

# **Assessment of Water Supply Status of 20 Gram Panchayats in Ratnagiri District**

## **Project Proposal IIT Bombay Cell, Unnat Maharashtra Abhiyan**

### **1. Background:-**

Jal Jeevan Mission (JJM) is a high-priority mission of the government and the district administration to provide household tap connections to every household by 2024. In the mission, “Source Sustainability for Drinking Water” is a central theme of the Jal Shakti Abhiyan 2023, as per the letter dated 24th February, 2023. [1]

For the effective implementation of the scheme, village level primary data on the status of water supply is important. Under Unnat Maharashtra Abhiyan program, a case study program is being run in Ratnagiri colleges. As a part of this program, model case studies are being developed in various areas such as small enterprises, natural resources as well as key development sectors. [2]

In this regard, a team from IIT Bombay led by Prof. Milind Sohoni had a primary discussion with the Chief Executive Officer of Ratnagiri district Mr. Keerthi Kiran Pujar in the month of February. As per the discussion with the CEO, IIT Bombay wishes to (i) develop a methodology to generate and report such village level data through on-field surveys and GIS mapping (ii) provide support of UMA institutions in assessment of PWS, both of which will be helpful to the district administration in the execution of JJM. The UMA-IITB team first took up a pilot project of doing 10 water supply status reports in Rajapur Taluka in the month of March. To scale up this activity with the involvement of higher education institutions, a new project of doing village water supply status reports in Ratnagiri district is taken up in collaboration with Ratnagiri Zilla Parishad. [3]

### **2. Correspondence with the CEO: -**

To decide the action plan for the idea, the UMA team had a meeting with the CEO on 27th March 2023. The CEO welcomed the idea and the following correspondence was made thereafter:

- 1) A letter is given to the CEO about the willingness of the UMA-IITB to involve in the village-level surveys regarding water supply in Ratnagiri district. [4]
- 2) An acknowledgement letter is issued by the CEO to the UMA-IITB welcoming the idea and expressing the interest to support the UMA activities in this regard. [5]
- 3) A letter is issued by the CEO to the Principal Secretary of the Department of Higher and Technical Education requesting him to encourage the regional degree colleges to participate in the proposed activity. [6]
- 4) A response letter is issued by the DHTE, Govt of Maharashtra to the Ratnagiri CEO to proceed with the proposed activity and make financial provisions for the same. [7]

### **3. Project Title: -**

**“Assessment of Water Supply Status of 20 Gram Panchayats in Ratnagiri District”**

### **4. Objectives:-**

- 1) Preparation of the detailed reports of the current status of the water supply system for 20 GPs (including all revenue villages in each)
- 2) Identifying the key problems, gaps between demand and supply.
- 3) Giving necessary recommendations in line with the JJM target of providing HH tap connections to all by 2024 with special mention of **source strengthening possibilities**.

### **5. Project Period:-**

**15th April to 31st May 2023**

### **6. Methodology/steps involved in the assessment:-**

#### **6.1. Pre-field work: Collection and analysis of secondary data:**

- a) Census data
- b) JJM website data
- c) Data from Ratnagiri ZP about the villages facing high water scarcity
- d) Generation of maps based elevation and other parameters
- e) Decide selection criteria for the selection of 20 villages.
- f) Designing of survey formats for Wadi-level data collection and water resource mapping

#### **6.2 . Field work and primary data collection:**

- a) Meeting with GPs and collection of secondary data such as village area and population, number of public and private wells, details of the water supply schemes recently done and newly proposed, etc.
- b) Mapping and geo tagging of all water infrastructures including major wells of common use, common storage tanks, dams, bunds, common water reservoirs, etc.
- c) Wadi-wise Household surveys that include number of family members, daily usage of water, access to the source, daily time for water supply, water quality, etc.

#### **6.3. Analysis:**

- a) Compilation of the primary data in the form of excel sheet/tables
- b) Interpretation of the data with the identification of the key problems
- c) Preparation of the map of the water supply system showing location of the sources, location of Wadis, etc.

#### **6. 4. Reporting:**

- a) Preparation of the detailed report including the summary and recommendations.
- b) Verification of the report from Gram Panchayat
- c) Final submission of the report.

