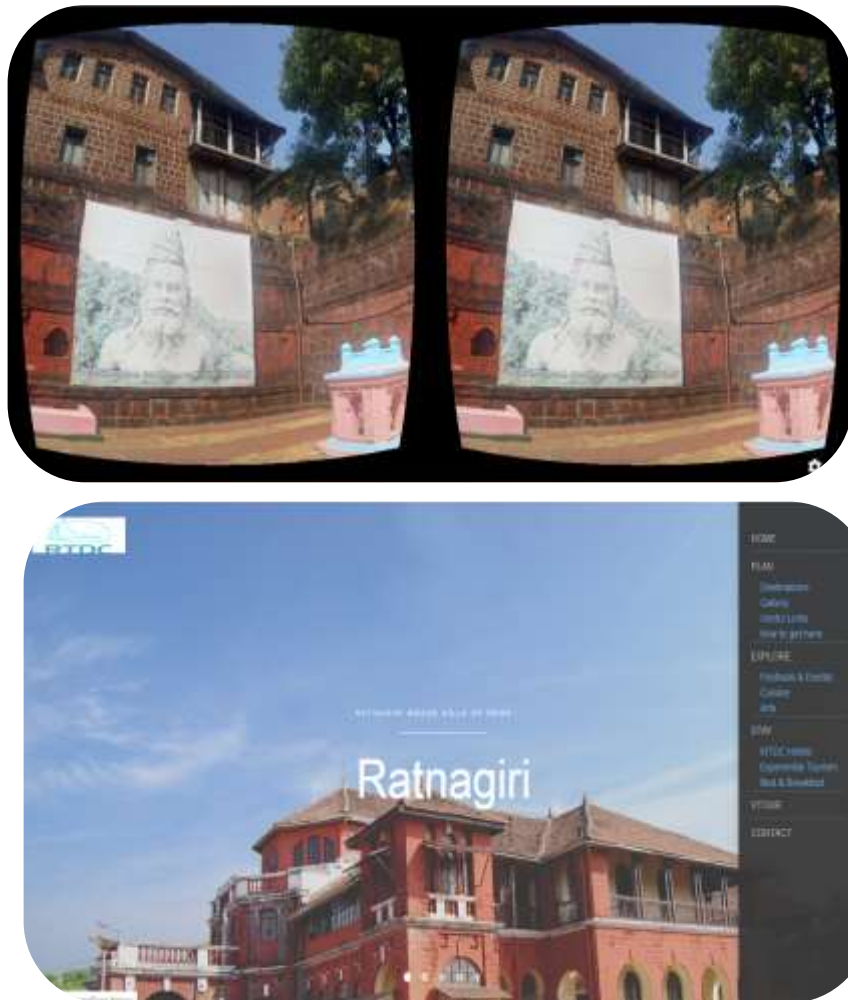


Image 6 – Glimpse of Website

6 **River Audit: Analysis of Flood Risk and Pollution in Shiv river with its effects on Vashishthi River using QGIS**

Client/ Stakeholder- Society, Farmers

Sponsored/ Non-sponsored- Self-funded

Abstract- Before development scaled up exponentially, rivers were capable of self-purifying themselves. They truly could justify the honour bestowed upon them of being

the Goddesses of our civilizations. The Ganga which is the holy river of India is now transformed into sewage and garbage carrier. The extent of pollution has reached a point that the Ganga is no more capable of self-purification. Now it is up to us that how do we approach and manage the problem of saving our rivers from getting polluted. Every river carries its holiness gracefully by supporting even the minute ecological entities in it for their survival. Exploiting a river for its water, its sand, polluting it, leads to a number of consequences which are a great threat to the surrounding life. The high utilization of water, releasing sewage or garbage has disabled the self-purification capacity of the river & problems like sand dredging renders the flora and fauna dependent on river homeless due to which the entire life cycle is disturbed.

