



# SECTORIAL INEQUALITIES IN BARE NECESSITIES INDEX (BNI) OF SOLAPUR DISTRICT: A COMPARATIVE ANALYSIS

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## ABSTRACT

The present study focuses and examines the sectorial inequalities of the Bare Necessities Index (BNI) in the Solapur district at the tehsil level. This study is pioneer for study area and it covered all eleven tehsils along with sectorial i.e., rural and urban analysis of BNI. The estimation of BNI of Solapur district is based on Census 2011 data. It is observed that BNI of Madha and Karmala total and rural has high, both indicates that the better access of bare necessities to total and rural people, but very low access to urban people. Overall estimation of BNI in the Solapur district has revealed the better and high access of bare necessities to urban people than total and rural people, it treated as inequalities between rural and urban people for access of bare necessities. The main aim of BNI estimation of Solapur district is to evaluate access and sectorial inequalities of bare necessities in Solapur district across eleven tehsils.

**KEYWORDS:** BNI, Water Index, Sanitation Index, Housing Index, Micro-Environment Index, Other Facilities Index.

## 1. INTRODUCTION

The Solapur district is one of most important part of Western Maharashtra region. Solapur district is segmented for administrative purposes into eleven tehsils, which in turn comprise smaller divisions. According to the census 2011, Solapur district has a population of 4,317,756, it is ranked 43<sup>rd</sup> for largest populated district in India. Out of total population of Solapur district about 67.6 % population lives in rural areas of villages and 32.4% lives in urban regions of district. The density of population of Solapur district is 290 per square kilometer and the population growth rate is 12.1% in over the decade 2001-2011. Sex ratio of Solapur district has 932 females for every 1000 males, and a literacy rate is 77.7%.

The Bare Necessities Index is a recently developed by the Ministry of Finance and Statistics, Government of India, to examines the access of bare necessities to people. It is firstly introduced in the Economic Survey of India report, 2020-21. Bare Necessities Index is composite statistics of various bare necessities i.e., clean water, sanitation, housing, micro-environment and other facilities, etc. which needed for everyone to sustain their life. The main aim of Bare necessities Index is that to examine access to the bare necessities like housing, water, sanitation, electricity and clean cooking fuel which is essential to live a decent life. This research study examines the progress made in providing access to bare necessities by constructing Bare Necessities Index (BNI) at the rural, urban and each tehsils level in Solapur district. The BNI estimation summarizes 21 sub- indicators includes 16 positive and 5 negative sub-indicators of 5 main dimensions i.e., water, sanitation, housing, micro-environment, and other facilities. The BNI has been created for all tehsils at total, rural and urban base as well as overall Solapur district using Census data of Solapur district 2011 data. The Bare Necessities Index exercise of Solapur district has examined that the tehsils and sectorial i.e., rural-urban-based overall access of bare necessities to the people and their inequalities.

## 2. OBJECTIVES

The major objectives of this study are as -

- (i) To estimate sectorial Bare Necessities Index of Solapur district.

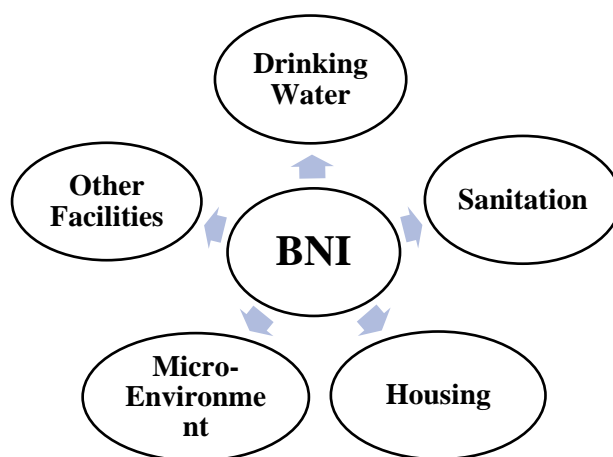
- (ii) To evaluate sectorial i.e., rural and urban inequalities in Bare Necessities Index of Solapur district.
- (iii) To suggest measures for improvement if necessary, for the study area.

### 3. RESEARCH METHODOLOGY AND DATA BASE

The present study is analytical in nature and it's based on purely secondary data and some ethical observation of the researcher. Bare Necessities Index (BNI) is comprehensive and newly introduced approach. It mainly focuses on minimum necessities of people which have each person to sustain their life. The secondary data is about Bare Necessities dimensions, sub-indicators were collected from the Census of India 2011. The methodology of estimating Bare Necessities Index has adopted from Union Budget, socio-economic review Government of India, which was published in January, 2021. Detailed methodology, dimensions and indicators of Bare Necessities Index estimation of the present study area are as follows.

• **About Indicators of BNI**

Bare Necessities Index is composite statistic of five dimensions and its 21 sub-indicators which are related to least necessities it needed to each people. There are five main dimensions of BNI like, drinking water, sanitation, housing, micro-environment and other facilities. The 21 sub-indicators of the BNIs divided into two categories as positive and negative indicators. Following diagram indicates that Bare Necessities Index (BNI's) main dimensions and its sub-indicator are as follows-



*Bare Necessities Index (BNI): Dimension, Indicators, Types and Weightage*

Dimension	Indicator	Types	Weightage
Water (5) 1/5	Tap-Treated	+ve	1/5
	Tube/Borewell	+ve	1/5
	Well -Covered	+ve	1/5
	Within dwelling	+ve	1/5
	Outside dwelling	-ve	1/5
Sanitation (5) 1/5	Access of Latrine	+ve	1/5
	Latrine: Piped sewer system	+ve	1/5
	Latrine: Septic tank	+ve	1/5
	Latrine: Twin leach pit	+ve	1/5
	Latrine: Single pit	+ve	1/5
Housing (3) 1/5	Condition of structure: Good	+ve	1/3
	Type of the dwelling: Owned	+ve	1/3
	Pucca dwelling	+ve	1/3
Micro-environment (3) 1/5	No drainage	-ve	1/3
	Open drainage	-ve	1/3
	Use of Dirt Fuel for Cooking i.e., firewood, etc.	-ve	1/3
Other Facilities (5) 1/5	Access of separate kitchen	+ve	1/5
	No bathroom	-ve	1/5
	Access of Bathroom	+ve	1/5
	Access of electricity	+ve	1/5
	Use of modern fuel for cooking: LPG	+ve	1/5

Source: Economic Survey of India, 2020-21/ Bare Necessities Index

• **Bare Necessities Index Calculation**

The Bare Necessity Index is constructed by to step, first step is aggregating the sub-indicators and calculate each sub-indicator index for each dimension. The second step is that each dimension is aggregated using their scores calculated in step first for the Bare Necessities Index of the particular tehsils. There is the arithmetic mean is used for aggregation to each indicator and dimension. The goalpost values of each sub-indicator have fixed at minimum value is set 0 (Zero) and maximum values set is 100 (Hundred). The value of the index ranges between 0 and 1, Higher the value of the index indicates better access to the bare necessities and lower is low. Also, the Bare Necessities Index (BNI) providing access to bare necessities to the people, there are three categories of BNI i.e., above 0.700 indicates ‘High’ level, 0.500 to 0.700 indicates ‘Medium’ level and below 0.500 indicates very ‘Low’ level of access. The Bare Necessities Index is calculated using the formula below-

$$A) \text{ Indicators Index} = \frac{(\text{Actual Value} - \text{Minimum Value})}{(\text{Maximum Value} - \text{Minimum Value})} \text{ --- (1)}$$

$$B) \text{ Bare Necessities Index (BNI)} = \frac{(I_{\text{Water}} + I_{\text{Sanitation}} + I_{\text{Housing}} + I_{\text{Micro-Environment}} + I_{\text{Other Facilities}})}{1/5} \text{ --- (2)}$$

