Chapter II

Review of Literature and Research Methodology

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Chapter II

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A) Review of Literature:

In the first chapter, the importance of water in the life of human being, Water resources availability, sources of water, consumption of water in India and Maharashtra, history of policies and programmes of rural drinking water supply in India and other important issues related to the drinking water is discussed. Researcher has reviewed some of the works related to research topic and has presented in the form of review of literature.

1. Batchelor R. A. (1975) in his study entitled ‘Household technology and the domestic demand for water’ develops a demand model for the efficient use of water resources. He observes that the contribution of economic principles to efficiency in public water supply management lies in the demonstration of the interdependence among investment planning, pricing policy and demand projection as general attributes of the growth process. The book is a good summary of the issues in water resource management.

2. Saunders and war ford (1976) identified and enlisted potential economic effects and health effects of rural water supply systems. Macro economic effects, such as effects on development and output, improved health, increased time for productive work, increase in income, increase in population and effects related to averted costs to the economy are systematically examined in the book.
3. Recognizing the importance of water, United Nations Water Conference (1977), concluded that a convenient supply of water is an essential ingredient of a healthy, productive life. Water, that is not safe for human consumption, can spread disease, and reduce the productive time and energy of the water carrier. Coupled with mal-nutrition, the water born disease takes a dreadful toll in developing countries. For example in one Middle Eastern country half of the children born alive die before reaching the age of five as a result of the combined effects of disease and mal-nutrition. In contrast, only two percentages of the children born in UK die before reaching their fifth birthday. The conference asserts that it is invariably the poor who suffers the most from the absence of safe water.

4. Clark, Robert M. and Stevis (1981), says in their article the cost structure of a water supply system is a debatable topic. Usually the cost of supply of drinking water falls two parts: production cost and Distribution cost. The production cost includes cost of treatment, pumping of untreated and treated water and laboratory charges. The distribution cost includes maintenance cost of distribution network, metering system, small line extension and revenue collection as well as other administrative expense. Clark and Stevis deal comprehensively with the cost structure.

5. Maduskar B. A. (1981) in his study examined that, some infrastructure like water supply and sewage, which can be improved with the help of better financial management. It can be improved through better tariff policy, use of modern techniques and equipments. Mumbai Corporation developed the manpower and creating the awareness of all the factors related to financial control which helped in expanding the things for desire results.
6. **Bowonder B. and Rahul Chettrik (1984)** in their studies observed that, India’s urban water supply system have been declining due to various factors, such as high rural-urban migration, regional disparities in water supply sources and low priority status. Lacks of Administrative and management have further affect the system. This study examines the various aspects of urban water supply in India, such as quantity, quality and equity of distribution, the financial variability and resilience or ability to withstand shock. A number of suggestions are also made for improvement in urban water supply.

7. **Tripathi P.M. (1985):** This study is conducted in Dhamdaha block in purnia district. He confirms the findings of other scholars about the poor maintenance of water supply particularly hand pumps. He has attributed this to the persistent official apathy and indifference. Out of 437 hand pumps there were 88 hand pumps found to be defunct.

8. **Gibbons, Dianna C. (1986)** examines the broad issues involved in putting an economic value of water. All chapter of this study covers the demand and value of water in different sectors. Each chapter opens with a broad look at the components of water demand and economic determinants of the demand.

9. **The National Water Policy (1987):** the first National Water Policy adopted in September 1987 underlined that ‘water is a prime natural resource, a basic human need and a precious national asset’. This policy intended promoting a standardized national information system, data collection, establishment of basin-wise organizations with multi-disciplinary approach to planning, formulation, clearance and implementation of projects, rehabilitation, groundwater development, water zoning, and flood and drought management. In the planning and operation of water resource systems, the priorities of water
allocation were set as: a) drinking water b) irrigation c) hydro-power d) navigation and e) industrial and other uses. The policy also addressed several areas of intervention, namely assessment of water resources, ground water hydrology and recharge, prevention of salinity ingress etc.

10. Roth G. (1987) has developed a merit-good concept of water. The book states, safe drinking water is sometimes taken as a merit-good in the sense that people who receive supplies of safe water from it to a greater extent than they themselves believe.