## **7. Selection of the Villages:-**

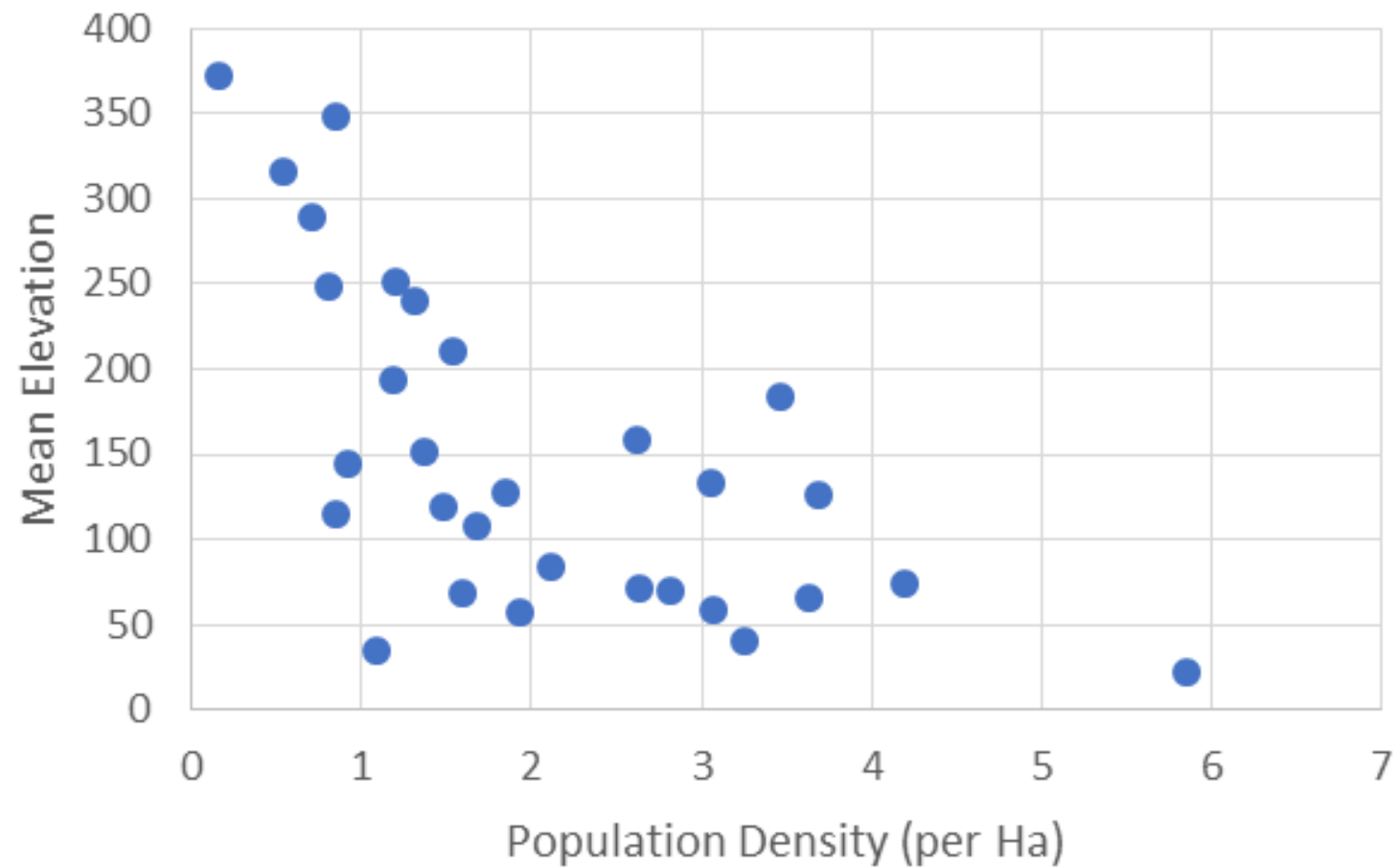
The selection of the villages for this project is made on the following basis.

1. The list of the villages in Ratnagiri district facing extreme water scarcity as obtained from ZP.
2. Villages with highest number of tankers supplied in each Taluka based on 2022 and 2018 data (In a descending order)
3. Villages with highest number of years of tanker supply (In a descending order)
4. Mean elevation of villages
5. Population density