Whereas;

$I_{\text{Water}}$  = Drinking Water Index                       $I_{\text{Micro-Environment}}$  = Micro-Environment Index  
 $I_{\text{Sanitation}}$  = Sanitation Index                       $I_{\text{Other Facilities}}$  = Other Facilities Index  
 $I_{\text{Housing}}$  = Housing Index

**4. DATA ANALYSIS, DISCUSSION AND RESULT**

The current section of this study highlights the access of bare necessities to people at tehsils as well as sectorial i.e., rural and urban in eleven tehsils of Solapur district. Important observation at each sub-indicator and dimension base of each tehsils has been made. Analysis of BNI and its indicators of each tehsil and its inequalities in access to bare necessities i.e., clean water, sanitation facilities, clean and safe cooking fuel, electricity access, and other bare necessities in Solapur district is as follows-

**Table – 01**  
Sector-wise Access of Water Sources and Location of Solapur District

Sr. No.	Tehsil/ Sector	Water Sources									Location					
		Tap- Treated			Tube/Borewell			Well -Covered			Within dwelling			Outside dwelling		
		T	R	U	T	R	U	T	R	U	T	R	U	T	R	U
1	Karmala	27.1	20.4	96.6	11.1	12.2	0.2	1.5	1.7	0.2	41.8	38.9	72.6	17.5	18.8	3.3
2	Madha	24.2	18.9	94.1	13.7	14.6	2.1	1.3	1.4	0.0	44.0	41.0	84.3	14.5	15.3	4.1
3	Barshi	54.9	43.2	81.2	4.2	4.7	3.2	0.9	1.0	0.5	54.4	46.9	71.3	12.3	14.8	6.8
4	Solapur North	84.8	41.7	89.6	2.4	8.6	1.7	0.2	1.0	0.1	63.1	36.8	66.0	7.8	21.6	6.3
5	Mohol	23.8	23.8	-	11.4	11.4	-	1.4	1.4	-	43.0	43.0	-	17.1	17.1	-
6	Pandharpur	36.5	20.3	90.1	14.4	16.9	6.2	1.2	1.3	0.6	47.9	41.2	70.2	15.2	18.1	5.5
7	Malshiras	36.3	28.6	85.8	12.6	14.0	3.7	1.8	2.0	0.2	52.0	48.2	76.2	15.6	17.2	5.3
8	Sangole	33.2	29.2	67.5	7.1	7.3	5.7	2.5	2.7	0.8	43.3	40.0	71.2	23.6	24.9	12.1
9	Mangalvedhe	23.2	16.7	77.0	10.9	11.9	2.7	1.4	1.6	0.3	35.7	32.8	59.1	20.0	20.7	14.4
10	Solapur South	35.4	35.4	-	6.3	6.3	-	1.9	1.9	-	41.5	41.5	-	17.0	17.0	-
11	Akkalkot	43.9	35.6	75.7	5.9	6.1	5.1	2.2	2.4	1.1	40.9	37.7	53.1	18.0	19.8	10.9
	<b>Solapur</b>	<b>46.9</b>	<b>27.8</b>	<b>87.5</b>	<b>8.1</b>	<b>10.8</b>	<b>2.5</b>	<b>1.3</b>	<b>1.7</b>	<b>0.3</b>	<b>49.8</b>	<b>41.7</b>	<b>67.1</b>	<b>14.6</b>	<b>18.3</b>	<b>6.6</b>

Source: Census 2011/Solapur District (Note: T- Total, R- Rural, U-Urban)

Table -1, shows the sector-wise access of various water sources and location of water sources to the household in the Solapur district. Observing the tehsil base main water source, the main source of the water is tap-treated water, Solapur north total has 84.8%, Barshi rural has 43.2% and Karmala urban has 96.6% respectively, which higher as compared to eleven tehsils. While, the overall Solapur district total, rural and urban has 46.9%, 27.8%, and 87.5% of the population has depended on tap treated water source individually. The second important source of water is tube/borewell, Pandharpur total, urban and urban has 14.4%, 16.9% and 6.2% of the population has using tube/borewell water, which higher as compare to eleven tehsils. Overall status of use of tube/borewell water source in Solapur district, there are 8.1% of the total, 10.8% of rural and 2.5% of the urban population have using tube/borewell water source. There are 46.9% of the total, 27.8% of urban and 87.5% of the rural population have use tap-treated water. While, the use of tube/borewell water source,

Pandharpur rural, urban as well as the total population has noted 16.9%, 6.2% and 14.4% of the population has using tube/borewell water source. Speaking about the locality of water sources mentioned above, most of the population of Solapur North total 63.1%, Malshiral rural 48.2%, and Madha rural 84.3% of the population have a water source within the dwelling. Considering as Solapur district, there are only 49.8% of the total, 41.7% of rural and 67.1% of the urban population have water within the dwelling. On the other hand, about the location of water sources outside the dwelling, Sangole noted most of the population i.e., 23.6% of the total, 24.9% of the rural, and 12.1% of the urban population having water sources outside or away from the dwelling.

**Table - 02**  
**Sector-wise Access of Sanitation Facilities and Condition of Solapur District**

Sr. No.	Tehsil/ Sector	Access of Latrine			Latrine types											
					Piped sewer system			Septic tank			Twin leach pit			Single pit		
		T	R	U	T	R	U	T	R	U	T	R	U	T	R	U
1	Karmala	30.5	28.4	52.8	1.2	0.7	7.2	11.8	9.2	39.1	14.7	15.8	3.0	0.2	0.2	0.2
2	Madha	31.4	29.3	59.1	1.6	1.5	2.3	16.5	13.5	56.2	12.2	13.1	0.1	0.2	0.2	0.0
3	Barshi	38.0	29.4	57.4	2.4	1.4	4.7	22.2	9.7	50.3	11.7	16.5	0.7	0.3	0.2	0.4
4	Solapur North	62.0	38.4	64.6	32.5	1.3	35.9	20.9	7.6	22.3	5.7	28.3	3.2	0.2	0.3	0.2
5	Mohol	37.5	37.5	-	0.5	0.5	-	10.9	10.9	-	24.9	24.9	-	0.2	0.2	-
6	Pandharpur	43.6	36.6	66.8	6.6	1.4	23.8	16.3	9.8	37.7	18.6	23.9	0.7	0.2	0.2	0.2
7	Malshiras	37.3	34.0	58.2	1.8	1.4	4.7	24.0	19.8	50.4	10.0	11.1	2.5	0.3	0.3	0.1
8	Sangole	37.3	36.2	46.0	0.9	0.8	2.3	10.0	6.5	39.8	24.5	26.9	3.4	0.3	0.3	0.0
9	Mangalvedhe	36.3	36.2	37.5	1.0	0.8	2.1	7.0	4.3	29.3	26.5	28.9	5.8	0.1	0.1	0.0
10	Solapur South	26.2	26.2	-	1.8	1.8	-	12.7	12.7	-	10.7	10.7	-	0.1	0.1	-
11	Akkalkot	23.0	21.9	26.9	1.0	0.9	1.5	11.3	7.9	24.2	9.8	12.2	0.5	0.2	0.3	0.0
<b>Solapur</b>		<b>41.3</b>	<b>32.1</b>	<b>60.9</b>	<b>9.4</b>	<b>1.2</b>	<b>26.8</b>	<b>16.7</b>	<b>11.0</b>	<b>28.7</b>	<b>13.3</b>	<b>18.3</b>	<b>2.7</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>

Source: Census 2011/Solapur District (Note: T- Total, R- Rural, U-Urban)

Table -02, indicates that tehsils and sector-wise access and condition of sanitation facilities i.e., latrine facility which is a bare necessity to each people of Solapur district. The sanitation is also second important dimension of Bare Necessities Index. Access of latrine facility, in Solapur north total and rural, has 62.0% and 38.4% respectively. Observing that the type of latrine, mostly people have using a septic tank and twin leach pit latrine as compared to piped sewer system and single pit latrine in all tehsils total, rural and urban areas along with overall Solapur district. Looking at the overall Solapur district, 41.3% of the total, 32.1% of urban, and 60.9% of urban people have access to latrine facilities. The types of latrine people are using, mostly septic tank and twin leach pit latrine people are using in the Solapur district.