11. N. Mohsin, A.N. Sinha institute of social studies, Patna (1988) this survey was carried out to examine the status of water supply in the village of two blocks each selected from 12 districts of Bihar. The study found the maintenance of water sources specially the hand pumps badly neglected. The performance of PHED, the nodal organization for planning and execution of rural water supply has been quite dismal.

12. Bijalani, H.U. and Rao N.S.P. (1989) in their study revealed that, the nature extent of access to basic requirements of healthy living is determined to a large extent from the level of societal development. Today almost one third of total population in 250 millions Indian depends on untreated and unsafe sources of water. In sanitation sector the situation has been even worse. Nearly 10 million people every year suffers from cholera, diarrhea, gastro enteritis, malaria, guinea worm etc. The cause for which could be directly attributed to lack of physical infrastructure especially unsafe conditions of water procurement use and means of human other waste disposal.

13. United Nations (1992): Nature and concept of water are changing rapidly over the years. From being treated as a public good to an economic good. The
recently concluded earth summit in Rio-de-Janeiro, (Agenda21, and chapter18) endorsed the idea of treating water as an economic good. Economic good concept of water necessitates fundamental alterations in the planning, designing, pricing and other policy framework, which requires, pricing policies to extract the scarcity rent from users. The involvement of community in the decision making process at all levels.

14. Bhela, Bhatia (1992), made a scientific approach to the discussion on about the water policy of Government of India. He argues, the building of water extraction structures in India is mentioned as early as 1343, when Muhammad Tuglak made advances from the treasury for the digging of wells during a famine. The preoccupation of these policies was overwhelming with averting starvation and mortality rather than with water scarcity as such. This was so because ground water scarcity was not a problem in times of draught. This happy state of affairs unfortunately started changing dramatically in 1960 when water scarcity increasingly emerged as one of the most alarming aspects.

15. The article by World Bank (1993)- Water Demand Research Team throws light on the need for improving the adequacy of water supplies. They argue that so far the strategies of Governments and international donors for tackling the problem have been supply driven; the fundamental importance of demand in the selection of appropriate policy has been virtually ignored. Major thrust of the study is based on the realization that effective policy and planning must take in to account what the rural clients want and are prepared to pay.

16. World Development Report (1994) identifies the economic impacts of clean water. It states “more than two million deaths from diarrhea could be avoided each year if all people had reasonable water and sanitation services.”
The report argues that large gains in environmental quality, health, equity, and direct economic returns can be realized by adopting an approach that comprises four key elements namely (1) managing water resources better, (2) providing those private services that people want and are willing to pay, (3) using scarce public funds only for those services that provide wider community benefits and (4) developing flexible responsive institutional mechanisms for providing these services.

17. Pushpangadan K. and Murugan G. (1994) make an attempt to apply the modified version of coase Two-part tariff method to determine the efficient and equitable rate structure for drinking water. The study constructs the Adult Equivalent scale for the first time in the consumption of potable water.

18. White paper (Shwetpatrika) (1995)- Even though there were large scale investment done on the drinking water supply schemes for solving the problems of water of rural and urban division, nevertheless the intensity of this problem is not decreased. Hence Maharashtra Government published white paper on 26th July 1995 in order to decide the comprehensive policy which is acceptable to all. The main aims of this policy are as follows:

- To strengthen the sources of water and increase refilling ground water and for it that is essential to find out longtime scheme.
- To get control over population growth as population growth is the main reason for the problem of drinking water.
- To use surface water in proper way because its availability is limited
- To ground water should be consider as social property and so its use for drinking and agriculture should be very efficient according to availability.
- To provide drinking water through irrigation project.
• To take participation of layman’s in the programme of water protection and advancement in order to protect the sources of drinking water.
• To establish drinking water supply division newly and separately in order to hone both rural and urban areas cumulatively for implementing water supply programme cumulatively.

19. Zaslow and Herman (1996) observed that the health effects of some contaminants in drinking water are not well understood but the presence of contaminants does not mean that our health will be harmed. The level of contaminants of drinking water is seldom high enough to cause acute health effects. Examples of acute health effects are nauseas, lungs irritation, skin rash, vomiting dizziness and even death. In North Carolina, drinking water is generally of high quality and free from significant contamination. Public water supplies are tested and regulated to ensure that our water remains free from unsafe level of contamination. Some private water supply including wells, are not regulated by drinking water standards and the owner must take step to test and treat the water as needed to avoid possible health risks.

