

Identification of the Backward Zones of Visakhapatnam District, Andhra Pradesh, India

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Abstract: Areas inhabited by tribal communities are mostly found to be backward. The district Visakhapatnam is one of the most industrialised and growing districts of India, but has eleven sub districts mostly inhabited by tribes. Thus regional disparities are bound to exist. In order to understand the extent of regional disparities in the thirty-nine sub districts of Visakhapatnam (rural) out of the total forty-three sub districts, an attempt is made in the present study to compare the economic, social, and infrastructural status that exists among tribes and non tribes. To achieve the objectives, data were collected from District Census Handbook of Census of India, 2011. Correlated variables were analysed and selected as an indicator of backwardness. Z scores of the variables were computed and were grouped for each aspect to be ranked at sub district level. Finally, composite index was derived based on which thirty-nine sub-districts were categorised according to different levels of backwardness. The study indicated that out of the eleven tribal sub districts, five are backward and six are very backward while none of the non-tribal sub districts are found to be in backward category. Thus eleven tribal sub districts are the backward zones of Visakhapatnam district.

Keywords: backwardness, quality of life, non-tribes, tribes, Visakhapatnam.

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I. INTRODUCTION

Regional disparities are found in all types of economy across the globe, however the extent of gap is found to be less in developed countries as compared to developing and underdeveloped countries. As per the human development report of 2015, India's HDI value for the year 2014 was 0.609 - which put the country in the medium human development category- positioning it at 130 out of 188 countries and territories. Being the second largest country of the world and housing more than 121 billion persons, the levels of disparity is quite wide in India although right from the inception of the First Five Year Plans attempts have been made to reduce the gap.

Again, while addressing on the issues of poverty and backwardness, inter-state and inter-district level studies have been conducted (Kurian, 2001; Singh, 2012; Das, 2014; Mittal and Devi, 2015, Singh, 2015; Kumar et al., 2016) which could not capture the near real picture of the poverty and backwardness stricken pockets in the so called forward or developed states or districts. The efforts by Bakshi, *et al.*, (2015) on the other hand is appreciable as they could pin pointed the problem by revealing the fact that some of the "Developed" districts like Thane, Vadodara, Ranchi, Visakhapatnam, and Raipur have some of the most backward areas. They also asserted that poverty and deprivation is mostly found concentrated in the areas inhabited by tribal communities. Devi and Kumar, (2011) also stated that tribal communities live in isolation, inaccessible terrain and maintain a lifestyle that remain static through centuries.

Whatsoever the cause may be, it is still a miserable fact that tribal areas are not yet developed even though several plans and policies have been made and implemented. It is also noticed that the focus of the ruling elite, progressive non-tribes, industrialists and investors look to tribal areas for resource extraction. Infrastructural facilities if at all are available; it is not to facilitate the tribal communities living in inaccessible areas, but just to make the out flow of resources (forest, minerals, hydal power, reservoirs etc) from there. The study by Rao and Reddy, (2015) also confirm to the fact that even though the amounts are spent under the Tribal Sub Plans those are not benefitting the tribes to improve their livelihood.

Furthermore, the parameters adopted to identify the areas of backwardness either on the district or state level gave no importance to the tribal socio-economic status, their occupation and lifestyle which vary widely among different tribal groups. Some tribes make their livelihood by animal rearing, some others by cultivation, while some others by hunting and gathering. Another important difference in tribes and non tribes is that tribes

usually may have extensive land but may not have the knowledge and capital to invest and improve their farm income.

Again, the parameters like access to banking and availability of electricity as used by Bakshi, *et al.*, (2015), may be irrelevant to measure the economic development in Andhra Pradesh as almost all the rural villages are 100 per cent electrified and irrespective of economic status or income of the individuals, banking facilities have been provided with zero balance to individuals for the payments of widow pension, nrega / mgnrega etc.

II. OBJECTIVE

An attempt is made in the present study to identify the backward zones of Visakhapatnam district, Andhra Pradesh. Suitable indicators which would portrahit the near real picture of backwardness in Visakhapatnam district have been selected. Levels of disparities among tribes and non tribes are determined by focusing on the social, economic, and infrastructural aspects.