**Table - 03**  
**Sector-wise Access of Housing Facilities and Condition of Solapur District**

Sr. No.	Tehsil/ Sector	Condition of Structure:			Type of the dwelling:			Pucca dwelling		
		Good			Owned					
		T	R	U	T	R	U	T	R	U
1	Karmala	65.1	64.3	73.0	90.3	91.6	76.6	72.7	70.6	96.3
2	Madha	66.9	66.4	73.1	88.6	90.7	60.9	82.5	81.5	96.0
3	Barshi	66.1	65.8	66.7	87.0	93.9	71.5	94.9	94.1	96.3
4	Solapur North	66.1	59.2	66.9	71.7	89.8	69.8	96.8	93.8	97.0
5	Mohol	65.2	65.2	-	89.4	89.4	-	86.3	86.3	-
6	Pandharpur	64.0	63.7	64.8	85.4	90.7	67.9	80.8	78.5	88.4
7	Malshiras	65.2	63.9	73.5	86.1	87.8	75.1	80.2	77.9	95.5
8	Sangole	63.2	61.5	77.3	90.8	92.6	74.7	64.9	61.8	91.0
9	Mangalvedhe	58.9	57.6	69.3	91.8	92.7	84.1	64.4	62.7	78.2
10	Solapur South	61.0	61.0	-	89.9	89.9	-	84.2	84.2	-
11	Akkalkot	55.8	54.1	62.4	86.8	91.8	67.5	82.1	80.2	89.3
<b>Solapur</b>		<b>64.1</b>	<b>62.6</b>	<b>67.3</b>	<b>84.3</b>	<b>90.9</b>	<b>70.3</b>	<b>84.2</b>	<b>78.8</b>	<b>95.6</b>

Source: Census 2011/Solapur District (Note: T- Total, R- Rural, U-Urban)

Table -03, shows that tehsils and sector-wise access and situation of housing facilities which is essential to each human and also safe place for everyone, it also third key dimension of Bare Necessities Index. Speaking about good structure of housing, Madha, Barshi and Solapur North total has nearly 66.9%, 66.1% and 66.1% respectively, Madha rural has 66.4% as well as Sangole urban has 77.3% it all higher as compared to eleven tehsils. The status of owned dwelling, Mangalvedhe total has 91.6%, Barshi rural has 93.9% and Mangalvedhe urban has 84.1% respectively. Talking about the condition of ‘Pucca’ dwelling or house, Solapur North total and urban has 96.8% and 97.0% respectively and followed by Barshi rural has 94.1% which higher as compared to eleven tehsils. The lowest share of ‘Pucca’ dwelling or house in Mangalvedhe total and urban has 64.4% and 78.2%, Sangole rural has 61.8% respectively in Solapur district. Observing overall good structure of house of Solapur district total, rural and urban has 64.1%, 62.6 % and 67.3% respectively. The status of owned dwelling of Solapur district total, rural and urban has 84.3%, 90.9% and 70.3% individually.

**Table – 04**  
**Sector- wise Access of Micro-Environment Facilities of Solapur District**

Sr. No.	Tehsil/ Sector	No drainage			Open drainage			Use of Dirt Fuel for Cooking		
		T	R	U	T	R	U	T	R	U
1	Karmala	64.5	70.1	5.8	25.8	22.4	61.6	83.4	88.0	34.9
2	Madha	58.8	61.1	27.9	28.0	25.3	63.7	76.7	80.7	25.3
3	Barshi	35.8	42.2	21.4	50.2	47.9	55.5	73.0	87.6	40.3
4	Solapur North	11.7	40.5	8.5	34.8	39.6	34.2	39.5	83.8	34.6
5	Mohol	62.2	62.2	-	24.3	24.3	-	84.9	84.9	-
6	Pandharpur	61.1	74.4	17.3	26.3	20.2	46.2	70.6	84.5	24.2
7	Malshiras	65.8	72.8	20.8	26.1	22.5	49.4	76.4	81.6	42.5
8	Sangole	81.0	83.7	57.5	12.9	11.5	24.7	85.5	89.9	49.0
9	Mangalvedhe	72.7	79.9	13.0	16.9	10.1	73.4	86.3	90.9	48.5
10	Solapur South	44.7	44.7	-	41.9	41.9	-	86.0	86.0	-
11	Akkalkot	42.3	50.8	9.4	49.1	40.8	81.1	84.7	91.8	57.5
	<b>Solapur</b>	<b>47.4</b>	<b>63.9</b>	<b>12.5</b>	<b>31.5</b>	<b>27.0</b>	<b>41.2</b>	<b>70.0</b>	<b>85.9</b>	<b>36.1</b>

Source: Census 2011/Solapur District (Note: T- Total, R- Rural, U-Urban)

Table -04, shows that tehsils and sector-wise access of sanitation facilities to the people, which is essential to each human and it fourth important dimension of Bare Necessities Index. Speaking about the No-connectivity of drainage facility, Sangole total rural and urban has 81.0%, 83.7%, and 57.5% respectively, it all higher as compared eleven tehsils. On the other hand, Solapur north total, rural and urban has 11.7%, 40.5% and 8.5% individually, which very lower as compared to eleven tehsils. connectivity of Open-drainage, Barshi total and rural have nearly 50.2% and 47.9%, Madha and Karmala urban has nearly rural 6.7% and 61.3% which is higher vis-versa Sangole total has 12.9%, Mangalvedhe rural has 10.1% and Solapur north urban has 34.2%, it all lower as compared to eleven tehsils. Use of dirt fuel i.e., firewood, kerosene, charcoal, etc, the Mangalvedhe and Solapur south total has closely 86.3% and 86.0% which is recorded higher. While Solapur north total has 39.5% and Pandharpur urban has 24.2% both lower as compared to eleven tehsils in Solapur district. Observing No- connectivity of facility and connectivity of Open drainage, Solapur district total has 47.4% and 31.5% respectively. the Use of dirt fuel in the Solapur district has noted 7.0% of the total, 85.9% of rural and 36.1% of the urban population have using dirt fuel in Solapur district.