20. Maria and Arial (1997) make an analytical study of the acute problems involved in the provision of drinking water to Hyderabad city. The study concludes stating that considering the tremendous pressure that population growth, area expansion and life style changes could exert pressures on the urban water supply system.

21. Rogers, Bhatia and Herber (1998) bring out some modification on agenda 21 and the Dublin principles. This paper addresses the concept of water as an economic good and explains in practical terms economic tools that can be used to affect the environmentally, socially and economically efficient use of water.
22. **Santhakumar V. (1998)** has identified two sources of inefficiency in the provision of merit-good water. First is due to the fact that the state autonomously decides the nature and characteristics of the merit-good. If the people does not prefer the nature of the good, or its consumption requires effort, these may lead to the non-consumption of the good. The second source of inefficiency is in the selection of institutional framework. The acquisition and free distribution of water by the state agency is inappropriate in efficiently solving the drinking water problem of different localities. This paper concludes that the provision of drinking through public system is a failure in several parts of rural Kerala, on efficiency and equity grounds.

23. **The paper by Pushpangathan and Murugan (1998)** is an application of Ramsey Wilson model of changing welfare criterion. The study attempts to design an equitable and efficient tariff rate for drinking water. It also explores important elements in the design of appropriate user financing.

24. **Lewis, Devid K. (1998)** describes the limitations and contributions of cost-benefit analysis in the evaluation of new technology and policies in natural resources. This is achieved through a review of the economic principles of consumer choice and the role of markets in expressing social preferences.

25. **Asian Development Bank (1999)** makes an attempt to analyze how to make an economic analysis of water supply project it is an effort to translate the provisions of water supply guide lines into a practical and self explanatory work with numerous illustrations and numerical calculations for the use of all involved in planning, designing, apprising and evaluating water supply project.

26. **World Health Statistics (1999)** reveals certain facts related to the drinking water scenario of third world countries. It states that one quarter of the
Third World’s population does not have access to adequate safe water supply and one half does not have access to an adequate excreta-disposal system. There are several reasons for this. Firstly, the criteria used to define an adequate water supply are open to question. Secondly, statistics on coverage are often based on the assumption that all those with water taps in their settlements are adequately served. But frequently community water taps are so few that people have to queue up for a long time. This has the effect of reducing water consumption below the level required for good health.

27. Hanumantha Rao C.H. (2000) raises a number of important issues, which have a bearing on the sustainability of watershed management. The paper proves that the overall impacts of watershed project have been positive and significant. There has been a marked improvement in the access to drinking water, crop yields, and the area under cultivation, lending to a rise in employment. Despite this noticeable improvement, watershed development needs strategy shifts to a truly spontaneous and demand driven movement of the people in dry land areas.

28. Ramachandraiah C. (2000) comments on the recent landmark judgment by the supreme court of India placing drinking water as a fundamental right. It is an unfortunate story in India that most of the rivers flowing through cities are polluted. The apex court’s judgment, helping the people serves as a stern warning to the politician-bureaucrat nexus who have in recent years turned a blind eye to the growing pollution of Indian rivers.

29. Mathai, John (2000) provides a descriptive picture on water resource potential of Kerala and gives a holistic view of diverse water problems in the state, against the backdrop of the Indian scenario. The author identifies that
Kerala has a number of inherent constraints in the utilization of water, though it receives substantial rainfall during the year. The constraints as the author lists out are natural, anthropogenic, policies of the state, and a combination of all these. The paper offers concrete suggestions such as community participation and management of local water resources, changing the role of the Government from provider to facilitator, and effective strategy that will minimize the run-off.

30. The paper by Push pangadan K. (2001) provides capacity utilization in rural schemes as an explanation for the wide variation in the coverage of drinking water supply existing between the estimates of norm-based consumption and actual consumption. It also develops an engineering methodology for the calculation of actual water supplied from the pumping hours using a stratified random sample of 199 rural schemes in Kerala. The paper effectively proves that the capacity utilization is only 49.5% in Kerala.

31. Jalan and Ravallion (2001) study raised question that piped water reduce diarrhoea for children to Rural India. In his study using primary survey data for the period 1993-94 found that overall prevalence of diarrhea is in the sample with an average of 33 days of illness and mean expenditure of 0.74% episode of diarrhea.