III. STUDY AREA

Visakhapatnam district is one of the Coastal districts of Andhra Pradesh which lies between 17.26° N to 18.55° N latitude and 81.87° E to 83.49° E longitude. The coastline of the district is 132 kilometres long as the eastern boundary of the district is flanked by Bay of Bengal (Fig. 1).

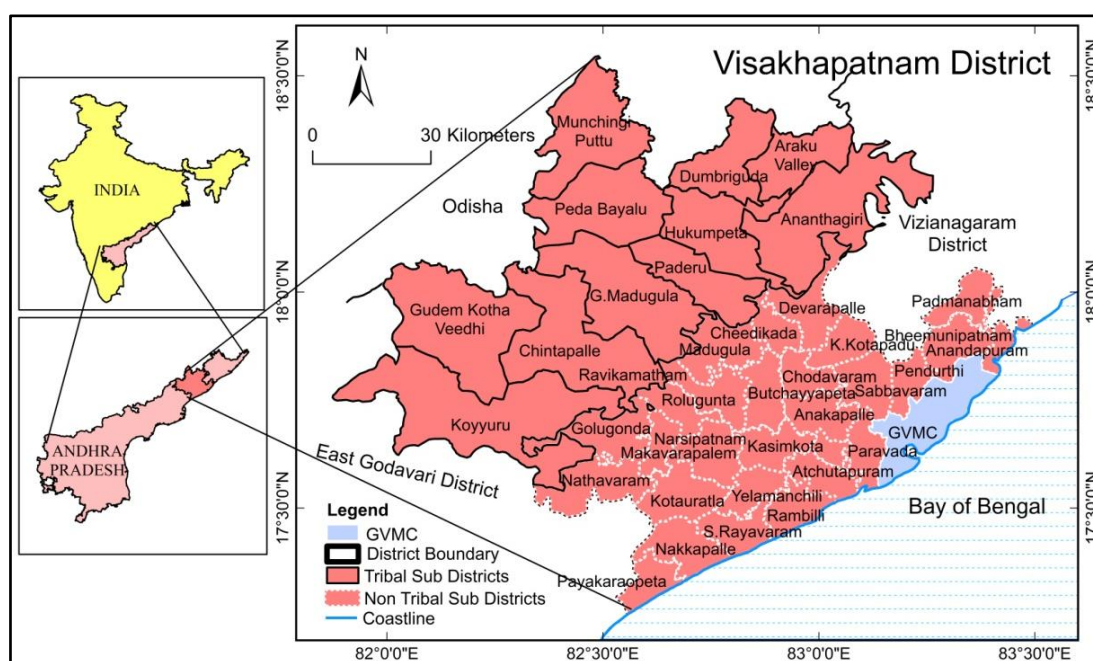


Fig. 1 Location map of Visakhapatnam district and its sub districts (*mandals*)

Source: Compiled by the author

The area of Visakhapatnam district is 11161 square kilometres, of which 40 per cent is under forest. The district has two distinct geographical regions- coastal plain and hills of the Eastern Ghats. Out of the 43 sub districts, 11 sub districts are located on the hills and are mostly inhabited by tribes (more than 80 per cent). Majority of the tribes belong to *Bhagatha, Kondadora, Khond, Kondakapu, Valmiki, Kammara, Gadaba, Kotias, Porja* and *Nookadora* communities who make their livelihood from cultivation. Agriculture is the main stay of nearly 70 per cent of the household. The city is industrially developing but the rural areas are quite backward. The total population of the district is 42,90,589, of which 47.45 per cent live in urban area and the remaining 52.55 live in rural areas.

IV. DATA COLLECTION AND METHODOLOGY

To achieve the objectives, data related to different aspects such as total population, tribal population, percentage of illiterates, occupational structure, and provision of basic amenities etc. were collected for the rural areas at the sub district level from District Census Handbook of Census of India, 2011. Out of 43 sub districts, four sub districts namely Visakhapatnam Urban, Visakhapatnam Rural, Pedaghantyada, and Gajuwaka are excluded in this study as these are urban and constitute Greater Visakhapatnam Municipal Corporation

(GVMC). Nine parameters were derived from the collected data and are discussed below under three sub heads (4.1 to 4.3) in detail.