**Table – 05**  
Sector-wise Access of Other Facilities of Solapur District

Sr. No.	Tehsil/ Sector	Access of separate kitchen			Bathing Facility						Access of electricity			Use of modern fuel for cooking: LPG		
					No bathroom			Access of Bathroom								
		T	R	U	T	R	U	T	R	U	T	R	U	T	R	U
1	Karmala	41.1	38.0	73.7	24.6	26.6	3.4	75.4	73.4	96.6	55.7	52.1	93.2	15.8	11.2	64.1
2	Madha	49.2	47.2	75.9	21.9	22.7	11.1	78.0	77.2	88.9	61.3	58.9	93.2	22.3	18.4	73.9
3	Barshi	56.1	50.7	68.3	15.0	18.6	6.9	85.0	81.4	93.1	76.6	69.4	92.8	25.7	11.2	58.3
4	Solapur North	73.6	52.0	76.0	5.1	16.0	3.9	94.9	84.0	96.1	91.3	70.4	93.6	59.4	14.9	64.3
5	Mohol	42.4	42.4	-	23.1	23.1	-	76.9	76.9	-	58.8	58.8	-	14.2	14.2	-
6	Pandharpur	55.5	48.6	78.2	20.8	24.9	7.3	79.2	75.1	92.7	65.3	56.6	93.9	27.8	13.7	74.5
7	Malshiras	49.2	47.1	62.6	27.5	30.0	11.4	72.5	70.0	88.6	69.1	65.5	92.4	22.4	17.1	56.5
8	Sangole	48.8	46.5	68.3	34.4	36.4	17.6	65.6	63.6	82.5	51.9	47.8	87.1	13.2	8.9	49.8
9	Mangalvedhe	45.9	44.9	54.3	29.6	31.6	13.4	70.4	68.4	86.7	48.5	43.7	88.1	12.7	8.1	50.6
10	Solapur South	55.0	55.0	-	16.0	16.0	-	84.0	84.0	-	61.3	61.3	-	13.0	13.0	-
11	Akkalkot	54.1	50.5	68.0	17.2	19.7	7.9	82.8	80.3	92.2	61.2	55.0	84.8	14.5	7.5	41.5
	<b>Solapur</b>	<b>55.8</b>	<b>47.3</b>	<b>73.9</b>	<b>18.7</b>	<b>24.9</b>	<b>5.5</b>	<b>81.3</b>	<b>75.1</b>	<b>94.5</b>	<b>69.3</b>	<b>58.2</b>	<b>92.9</b>	<b>28.9</b>	<b>13.0</b>	<b>62.7</b>

Source: Census 2011/Solapur District (Note: T- Total, R-Rural, U-Urban)

Table -05, indicates that tehsils and sector-wise access of Other facilities, i.e., separate kitchen, bathrooms, electricity access, and clean cooking fuel in Solapur district across eleven tehsils. Other facilities which expired above are the fifth key dimension of the Bare Necessities Index. Speaking about the access to separate kitchens, Solapur north total has 73.6%, Solapur south rural has 55.0% and Pandharpur urban has 78.2% which all higher as compared to eleven tehsils. Access to bathroom and electricity, Solapur north total has 94.9% and 91.3% respectively, Solapur south rural and Solapur north rural has 84.0% and 70.4% respectively which noted higher in Solapur district. The use of clean modern cooking fuel, Solapur north total has 59.4%, Madha rural has 14.9% and Pandharpur urban has 74.5% which recorded higher as compared to eleven tehsils. Observing overall access of separate kitchen Solapur district total, rural and urban has 55.8%, 47.3%, and 73.9% respectively. Access of bathroom facility of Solapur district total, rural and urban has 81.3%, 75.1% and 94.5% individually.

**Table – 06**  
Tehsil and Sector-wise Water Index & its Indices of Solapur District

Sr. No.	Tehsil/ Sector	Water Sources									Location						Water Index (WI)		
		Tap - Treated			Tube/Borewell			Well - Covered			Within dwelling			Outside dwelling					
		T	R	U	T	R	U	T	R	U	T	R	U	T	R	U	T	R	U
1	Karmala	0.27	0.20	0.97	0.11	0.12	0.00	0.02	0.02	0.00	0.42	0.39	0.73	0.18	0.19	0.03	0.85	0.77	0.35
2	Madha	0.24	0.19	0.94	0.14	0.15	0.02	0.01	0.01	0.00	0.44	0.41	0.84	0.15	0.15	0.04	0.86	0.79	0.37
3	Barshi	0.55	0.43	0.81	0.04	0.05	0.03	0.01	0.01	0.01	0.54	0.47	0.71	0.12	0.15	0.07	0.25	0.22	0.33
4	Solapur North	0.85	0.42	0.90	0.02	0.09	0.02	0.00	0.01	0.00	0.63	0.37	0.66	0.08	0.22	0.06	0.32	0.22	0.33
5	Mohol	0.24	0.24	-	0.11	0.11	-	0.01	0.01	-	0.43	0.43	-	0.17	0.17	-	0.19	0.19	-
6	Pandharpur	0.37	0.20	0.90	0.14	0.17	0.06	0.01	0.01	0.01	0.48	0.41	0.70	0.15	0.18	0.06	0.23	0.20	0.35
7	Malshiras	0.36	0.29	0.86	0.13	0.14	0.04	0.02	0.02	0.00	0.52	0.48	0.76	0.16	0.17	0.05	0.24	0.22	0.34
8	Sangole	0.33	0.29	0.68	0.07	0.07	0.06	0.03	0.03	0.01	0.43	0.40	0.71	0.24	0.25	0.12	0.22	0.21	0.31
9	Mangalvedbe	0.23	0.17	0.77	0.11	0.12	0.03	0.01	0.02	0.00	0.36	0.33	0.59	0.20	0.21	0.14	0.18	0.17	0.31
10	Solapur South	0.35	0.35	-	0.06	0.06	-	0.02	0.02	-	0.42	0.42	-	0.17	0.17	-	0.20	0.20	-
11	Akkalkot	0.44	0.36	0.76	0.06	0.06	0.05	0.02	0.02	0.01	0.41	0.38	0.53	0.18	0.20	0.11	0.22	0.20	0.29
	<b>Solapur</b>	<b>0.47</b>	<b>0.28</b>	<b>0.88</b>	<b>0.08</b>	<b>0.11</b>	<b>0.03</b>	<b>0.01</b>	<b>0.02</b>	<b>0.00</b>	<b>0.50</b>	<b>0.42</b>	<b>0.67</b>	<b>0.15</b>	<b>0.18</b>	<b>0.07</b>	<b>0.24</b>	<b>0.20</b>	<b>0.33</b>

Source: Authors Calculation/ from table-01 (Note: T- Total, R- Rural, U-Urban)