Disease prevalence and length of illness fall with higher income and education. Access to piped water significantly reduces diarrhea prevalence and duration. Diseases prevalent amongst those with piped water would be 21% higher without it. Health impacts from piped water were found to be larger and significance is more familiar with better educated women. They found a similar pattern when stratified instead by the highest education of household head.
Finally, they concluded that there are striking differences in the child health gains from piped water according to family income and adult female education. Health gains from piped water tend to be lower for children with less well educated women in the household. They also found that the illness reduced significantly if households have drinking water source with the premises, the impact is greater in households where the female member is illiterate. Suggesting that the piped water within, the house helps to compensate the knowledge of disadvantages and the illiterate member.

32. **National Human Resource Development Report (2001)** observed that as per census of India, if a household has access to drinking water supply from a tap or a hand pump/tube well situated within or outside the premises it is considered to safe drinking water. Millions of people in the country suffer from water borne diseases on account of lack of access to be safe drinking water. It is a poor who suffer from higher prevalence of diseases as compared to rich.

33. **The National Water Policy (2002)**- To overcome some of the discrepancies in implementing the 1987 policy, the National Water Policy 2002 was announced as a modified version of the 1987 policy. The 2002 policy was set in the backdrop of the impending water crisis and the severe droughts in the country.

Hence, provision of drinking water assumed top most priority in the 2002 policy as well. With the inclusion of provision of water for ecological services the 2002 policy set the priorities as: a) drinking water b) irrigation c) hydro-power d) ecology e) agro-industries and non-agricultural industries f) navigation and other uses. In rest of the areas and provisions, the 2002 policy
appears to be a replica of the 1987 policy. A notable difference in the 2002 policy has been its focus on privatization.

34. **Water Aid India Report (2005)** has examined that access to safe drinking water and sanitation in rural-urban area in India. The growth of population is increasing very fast while the supply of drinking water is not at par. So people face many problems to get drinking water especially in urban poor area. The public resources often provide insufficient amounts of water in congested urban areas. In fact the survey noted that 15% of the urban households did not get sufficient water from their principal water source in April, May and June, so it is a matter of serious concern.

35. **Srinivasula and Haripriya (2006)** have examined the factors affecting child health due to drinking water quality and sanitation in Chhornepet and Pallavaram township of Tamil Nadu. The model has been estimated using probit model and Cox-proportional model using primary data. The result of the analysis shows that drinking water quality and sanitation kind used and precautionary measure taken by the household significantly affect the child health. In Cox proportional model the drinking water quality and sanitation were not significant but precautionary measures are highly significant indicating child mortality. This suggests the need for stringent regulatory mechanism to supply clean drinking water as it is to poor who are usually affected by water related diseases.

36. **NSSO 65th round (July 2008- June 2009)** examine that in rural areas, there has been a gradual increase in the share of both the sources ‘tap’ and ‘tube well/hand pump’, and a corresponding decrease in the share of ‘well’. In 1993, nearly 19% of the rural households used ‘tap’ as source of drinking
water, which rose to 30.1% in 2008-09. In respect of ‘tube well/hand pump’, this was 45% of rural households in 1993 rose to nearly 55% in 2008-09. The coverage from the improved sources of drinking water was 90% in rural areas. This implies that India has achieved its MDG for rural drinking water supply. While in 2002 37% of the rural households had drinking water facility within premises this increased to 41% in 2008-09. The proportion of rural households required to travel beyond 500 meters to access the major source of drinking water decreased to nearly 2% in 2008-09. About 9% travelled a distance between 200 meters and 500 meters to access drinking water. However, 86% of the rural households got sufficient drinking water throughout the year from the first major source. The shortage of drinking water is mostly in the summer months of April, May and June.

37. Verma Manisha (2009) observed that the provision of safe drinking water is considered today as a fundamental to governance; to promote good health and welfare of the people. To ensure that different aspect of rural drinking water supply is adequately taken care of the funds budgeted for rural drinking water supply under the centrally sponsored scheme. ARWSP (Accelerated Rural Water Supply Programme) bifurcated in different components. In this study it is also given some strategy to improve safe drinking water in rural areas.