<b>Taluka</b>	<b>GP</b>	<b>FHTC-%</b>	<b>Pop_Density</b>	<b>Mean Elevation</b>
Chiplun	Adare	46.84	1.69	107.3439479
Dapoli	Asud	87.76	2.64	71.23761261
Mandangad	Bholavali	98.27	1.32	239.1721161
Chiplun	Gane	55.65	3.06	132.706303
Khed	Ghera Rasalgad	84.18	0.71	288.6546388
Chiplun	Kadwad	83.83	1.19	192.6953542
Sangameshwar	Kalambaste	7.50	3.26	39.83527697
Dapoli	Karajagaon	80.64	1.94	56.03978888
Ratnagiri	Kelye	88.14	2.82	68.96568357
Chiplun	Khadpoli	87.65	3.64	64.68146518
Khed	Khavati	40.60	1.55	210.1378139
Khed	Khopi	55.66	0.82	247.1101211
Lanja	Kochari	27.74	1.21	250.4075579
Lanja	Kondage	9.90	0.86	113.6368444
Chiplun	Kondmala	94.72	3.47	183.0410461
Mandangad	Latavan	66.36	2.62	157.5173642
Mandangad	Lokarwan	61.49	1.86	126.9502762
Mandangad	Mhapral	35.62	5.86	21.9410609
Khed	Mohane	69.19	1.1	34.44015645
Sangameshwar	Pachambe	53.23	0.17	372.1458235
Lanja	Palu	98.24	0.85	347.2423032
Sangameshwar	Phanasawane	32.83	1.49	118.8129348
Khed	Posare Budruk	69.77	1.37	150.8621811
Chiplun	Riktoli	50.57	0.54	315.5464131
Ratnagiri	Sadyamirya	40.50	3.08	57.31934033
Guhagar	Sakhari Trishul	86.77	1.6	67.11571782
Khed	Suseri	88.33	4.2	73.21808219
Sangameshwar	Umare	21.45	0.93	143.4891249
Dapoli	Umbarshet	39.00	2.12	83.69112228
Guhagar	Veldur	74.13	3.7	125.4043088

From the above list of villages, 20 will be selected for the project.

# Scatter Plot of Shortlisted Villages



## **8. Outcomes:**

**This project would yield the following outcomes:**

- 1) Identification of the water sources for each Wadi with their GPS location, photograph, water level, dependency of population, etc.
- 2) Information about the existence of PWS for each Wadi and its coverage
- 3) Information about different modes of water access for each source - manual or energized
- 4) Information about the per head capital cost and the running cost of the PWS for each Wadi
- 5) Identification of the key problems for each Wadi such as water scarcity, water quality, absence of FHTC, etc.
- 6) Mapping of the overall picture of the village water supply with problem areas and appropriate suggestions.
- 7) Important recommendations towards source strengthening.

The reports will thus help understand the gaps between demand and supply which would ultimately help define the focus areas for the GPs. This should be a key input for the design of the PWS under JJM.

## **9. Probable Participating Colleges/Institutions:-**

In Konkan region, total 15 colleges from Ratnagiri, Sindhudurg and Raigad districts are associated with Unnat Maharashtra Abhiyan, out of which 9 colleges are from Ratnagiri district. The list of these 9 colleges is as follows:

- i) Mumbai University, Ratnagiri sub center
- ii) S. P. Hegshetye Arts, Commerce and Science College, Ratnagiri
- iii) Gogate Jogalekar College. R. P. Gogate College of Arts & Science and R. V. Jogalekar College of Commerce, Ratnagiri
- iv) Shri Anandrao Pawar Arts, Commerce and Science Mahavidyalaya, Chiplun - Ratnagiri
- v) Athalye-Sapre-Pitale College, Devrukh - Ratnagiri
- vi) Datar Science, Dr. Behere Arts and Shri. Pilukaka Joshi Commerce College (D.B.J. College), Chiplun - Ratnagiri
- vii) Navnirman Shikshan Sanstha's College of Arts, Commerce & Science, Sangmeshwar - Ratnagiri
- viii) Khare Dhere Bhosale College, Guhagar - Ratnagiri
- ix) Dnyandeep College of Science and Commerce, Khed - Ratnagiri

A coordination will be made by the UMA IITB team with the above-mentioned regional colleges for the participation of the students or fresh graduates in the project. Similarly, other UMA institutions from Maharashtra KIT, KTHM, GIT can participate in the same.

## **10. Coordination for Execution:-**

For the effective execution of this project, proper coordination between the UMA-IITB, Ratnagiri ZP and the regional degree colleges is important. Coordination will be done by the appointed coordinators from the UMA IITB and Ratnagiri ZP and the appointed faculty coordinators by the participating college/institution.

### **10.1 Coordination team from the UMA-IITB:**

- i) Prof. Milind Sohoni (Chairperson, UMA- IITB)
- ii) Dr. Gopal Chavan (Project Research Scientist - UMA)
- iii) Akash Garud (Project Engineer - UMA)
- iv) Akshay Chavan (Project Technical Assistant - UMA)
- v) Harshad Tulpule (Project Coordinator - UMA)
- vi) Tanaya Pangerkar (Project Assistant - UMA)

## **11. Execution Process and Timeline:-**

### **11.1 - Process:**

- i) Total 14 candidates from different Higher Education Institutes will be selected in this project. 7 teams of 2 candidates each will do the surveys. Each team will work in minimum 3 villages in a month.
- ii) The participating college/institution will appoint a faculty coordinator who will coordinate with the UMA team and the selected candidates for the execution.
- iii) Indoor as well as on-field training sessions for the candidates will be conducted by the UMA team
- iv) The support system for the project work including coordination with Gram Panchayats, field-work coordination, training for map making, review and suggestions for quality improvement will be done by the UMA-IITB.
- v) The faculty coordinator will also check the survey methodology and the quality of the report.
- vi) The final reports will be first submitted to UMA-IITB and then from the UMA team they will be submitted to the ZP.