Thus, it is necessary to not only clean and save our big rivers, but at the same time it has become important to assess the pollution levels of small rivers & rivulets which are finally feeding their waters into big rivers. With the same objective in mind we have analyzed the water of a local river Shiv (Shiv Nadi as referred locally) for past 7 months. Shiv river (tributary of Vashishthi River) is a small river which originates near Sawarde in form of small stream and flows towards Chiplun to meet River Vashishthi. The total running span of Shiv river is 30 km. We selected 4 points along the river located within city premises for sample collection. The samples were collected every month and analyzed for pollution levels in terms of Biochemical Oxygen Demand, Dissolved Oxygen, Chemical Oxygen Demand, Chloride content, Alkalinity, Hardness, pH levels, etc. Based on this miniature study it was found that Shiv River is not healthy to support survival of fish as DO levels have been found quite lower compared to 4mg/l which is required for the survival of fish. Additionally, Shiv river is not safe for bathing and as a source of drinking water.



Image 7 – Shiv river, Chiplun

7 Earth Rammed Structure

Client/ Stakeholder- Society

Sponsored/ Non-sponsored- Self-funded

Abstract-Low cost housing is the latest trend now a days. Beside construction using local material may boom up very soon. Hence looking into demand earth rammed structured felt an importance.

Analysis, design and construction of earth rammed wall, by ramming the soil manually and by use of pneumatic hammer as well. its durable, cost effective and ecofriendly.

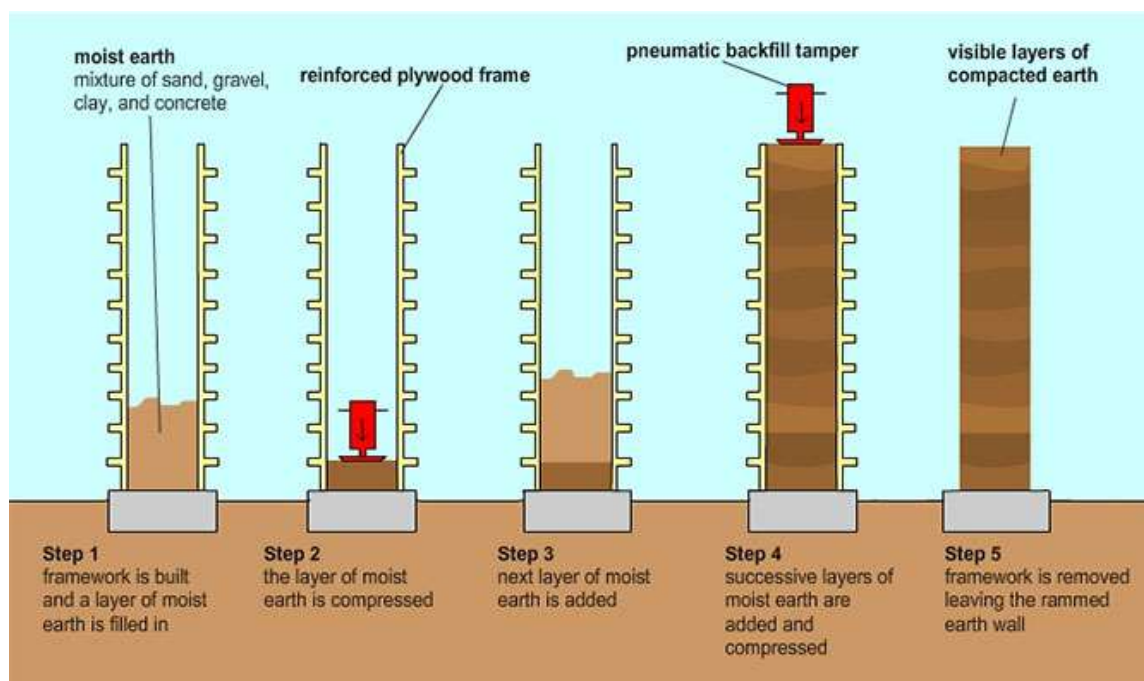


Image 8 –Earth Ramming Process

8 Rural Water Supply Scheme Assessment (RWSS)

Client/ Stakeholder- CTARA, IRAP, UNICEF and Water supply Dept.