38. Patanaik K. B. (2009) examines that water is life and is a basic need of human beings. The prime responsibility of a nation is to ensure safe drinking water to all its citizens. Access to safe drinking water in both quality and quantity should be treated as a fundamental right of the individual. The endeavor of every nation is to provide 'safe drinking water for all'. The
promotion of the community participation, involvement of Panchayat, public-private partnership, IEC (Information, education and communication), Inter sect oral condition and empowerment would go along with the mission of achieving safe drinking water for all in countryside of India.

39. Evaluation study on Rajiv Gandhi National Drinking Water Mission, Government of India, (2010) - The present evaluation study covered 240 habitations spread over 10 sample districts across five geographical representative study states and looked at the extent of coverage, access and the overall impact of the mission on the rural habitations, especially on women. The main findings of this evaluation study on the basis of drawn samples are:

- 93 percent of the rural population at present has access to safe drinking water in the covered states.
- 66 percent of the households having access to safe drinking water source are getting round the year supply of drinking water.
- It is encouraging to note that an overwhelming majority of the households (93%) have reported their satisfaction with the water quality.
- 70 percent of the hand pumps and 91 percent of the tapped water supply sources in the sample villages were functional as reported by the respondents during the field investigation.
- 87 percent of the households have reported to be paying the water charges on a regular basis and 95 percent of the households have expressed their satisfaction with regard to the water charges paid by them vis-à-vis the quantity/ quality received by them in the covered states.
- Most of the households mentioned about non-existence of village water and sanitation committee (VWSC) in their area.
- 74 percent of the households have reported that the programme has a positive impact in terms of environmental sanitation.
- 75 percent respondents have conveyed that the workload on women has reduced drastically due to the implementation of the programme.
- 89 percent of the women have also reported that the children are getting more time for studying instead of helping them in collecting water from the natural sources.

40. **Dr. Niranjan Mandal (2011)** in his study entitled ‘Role of Panchayats in Rural Water Supply and Sanitation: a Case Study of West Bengal’ his main findings of this study are as follows:

1. There is a considerable variation in the accessibility of safe drinking water to the rural households across the state of West Bengal.
2. The access to safe drinking water of households in West Bengal as compared to all India average is significantly high over the period under study. This is possible due to the direct and active role of PRIs and in some cases NGOs and PHE in providing safe drinking water to the rural people.
3. Most of the families in rural West Bengal are outside the latrine facilities at their household levels. However, it is observed that the formation of sanitary marts and households coverage show an increasing trend over the years.
4. Some of the sample families do not have the practice of using sanitation though it is available at their household levels. It indicates the lack of health consciousness of the rural population in the one hand and the negligence of PRIs as regards raising the same on the other.
41. Brij Pal (2012) in his paper the analysis of policy and programmes of rural water supply and sanitation, it is evident that sincere efforts have been made by the Government to overcome both the problems. Enhanced funds were earmarked under the Five Year Plans but on the whole, limited success could be obtained at the operational level. No doubt, a variety of programmes were launched to cope with the problems but their implementation could not yield commendable results as the goal of providing safe drinking water for all still away and the sanitation problem has not reduced significantly. Much more efforts are required on the part of the Union and State Governments, PRIs, NGOs and other community organizations. Special attention on the part of the State Government with strong political will is required to get the programmes implemented effectively by devolution of requisite powers to the PRIs.

Many researchers have done in the field of drinking water supply. But it has been noticed that after the revived of various literature most of them have been completed on the status of drinking water supply in major cities and urban areas but very few attention paid in rural area and no any research work on drinking water supply schemes of rural area of Jalna district. While the problem of drinking water supply in whole country is remain the same.

B) Research Methodology

Significance of the study:

Today from the whole world to small hamlet is facing the one important problem and this is nothing but the problem of ‘Water’. In 1950s the world was facing the problem that how to produce grain and the problem of growing population. Then in the decade of 1960-70 there was a problem of fuel. And now a days matter of water scarcity becomes the dominant problem. So our
Maharashtra state is not exceptional state in case of this problem and Jalna which is one of the backward districts in the state is also facing the problems of scarcity. Therefore the present study has relevance with present day problems of drinking water in rural area of Jalna district.

The Zilla Parishad takes more and more efforts to avoid the problems of drinking water through various Rural Drinking Water Supply Schemes.