**Figure – 01**  
**Tehsil and Sector-wise Water Index & its Indices of Solapur District**

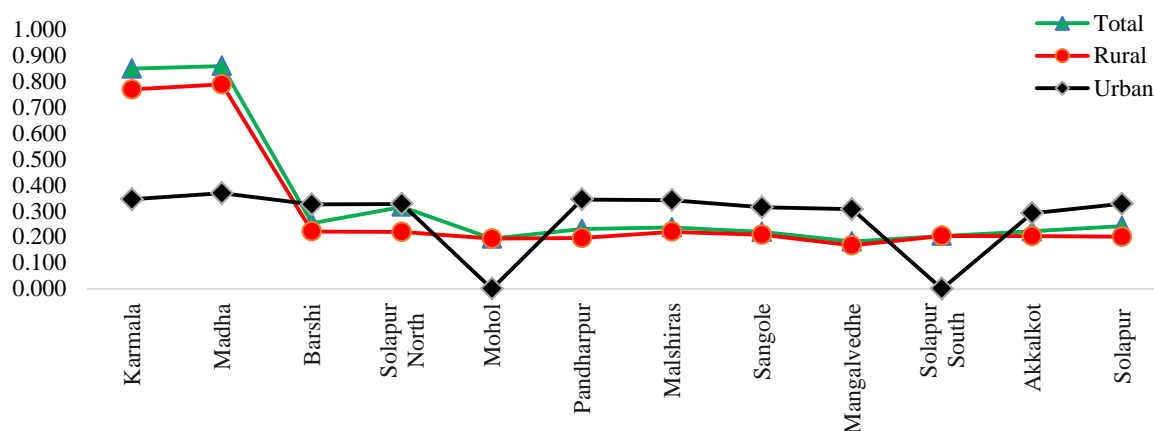


Table – 06 & Fig. 01 indicates the tehsil and sector-wise water index and its sub-indicator indices of the Solapur district. The high-water index indicates high access to water sources, the medium index has medium and very low index has very low access of water sources to the people respectively. The Water Index of the Madha total, rural and urban has 0.85, 0.79 and 0.37, it is higher than as compared to 11 tehsils and it also reveals except urban other sectors i.e., rural and total comes under high and medium category respectively. Magalvedhe total and rural has noted lowest that are 0.18 and 0.17 respectively as compared 11 tehsils, both come under the very low category. Akkalkot urban Water Index has reported 0.29 it comes under the very low category in Solapur district. Considering the overall achievement of the Water index of Solapur district total, rural and urban noted 0.24, 0.20 and 0.33 respectively it all under the category of very low development. Shortly, seeing the Water Index of Solapur district indicates that they mostly population has to face a struggle to get clean water and they inadequate to access water sources in Solapur district.

**Table – 07**  
**Tehsil and Sector-wise Sanitation Index & its Indices of Solapur District**

Sr. No.	Tehsil/Sector	Access of Latrine			Latrine types												Sanitation Index (SI)		
					Piped sewer system			Septic tank			Twin leach pit			Single pit					
		T	R	U	T	R	U	T	R	U	T	R	U	T	R	U	T	R	U
1	Karmala	0.31	0.29	0.59	0.02	0.02	0.02	0.17	0.14	0.56	0.12	0.13	0.00	0.00	0.00	0.00	0.12	0.12	0.24
2	Madha	0.38	0.29	0.57	0.02	0.01	0.05	0.22	0.10	0.50	0.12	0.17	0.01	0.00	0.00	0.00	0.15	0.11	0.23
3	Barshi	0.38	0.29	0.57	0.02	0.01	0.05	0.22	0.10	0.50	0.12	0.17	0.01	0.00	0.00	0.00	0.15	0.11	0.23
4	Solapur North	0.62	0.38	0.65	0.33	0.01	0.36	0.21	0.08	0.22	0.06	0.28	0.03	0.00	0.00	0.00	0.24	0.15	0.25
5	Mohol	0.38	0.38	-	0.01	0.01	-	0.11	0.11	-	0.25	0.25	-	0.00	0.00	-	0.15	0.15	-
6	Pandharpur	0.44	0.37	0.67	0.07	0.01	0.24	0.16	0.10	0.38	0.19	0.24	0.01	0.00	0.00	0.00	0.17	0.14	0.26
7	Malshiras	0.37	0.34	0.58	0.02	0.01	0.05	0.24	0.20	0.50	0.10	0.11	0.03	0.00	0.00	0.00	0.15	0.13	0.23
8	Sangole	0.37	0.36	0.46	0.01	0.01	0.02	0.10	0.07	0.40	0.25	0.27	0.03	0.00	0.00	0.00	0.15	0.14	0.18
9	Mangalvedhe	0.36	0.36	0.38	0.01	0.01	0.02	0.07	0.04	0.29	0.27	0.29	0.06	0.00	0.00	0.00	0.14	0.14	0.15
10	Solapur South	0.26	0.26	-	0.02	0.02	-	0.13	0.13	-	0.11	0.11	-	0.00	0.00	-	0.10	0.10	-
12	Akkalkot	0.23	0.22	0.27	0.01	0.01	0.02	0.11	0.08	0.24	0.10	0.12	0.01	0.00	0.00	0.00	0.09	0.09	0.11
	<b>Solapur</b>	<b>0.41</b>	<b>0.32</b>	<b>0.61</b>	<b>0.09</b>	<b>0.01</b>	<b>0.27</b>	<b>0.17</b>	<b>0.11</b>	<b>0.29</b>	<b>0.13</b>	<b>0.18</b>	<b>0.03</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.16</b>	<b>0.13</b>	<b>0.24</b>

Source: Authors Calculation/ from table-02 (Note: T- Total, R- Rural, U-Urban)

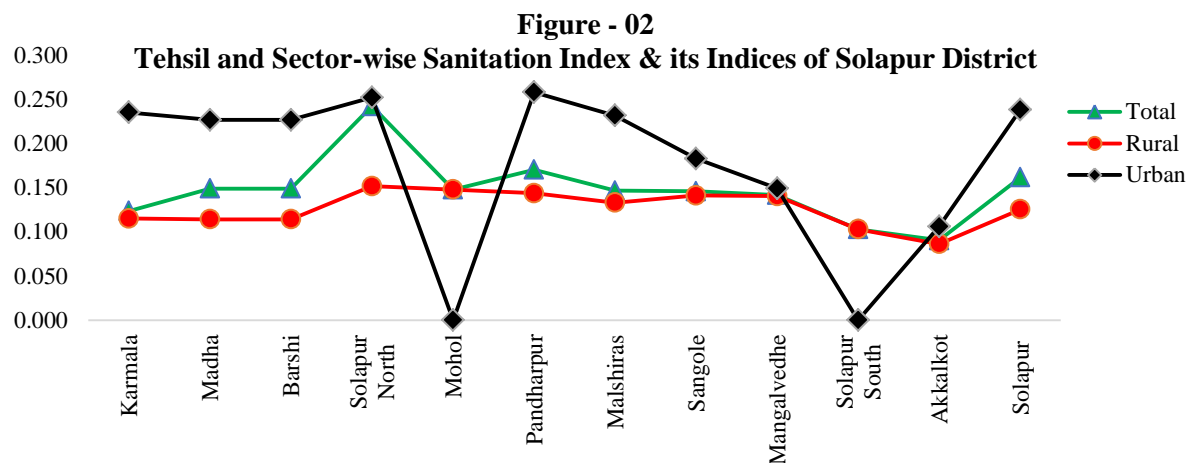


Table – 07 & Fig. 02 shows that the tehsil and sector-wise sanitation index and its sub-indicator indices of Solapur district. The criterion of the Sanitation Index is the high-sanitation index indicates high access to sanitation facilities, the medium index has medium and very low index has very low access to sanitation facilities to the people respectively. Looking at the tehsil-wise and sectorial Sanitation Index, Solapur North total, rural and urban has 0.24, 0.15 and 0.25 respectively, it all higher than as compared to 11 tehsils but it all treated under very low category. Sanitation Index of Akkalkot total, rural and rural has noted lowest 0.09, 0.09 and 0.11 respectively as compared 11 tehsils, and also all come under the very low category. Seeing overall Sanitation index of Solapur district total, rural, and urban has calculated 0.16, 0.13, and 0.24 respectively, it all treated under very low category. In brief, the Sanitation Index of entire tehsils with sector and Solapur district has come under the very low category, hence it reveals that the inadequate access of bare sanitation facilities to the people in Solapur district.