Sponsored/ Non-sponsored- Self-funded

Abstract-Technical and financial assessment of existing and under construction rural water supply schemes is the theme of the project.

Completed assessment of two rural water supply schemes of Dalvatne village in Chipluntaluka, Maharashtra and identified the overall efficiency of implemented schemes.

- ✓ **Project 1- RWSS Assessment of Dalvante village consisting of 5 hamlets (Capacity 1 lakh litre)**
- ✓ **Project 2- RWSS Assessment of Dalvante village consisting of 3 hamlets (Capacity 25 Thousand litre)**
- ✓ **Reports has been submitted to CTARA Dept. , IIT Bombay.**
- ✓ **Presented at second workshop and very much appreciated by CTARA, IRAP and UNICEF.**
- ✓ **GIT is awarded with GR dated 14th July 2020, with Grade A, recognised actively working institute in Kokan region and Maharashtra state as well.**
- ✓ **And now officially institute can participate in paid for the same. This will not only fetch the graduating students with on field challenges and Knowledge, but also will help to with improvising the quality of work.**

9 Jalyuktshivar Assessment(JSA)

Client/ Stakeholder- CTARA, Water Conservation Dept. and farmers

Sponsored/ Non-sponsored- Self-funded (Eight thousand rupees till date has been given to the institute as travelling allowance by CTARA)

Abstract-Technical and financial assessment of structured and constructed schemes under JSA, includes cement nallabhandhars, gabion structures, terracing, trenches, divergent Bhand, wells, repairs of all these structures and tree plantation.

Completed assessment of one village named Ketki in ChiplunTaluka, Maharashtra.

- ✓ **Project 1- JSA OF Ketki Village having 8 hamlets**
- ✓ **Also visited and guided by CTARA representatives in this month**
- ✓ **Reports is completed and submitted.**
- ✓ **GIT is awarded with GR dated 6th March 2019, which emphasis on GIT as official node to conduct Third Party Assessment of Jalyukt Shivar works.**
- ✓ **Received Rs. 8, 000/- as travelling allowance for the field survey.**



Image 10 – Assessment of well on field in Ketkivillage(Hamlet- Budhwadi)



Image 11 – Meeting with KrushiSahayak, Sarpanch, Upsarpanch and villagers along with CTARA representatives

9. **Tribal Skill Development workshop** conducted at Gharda Institute of Technology GIT, for Scheduled tribes, is a benchmark for the Kokan region. The workshop was organized by GIT under guidance and support of Centre for Technology Alternatives for Rural Areas CTARA and funded by Tribal Research Institute of Training TRTI. It brought people from multidisciplinary on one platform and gave a chance to contribute towards social needs. We had Mr. Raj Desai, Ms Priyanka Gadhave from CTARA, IIT Bombay, Dr. Jayant Gadgil Principal Consultant of Saadhan, Relevant Research and Analysis, Mr. Oak, Mr. Suhas Jhunjare District Planning Officer from Collector Office Ratnagiri, Prof. Yogesh Agavekar from DBJ Chiplun college and Mr. Nilesh Bapat working as Nisarg Sevak, as speakers and many of our faculty members. People from Schedule Tribes(Katkari Samaj) attended the complete workshop. The count was 51. The other details are as below:

Sr. No.	Village	Taluka	Male	Female	Total no. Of Candidates	Education Details		
						Primary (1 st -4 th)	Secondary (5 th - 12 th)	Graduation & Post-Graduation
1	Khopee	Khed	13	03	16	02	06	--
2	Bijghar	Khed	01	01	02	--	02	--
3	Kumbhad	Chiplun	03	00	03	--	02	--
4	Nirbade	Chiplun	18	00	18	04	04	--
5	Dalvatne	Chiplun	12	00	12	03	04	--
Total					51	09	18	--



Image 12: Sri. Raj Desai introducing the Tribal scheme



Image 13: Workshop participants



Image 14: Dr. Jayant Gadgil encouraging the mob

10. Two days workshop on **Techno economic Assessment Micro Small Medium Enterprises (MSME)** in collaboration with CTARA, IIT Bombay and Director of Technical Education (DTE) was conducted at Gharda Institute of Technology GIT on 17th and 18th February 2020. This workshop was organized by GIT under guidance and support of Centre for Technology Alternatives for Rural Areas CTARA, with the motive of increasing the efficiency of MSME settled in the surroundings. Total 12 technical institutes from overall Maharashtra participated in this workshop, 2 faculties along with 2 students from each college.