The study would be helpful in throwing light on the schemes of water supply implemented by Zilla Parishad and its expenditure trends on these schemes. It would be helpful to understand the problems and situations of drinking water in rural area of Jalna district, and also helpful for improving their performance by implementing suggestions to be made on the basis of it. Considering the importance of water and its related management, researcher has selected the topic.

**Objectives of the study:**

The following objectives have been intended in the present study.

1. To study the Government schemes of rural drinking water supply implemented by Zilla Parishad Jalna.
2. To make comparative study of expenditure incurred on rural drinking water supply by Maharashtra and Zilla Parishad Jalna.
3. To study the expenditure trends of Zilla Parishad Jalna on rural drinking water supply schemes.
4. To make comparative study of expenditure on various rural drinking water supply schemes in Jalna district.
5. To find out the problems of drinking water in rural area of Jalna district.
Hypotheses of Study:

The following hypotheses were formulated for the study.

1. There is an increasing trend of expenditure on rural drinking water supply.
2. The various schemes of rural drinking water supply are not implemented effectively.
3. Rural people are suffering various hygiene problems due to the water provided by the Grampanchayat.

Scope of the Study:

The study is confined to the review of the study of rural drinking water supply schemes with special reference to Zilla Parishad Jalna. The study has been divided into the following three groups.

1. Geographical: The study covers all block-wise activities of various drinking water supply schemes in the rural area of Jalna district.
2. Operational: The study includes various rural drinking water supply schemes implemented by Zilla Parishad Jalna, such as Accelerated Rural Drinking Water Supply Scheme, Minimum Needs Programme, Swajaldhara Scheme, Jalswarajya Scheme, Bharat Nirman Scheme, Special Components Plan, Natural Disaster Relief fund scheme, scheme of local Area Development Fund of MLA and MPs, Finance Commission fund scheme and other temporary schemes of drinking water supply in rural area of Jalna District.
3. Temporal: The study covers the analysis and interpretation of data for the period of ten years from 1999-2000 to 2008-09.

Data Collection and Processing:

The present study is based both on the primary data and secondary data. Primary data has been collected through the well designed interview schedule.
and observation of Sarpanches and beneficiary families from the selected sample villages. 100 sample villages were selected from the total villages of Jalna district by using purposive sampling method. From each village one Sarpanch and two beneficiary families were selected in order to study the effectiveness of rural drinking water supply schemes implemented by Zilla Parishad Jalna and also to study the current situation of drinking water in rural area of Jalna district. Jalna and Bhokardan taluka are very large in case of number of villages compared to the other six taluka of Jalna district. Hence 14 villages from Jalna and Bhokardan taluka each and 12 villages from other each taluka were selected.

The secondary data were also used in order to study the expenditure on rural drinking water supply schemes implemented by Zilla Parishad Jalna. The secondary data were collected from final statement, annual report of the department of drinking water supply of Zilla Parishad Jalna and Government of Maharashtra (Mantralaya).

Besides all these sources, economic survey of India, economic survey of Maharashtra, Jalna district socio-economic review, census 2011 of India and Maharashtra, various publications of the Government, journals, related subject books, reports, research articles, and reviews of literatures were used for data collection. The most important source of the collection of the secondary data is various websites such as- www.cwc.nic.in, www.wateraid.org.gov.in, www.mdws.gov.in, www.indiawaterportal.org.

For analysis of data statistical tools like averages, percentages, cumulative percentages, simple annual growth rate, standard deviation, coefficient of variation and co-efficient of correlation etc. and various types of graphs and maps also used.
Chapter scheme:

The present study is divided into following six chapters:

1. Introduction
2. Review of Literature and Research Methodology
5. Situation of Drinking Water Supply in Rural Area of Jalna District.
6. Conclusions and Suggestions.

Limitations of the Study:

The limitations of the study are as below:

1) The sample size is limited to 100 Sarpanches and 200 beneficiary families from rural area of Jalna district. The number of sample may not be real representative of the district population.
2) The survey was conducted in April and May 2012 and their results might not be pertinent to the every year.
3) The answers given by the respondents may not be correct.
4) The data collected for the study are not in the form in which it is required for the study.

Further scope of the study:

A study of drinking water supply schemes can also be undertaken for the other districts in Maharashtra as well as districts of other states in rural areas and also urban areas including urban area of Jalna district. The same kind of study can also be undertaken for rural and urban areas in India at state level and national level.
References