**Table - 08**  
**Sector-wise Housing Index & its Indices of Solapur District**

Sr. No.	Tehsil/ Sector	Condition of Structure: Good			Type of the dwelling: Owned			Pucca dwelling			Housing Index (HI)		
		T	R	U	T	R	U	T	R	U	T	R	U
1	Karmala	0.65	0.64	0.73	0.90	0.92	0.77	0.73	0.71	0.96	<b>0.76</b>	<b>0.76</b>	<b>0.82</b>
2	Madha	0.67	0.66	0.73	0.89	0.91	0.61	0.83	0.82	0.96	<b>0.79</b>	<b>0.80</b>	<b>0.77</b>
3	Barshi	0.66	0.66	0.67	0.87	0.94	0.72	0.95	0.94	0.96	<b>0.83</b>	<b>0.85</b>	<b>0.78</b>
4	Solapur North	0.66	0.59	0.67	0.72	0.90	0.70	0.97	0.94	0.97	<b>0.78</b>	<b>0.81</b>	<b>0.78</b>
5	Mohol	0.65	0.65	0.00	0.89	0.89	0.00	0.86	0.86	0.00	<b>0.80</b>	<b>0.80</b>	<b>0.00</b>
6	Pandharpur	0.64	0.64	0.65	0.85	0.91	0.68	0.81	0.79	0.88	<b>0.77</b>	<b>0.78</b>	<b>0.74</b>
7	Malshiras	0.65	0.64	0.74	0.86	0.88	0.75	0.80	0.78	0.96	<b>0.77</b>	<b>0.77</b>	<b>0.81</b>
8	Sangole	0.63	0.62	0.77	0.91	0.93	0.75	0.65	0.62	0.91	<b>0.73</b>	<b>0.72</b>	<b>0.81</b>
9	Mangalvedhe	0.59	0.58	0.69	0.92	0.93	0.84	0.64	0.63	0.78	<b>0.72</b>	<b>0.71</b>	<b>0.77</b>
10	Solapur South	0.61	0.61	0.00	0.90	0.90	0.00	0.84	0.84	0.00	<b>0.78</b>	<b>0.78</b>	<b>0.00</b>
11	Akkalkot	0.56	0.54	0.62	0.87	0.92	0.68	0.82	0.80	0.89	<b>0.75</b>	<b>0.75</b>	<b>0.73</b>
<b>Solapur</b>		<b>0.64</b>	<b>0.63</b>	<b>0.67</b>	<b>0.84</b>	<b>0.91</b>	<b>0.70</b>	<b>0.84</b>	<b>0.79</b>	<b>0.96</b>	<b>0.78</b>	<b>0.77</b>	<b>0.78</b>

Source: Authors Calculation/ from table-03 (Note: T- Total, R- Rural, U-Urban)



**Figure – 03**  
Tehsil and Sector-wise Housing Index & its Indices of Solapur District

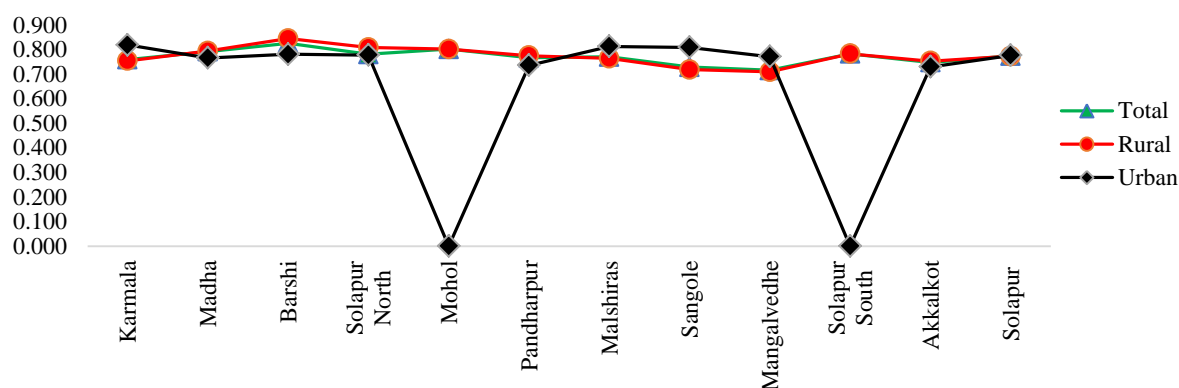


Table – 08 & Fig. 03 reveals that the tehsil and sector-wise Housing Index and its sub-indicator indices of Solapur district. Measures of Housing Index is, the high-housing index reveals high access of satisfactory and good condition housing facilities, the medium index has medium and very low index has very low to the people respectively. Observing the tehsil-wise and sectorial Housing Index, Barshi total and rural has 0.83 and 0.85 respectively, both higher than as compared to 11 tehsils and also it all treated under the high category. Karmala urban has recorded 0.82, which is higher as compared to 11 tehsils and which come under the high category. Looking of Housing Index of Mangalvedha total and rural has noted 0.72 and 0.71, respectively and Akkalkot urban has 0.73, which all lowest as compared to 11 tehsils also under the of high category in Solapur district. The overall progress of Housing index of Solapur district total, rural, and urban has counted nearly 0.78, 0.77 and 0.78 respectively, it all comes under high category. In brief, the overall progress of Housing Index of entire tehsils with sector and also Solapur district has come under the high category, hence it reveals that the decent access of satisfactory and good condition housing facilities to the people in Solapur district.

**Table – 09**  
Sector-wise Micro-Environment Index & its Indices of Solapur District

Sr. No.	Tehsil/ Sector	No drainage			Open drainage			Use of Dirt Fuel for Cooking			Micro-Environment Index (MEI)		
		T	R	U	T	R	U	T	R	U	T	R	U
1	Karmala	0.65	0.70	0.06	0.26	0.22	0.62	0.83	0.88	0.35	0.58	0.60	0.34
2	Madha	0.59	0.61	0.28	0.28	0.25	0.64	0.77	0.81	0.25	0.55	0.56	0.39
3	Barshi	0.36	0.42	0.21	0.50	0.48	0.56	0.73	0.88	0.40	0.53	0.59	0.39
4	Solapur North	0.12	0.41	0.09	0.35	0.40	0.34	0.40	0.84	0.35	0.29	0.55	0.26
5	Mohol	0.62	0.62	-	0.24	0.24	-	0.85	0.85	-	0.57	0.57	-
6	Pandharpur	0.61	0.74	0.17	0.26	0.20	0.46	0.71	0.85	0.24	0.53	0.60	0.29
7	Malshiras	0.66	0.73	0.21	0.26	0.23	0.49	0.76	0.82	0.43	0.56	0.59	0.38
8	Sangole	0.81	0.84	0.58	0.13	0.12	0.25	0.86	0.90	0.49	0.60	0.62	0.44
9	Mangalvedhe	0.73	0.80	0.13	0.17	0.10	0.73	0.86	0.91	0.49	0.59	0.60	0.45
10	Solapur South	0.45	0.45	-	0.42	0.42	-	0.86	0.86	-	0.58	0.58	-
11	Akkalkot	0.42	0.51	0.09	0.49	0.41	0.81	0.85	0.92	0.58	0.59	0.61	0.49
	<b>Solapur</b>	<b>0.47</b>	<b>0.64</b>	<b>0.13</b>	<b>0.32</b>	<b>0.27</b>	<b>0.41</b>	<b>0.70</b>	<b>0.86</b>	<b>0.36</b>	<b>0.50</b>	<b>0.59</b>	<b>0.30</b>

Source: Authors Calculation/ from table-04 (Note: T- Total, R- Rural, U-Urban)