- ✓ **44 participants (2 faculties + 2 students), including GIT attended from overall Maharashtra from different colleges.**

- ✓ Institute can serve as resource/ centre to conduct various workshops utilizing the technical aspects and infrastructural aspects.
- ✓ Received funding amount Rs. 2,86,000/-, for the same.



Image 15: Mr. Dilip Shirke owner of Local MSME along Head of the institute Dr. P. S. Joshi and Shri Raj Desai from CTARA IIT Bombay.



Image 16: Workshop participants

Outcome based Summary:

Achievement	Details	Outcome	Future benefits
GIT recognition by State Govt by way of inclusion in Government Resolutions as authorised third party evaluators	For official empanelment under UMA, Prof. S. S. Gujarathi and Institute head Dr. P.S. Joshi attended the meeting regarding participation in UMA/ UBA at VJTI, Mumbai on 2 December 2016.	For around six months from then worked on collection of documents and filling the mandatory forms required for empanelment under UMA. In the month of April 2017 CTARA, IIT Bombay Authorities (whole and soul of UMA) visited GIT, physically verified all the documents and infrastructure our institute. Finally in month of August 2017, GR dated 5 July 2017	GIT's official identification under UMA
Dr. K. Gharda sir sanctioned the amount of Rs. 1,00,000/-, on 22 Nov 2016	Number meeting were held at Collector's Office with District Collector/ Magistrate Mr. Pradeep Prabhakar for discussion and follow up of Project topics	Funds given by Dr. K. Gharda sir were utilized for the project demo/models, to be presented to the collector.	Release of funds from Collector's office for various projects.
Projects were highly appreciated by CTARA dept., Water Conservation Dept. GOM, Water Sanitation Department GOM, UNISEF and others.	Project 2: Third Party Assessment of Rural Water Supply Scheme : Dalvatne village	GIT is awarded with GR dated 14th July 2020 , with Grade A, recognised actively working institute in Kokan region and Maharashtra state as well.	GIT can participate in paid bid for the same.
	Project 1: Third Party Assessment of Jalyukt Shivar Works: Ketki village	1. GIT is awarded with GR dated 6th March 2019 , which emphasis on GIT as official node to conduct Third Party Assessment of Jalyukt Shivar works 2. Also received funds Rs. 8,000/- as travelling allowance for the on field survey	GIT can participate in paid bid. And most important on based on this GR, we are at stage of signing an MOU with Ratnagiri Agricultural Office. Tender Received.

Extension Activity which is beneficial for the development of Schedule tribes in our Kokan region. (Activity fetches marks for NAAC & NBA accreditation)	One day Workshop/meet on Tribal Skill Development was arranged in collaboration Tribal Research Institute, Pune, under the guidance of CTARA, as part of UMA, on 26 th July 2019.	Received funds Rs, 79,500/- , just at survey stage and arraigning workshop. Further funds will be released as we actual conduct courses for the candidates, which will be helpful for them to earn their livelihoods.	For identification of problems and their solutions in the form of projects/courses
Extension Activity.(Activity fetches marks for NAAC & NBA accreditation)	Two days workshop on Techno economic Assessment Micro Small Medium Enterprises (MSME) in collaboration with CTARA, IIT Bombay and Director of Technical Education (DTE).	1. 44 participants (2 faculties + 2 students), including GIT attended from overall Maharashtra from different colleges. 2. Funded Rs. 2,86,000/-, for the same	Institute can serve as resource/ centre to conduct various workshops utilizing the technical aspects and infrastructural aspects.