### **11.2 Timeline:**

<b>Date/Period</b>	<b>Tasks to be Accomplished</b>
1 April to 10 April	Communication with the regional colleges/institutions about their involvement in the project
10 April to 15 April	Selection of the candidates through interview process
15th April to 20th April	Training
20th April to 20th May	Field work and report writing
20th May to 30th May	Review and final submission of the reports

## **12. Project Budget:-**

An estimate for expenditure budget and working time for the project is as follows:

### **12.1 Working time allocation for the survey of 1 village:**

Task		Working days required (8 hours of working by each candidate everyday, total 2 candidates in a team)
<b>A) Field Work</b>		
1	First overview visit to the village, visit to the GP and collection of the secondary data	2
2	Wadi level survey	3
<b>Total (A)</b>		<b>5</b>
<b>B) Desk Work</b>		
1	Map making	1
2	Data Compilation and report writing	2
<b>Total (B)</b>		<b>3</b>
<b>Total (A+B)</b>		<b>8</b>

### **12.2 Budget Estimate for one village:**

A primary budgetary estimate for this project is as follows:

No.	Expenditure Head	Details (For a team of 2 candidates)	Amount (INR)	% to the total expenditure
1	Major traveling	Rs. 1000 x 2 days	2000	11%
2)	Local Traveling	Rs. 500 x 3 days	1500	8%
3)	Accommodation	Rs. 500 x 5 days	2500	14%
4)	Food	Rs. 400 x 5 days	2000	11%
5)	Surveyors' honorarium	Rs. 1000 x 8 days	8,000	44%
6)	Printing and Stationery	Printing of survey forms, letters, maps reports, etc.	1000	6%
7)	Other	Other miscellaneous expenditure	1000	6%
<b>Total</b>			<b>18000/-</b>	<b>100%</b>

**Apart from this, an amount of Rs. 2000 per village will be required for coordination expenditure to the UMA-IITB team.**

### 12.3 Gross Estimate:

No.	Head	Expenditure per village	Number of villages	Amount (INR)
1	Field survey and reporting	18000/-	20	3,60,000/-
1	Coordination Expenditure	2000/-	20	40,000/-
Total Budget (INR)				4,00,000/-

### 13. Annexures/Reference Links:-

**1] Jal Jeevan Mission:**

<https://jaljeevanmission.gov.in/>

**2] Unnat Maharashtra Abhiyan - Main GR -**

<https://drive.google.com/file/d/10ujMslcix5vvYXDnE-7XWHzTfKd1Bs5/view?usp=sharing>

**3] Minutes of the Meeting with the CEO - Ratnagiri on 27th March 2023:**

<https://drive.google.com/file/d/1ov04zFBpnPRpycYULNEckOg1hcNUQV1x/view?usp=sharing>

**4] Letter by UMA-IITB to the CEO:**

[https://drive.google.com/file/d/1FdPjc5X\\_FubOw8MplJR1Xja\\_8uvk30Ac/view?usp=sharing](https://drive.google.com/file/d/1FdPjc5X_FubOw8MplJR1Xja_8uvk30Ac/view?usp=sharing)

**5] Acknowledgement letter by the CEO:**

[https://drive.google.com/file/d/1zduKjoUcJs4tYTF3zX8ISa7-YPKw\\_LzZ/view?usp=sharing](https://drive.google.com/file/d/1zduKjoUcJs4tYTF3zX8ISa7-YPKw_LzZ/view?usp=sharing)

**6] Letter to DHTE by the CEO:**

<https://drive.google.com/file/d/18Esl6RIVOAucExJnWtiajxFQb2MNvtv/view?usp=sharing>

**7] Response Letter by the DHTE to the CEO:**

<https://drive.google.com/file/d/1AgSGHQni6K9qZgVXnwNSDZdnYEyyGleR/view?usp=sharing>

**8] Sample of the survey form for field work:**

<https://drive.google.com/file/d/1BZweC4yfqUKH4YUf7mWKhwIwcLxCfVnK/view?usp=sharing>

**Contact:**

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- 5) Harshad Tulpule - 9405955608