**Figure – 04**  
**Tehsil and Sector-wise Micro-Environment Index & its Indices of Solapur District**

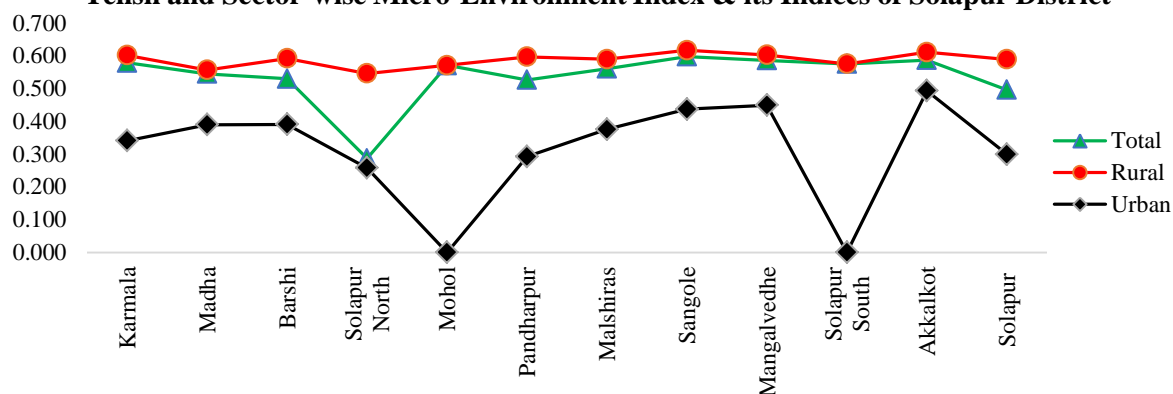


Table – 09 & Fig. 04 indicates that the tehsil and sector-wise Micro-Environment Index and its sub-indicator indices of Solapur district. Measures of Micro-Environment Index is high- Micro-Environment Index reveals high access of satisfactory and good condition micro-environment facilities i.e., drainage, cooking fuel, the medium index has medium and very low index has very low to the people respectively. Observing the tehsil-wise and sectorial Micro-Environment Index, Mangalvedhe total, rural and rural has 0.59, 0.60 and 0.45 respectively, it all higher as compared to 11 tehsils and also total as well as rural MEI treated under medium and urban has very low category respectively. Solapur North total and rural MEI's has recorded 0.29 and 0.55 which lowest as compared to 11 tehsils and both come under the medium and very low category. Looking at Pandharpur urban MEI has noted 0.29, which very low as compared to 11 tehsils and comes under the very low category. Seeing the overall progress of Micro-Environment Index of Solapur district total, and rural has reported nearly 0.50 and 0.59 respectively, both come under the medium category. The MEI of Solapur district rural has 0.30, which under very low category. In brief, the overall progress of Micro-Environment Index of entire tehsils and also Solapur district reveals that medium access of micro-environmental facilities in total and rural areas people and very low access in urban areas people in Solapur district.

**Table – 10**  
**Tehsil and Sector-wise Other Facilities Index & its Indices of Solapur District**

Sr. No.	Tehsil/ Sector	Access of separate kitchen			Bathing Facility						Access of electricity			Use of modern fuel for cooking: LPG			Other Facilities Index (OFI)		
					No bathroom			Access of Bathroom											
		T	R	U	T	R	U	T	R	U	T	R	U	T	R	U	T	R	U
1	Karmala	0.41	0.38	0.74	0.25	0.27	0.03	0.75	0.73	0.97	0.56	0.52	0.93	0.16	0.11	0.64	0.43	0.40	0.66
2	Madha	0.49	0.47	0.76	0.22	0.23	0.11	0.78	0.77	0.89	0.61	0.59	0.93	0.22	0.18	0.74	0.47	0.45	0.69
3	Barshi	0.56	0.51	0.68	0.15	0.19	0.07	0.85	0.81	0.93	0.77	0.69	0.93	0.26	0.11	0.58	0.52	0.46	0.64
4	Solapur North	0.74	0.52	0.76	0.05	0.16	0.04	0.95	0.84	0.96	0.91	0.70	0.94	0.59	0.15	0.64	0.65	0.47	0.67
5	Mohol	0.42	0.42	-	0.23	0.23	-	0.77	0.77	-	0.59	0.59	-	0.14	0.14	-	0.43	0.43	-
6	Pandharpur	0.56	0.49	0.78	0.21	0.25	0.07	0.79	0.75	0.93	0.65	0.57	0.94	0.28	0.14	0.75	0.50	0.44	0.69
7	Malshiras	0.49	0.47	0.63	0.28	0.30	0.11	0.73	0.70	0.89	0.69	0.66	0.92	0.22	0.17	0.57	0.48	0.46	0.62
8	Sangole	0.49	0.47	0.68	0.34	0.36	0.18	0.66	0.64	0.83	0.52	0.48	0.87	0.13	0.09	0.50	0.43	0.41	0.61
9	Mangalvedhe	0.46	0.45	0.54	0.30	0.32	0.13	0.70	0.68	0.87	0.49	0.44	0.88	0.13	0.08	0.51	0.41	0.39	0.59
10	Solapur South	0.55	0.55	-	0.16	0.16	-	0.84	0.84	-	0.61	0.61	-	0.13	0.13	-	0.46	0.46	-
11	Akkalkot	0.54	0.51	0.68	0.17	0.20	0.08	0.83	0.80	0.92	0.61	0.55	0.85	0.15	0.08	0.42	0.46	0.43	0.59
	<b>Solapur</b>	<b>0.56</b>	<b>0.47</b>	<b>0.74</b>	<b>0.19</b>	<b>0.25</b>	<b>0.06</b>	<b>0.81</b>	<b>0.75</b>	<b>0.95</b>	<b>0.69</b>	<b>0.58</b>	<b>0.93</b>	<b>0.29</b>	<b>0.13</b>	<b>0.63</b>	<b>0.51</b>	<b>0.44</b>	<b>0.66</b>

Source: Authors Calculation from table-05 (Note: T- Total, R- Rural, U-Urban)

**Figure - 05**  
**Tehsil and Sector-wise Other Facilities Index & its Indices of Solapur District**

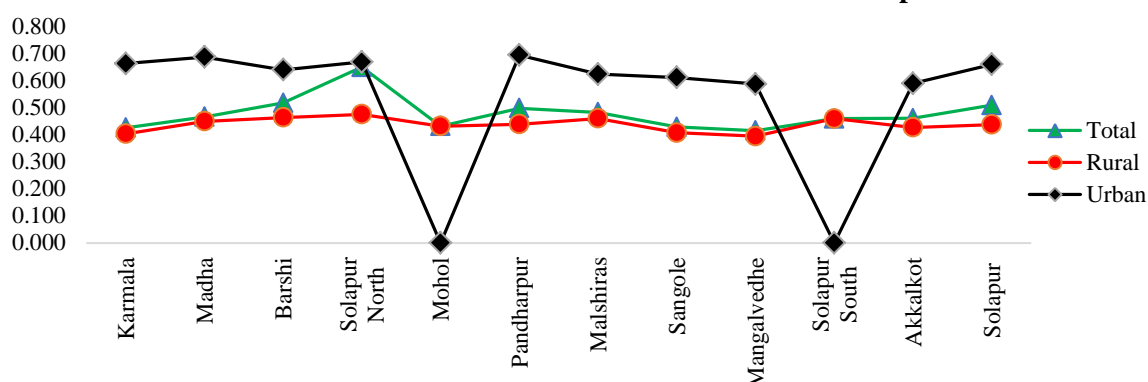


Table – 10 & Fig. 05 indicates that the tehsil and sector-wise Other Facilities Index (OFI) and its sub-indicator indices of Solapur district. Measures of Other Facilities Index (OFI) is the high- Other Facilities Index (OFI) indicates high access of Other Facilities i.e., separate kitchen, bathing, electricity and modern cooking fuel, the medium index has medium and very low index has very low to the people respectively. Speaking about tehsil-wise and sectorial Other Facilities Index, Solapur North total, rural and rural has noted 0.65, 0.47 and 0.67 respectively, it all higher as compared to 11 tehsils and also total as well as rural OFI treated under medium and urban has very low category respectively. On the other hand, Mangalvedhe total and rural OFI's has 0.41 and 0.39 which lowest as compared to 11 tehsils and also both come under the very low category. The Other Facilities Index of Mangalvedhe and Akkalkot urban has noted 0.59 individually, it lowest as compared to 11 tehsils and both come under the very low category. Observing the overall improvement of Other Facilities Index of Solapur district total, urban and rural have calculated 0.51, 0.44 and 0.66 respectively, except rural both total and urban comes under medium category. In shortly, the overall progress of the Other Facilities Index of all tehsils and Solapur district indicates that medium access of other bare necessities i.e., separate kitchen, bathroom, electricity, etc. to total and urban people and very low access to rural people in Solapur district.

**Table - 11**  
**Sectorial & Tehsil-wise Total/Rural/Urban Bear Necessities Index (BNI) of Solapur District**

Sr. No.	Tehsil	Total	Rank	Rural	Rank	Urban	Rank
1	Karmala	0.548	2	0.529	2	0.481	2
2	Madha	0.563	1	0.541	1	0.488	1
3	Barshi	0.455	3	0.447	3	0.473	4
4	Solapur North	0.455	4	0.440	4	0.457	7
5	Mohol	0.429	7	0.429	7	-	-
6	Pandharpur	0.438	6	0.430	6	0.465	6
7	Malshiras	0.439	5	0.434	5	0.477	3
8	Sangole	0.424	9	0.419	9	0.471	5
9	Mangalvedhe	0.408	11	0.403	11	0.453	8
10	Solapur South	0.425	8	0.425	8	-	-
11	Akkalkot	0.422	10	0.416	10	0.442	9
<b>Solapur</b>		<b>0.437</b>	-	<b>0.425</b>	-	<b>0.460</b>	-

Source: Authors Calculation/ From Table-6 to10

Figure – 06

Tehsil and Sectorial -wise Total/Rural/Urban Bare Necessities Index (BNI) of Solapur District

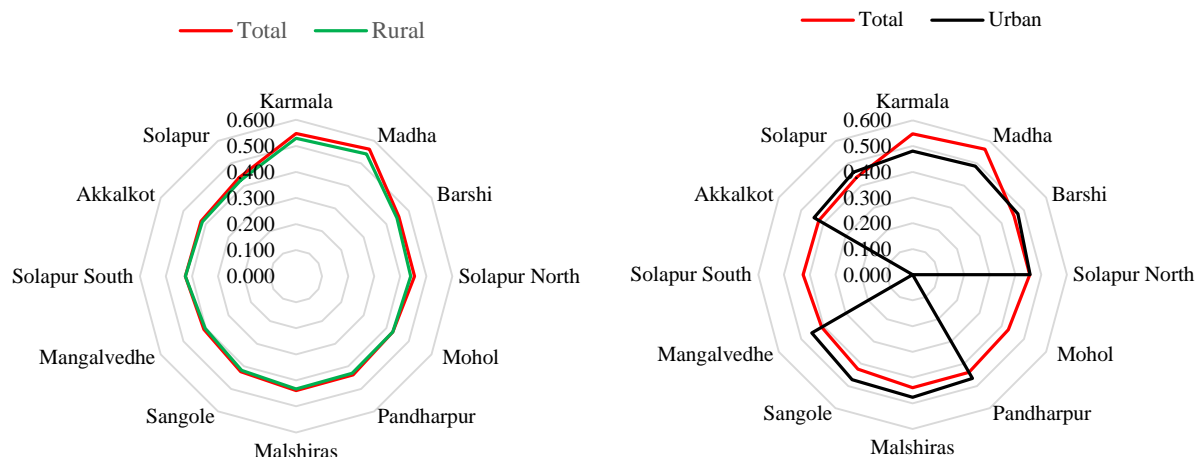


Table – 11 & Fig. 06 indicates that the tehsil and sector-wise Bare Necessities Index (BNI) of Solapur district across eleven tehsils. This study Bare Necessities Index (BNI) categorized into three categories which indicates that the high Bare Necessities Index (BNI) has high access of bare necessities, the medium has a medium, and very low has very low access to the people respectively. Speaking about tehsil-wise and sectorial Bare Necessities Index (BNI), Madha total, rural and urban has calculated 0.563, 0.541 and 0.488 respectively, it all higher and ranked 1st as compared to 11 tehsils but also total and rural BNI treated under medium and urban has very low category respectively.

Followed by Madha the Karmala total, rural and urban have 0.548, 0.529, and 0.481, which except urban it all treated as medium category and it is ranked 2nd in Solapur district. While, the BNI of Mangalvedhe total and urban has counted 0.408 and 0.403, which lowest and ranked 11th as compared 11 tehsils, both comes under very low category. Seeing about BNI of Akkalkot urban has noted 0.442, which under very low category and ranked 9th as compared to Nine urban areas in Solapur district.

Observing the sectorial overall progress of Bare Necessities Index (BNI) of Solapur district total, urban and rural has reported 0.437, 0.425 and 0.460 respectively, it all comes under very low category. Shortly, based on the overall progress of the Bare Necessities Index (BNI) of all tehsils and also Solapur district except Madha and Karmala all tehsils along with Solapur district the access of bare necessities to people is very low in Solapur district. But sectorial evaluation indicates that the access of bare necessities to urban people are higher than rural people in the Solapur district.

### 5. FINDINGS

The current section of this study deals with the important findings and some observations of this study which based on statistical results. According to tehsils and sectorial estimation of Bare Necessities Index (BNI's) of Solapur district across eleven tehsils, the major findings and observations of this study are as follow-

1. Bare Necessities Index of Madha and Karmala indicates that the better access of bare necessities to total and rural people, but very low access to urban people in Madha and Karmala tehsils.
2. Bare Necessities Index of Akkalkot along with except Madha and Karmala all other tehsils reveal very low access of bare necessities to total, rural as well as urban people of Solapur district.
3. Bare Necessities Index of overall Solapur district total, rural along with urban has a very low category, hence it treated very low access of bare necessities or facilities to the whole district, rural as well as urban people.
4. Urban Bare Necessities Index of Solapur district has revealed that the better and high access of bare necessities to urban people than total and rural people in Solapur district.

### CONCLUSION

People's ability to access bare necessities like clean water, housing, sanitation, electricity, and clean cooking fuel has therefore been regarded as an important barometer of improvement in the standard of living of people and economic development. The estimation of the Bare Necessities Index of all mostly tehsils including



rural-urban of Solapur district has recorded a very low category. Overall Bare Necessities Index of Solapur district has noted under a very low category including rural and urban. Hence, it reveals in all tehsils along with Solapur district the access of bare necessities to the people is very low. But according to the sectorial evaluation of BNI, it indicates that the access of bare necessities to urban people is higher than rural people, and it also indicates inequalities between rural and urban people to access bare necessities.

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