4.1. Access to Knowledge:

Two parameters namely male illiteracy (above 7 years) and female illiteracy (above 7 years) have been used as an index to assess access to knowledge. Female illiteracy is also included as this is closely related to absence of awareness, health and nutritional aspects of the household. In the hilly terrain, long distance walk and muddy and slippery roads during rainy season makes attending to schools more difficult for girls.

4.2. Economic Status:

Three parameters were used to determine economic backwardness.

4.2.1 Dependency on Agriculture- Larger the proportion of persons making their livelihood from agriculture, less is the degree of economic diversification. Hence, proportion of cultivators and agricultural labours (main + marginal) to total workers is used as an indicator. More number in this group indicates more backwardness.

4.2.2. Type of House- Those with good economic status go for construction of permanent houses. Hence, proportion of those not having permanent houses is used as another indicator of backwardness. Khan and Salman, (2012) also considered housing as a proxy for wealth and assets.

4.2.3. Absence of assets- Any of the assets such as Radio/Transistor, Television Computer/laptop-With Internet, Computer/laptop-Without Internet, Land line Telephone, Mobile Telephone, Both Land line and Mobile Telephone, Bicycle Scooter/Motor, Cycle/Moped, Car/Jeep/Van etc can be purchased by households which are economically strong. Absence of the above specified assets indicates economic backwardness. Therefore, the percentages of households not having any of these specified assets denote economic backwardness.

4.3. Access to basic amenities:

Four parameters were selected to determine backwardness in quality of standard life by using variables related to basic amenities.

4.3.1. Proportion of households practicing open defecation- this indicates more prone to diseases as one is exposed to all infection and morbidity.

4.3.2. Proportion of households lacking drainage for waste water – this indicates lack of hygiene thereby allowing conducive breeding ground for mosquitoes, flies, rodents, insects and other diseases carrying vectors which pose threat to health. Further, the people have to bear stinking and foul smell.

4.3.3. Proportion of households using firewood for cooking- This indicates lack of other means of fuel to the households and threat to natural vegetation.

4.3.4. Proportion of households having no access to treated water for drinking – This indicates their exposure to several diseases. Therefore, the percentages of households not having these basic amenities denote infrastructural backwardness.

To capture the near real scenario of backwardness and to identify the backward zones equal weight is assigned to all nine parameters under consideration. Z-score were computed for each parameter and then grouped according to their nature by using the average method to derive three different indices namely access to knowledge, economic status and provision of basic amenities. The resulted values were then arranged in ascending order which helped to give ranking to Sub districts with increasing levels of backwardness. For example the highest average value of male and female illiterate would indicate higher backwardness in access to knowledge and vice versa, Therefore, 1st rank was assigned to the sub district with lowest values and that would be the most developed sub district and vice versa. The average scores of three aspects were again averaged to derive composite index of backwardness which helped in final ranking of the sub districts. The composite index was classified into five categories according to the scheme given in Table 1, based on which spatial maps were prepared and the contiguous zones of backwardness were identified.

Table 1: Scheme of categorisation of composite index based on departure from standard deviation

Departure of composite Index with 1 σ interval	Levels of backwardness	Designated Status
>-1.5 σ	Very Low	Very Developed
-0.5 to -1.5 σ	Low	Developed
-0.5 σ to + 0.5 σ	Medium	Less Developed
+0.5 to + 1.5 σ	High	Backward
>+1.5 σ	Very High	Very Backward

V. RESULTS AND DISCUSSION

5.1. Comparison between tribes and non tribes:

The comparison of the parameters between tribes and non tribes revealed that in all the parameters tribes are lagging behind the non tribes in the rural areas. As shown in Fig. 2, non tribes are quite better in terms of availability of permanent house, assets and access to treated water. The gap is smaller in male illiteracy and usage of firewood for cooking. Higher fuel wood consumption is mainly due to lack of unconventional energy sources (Bhatt and Sachan, 2004).

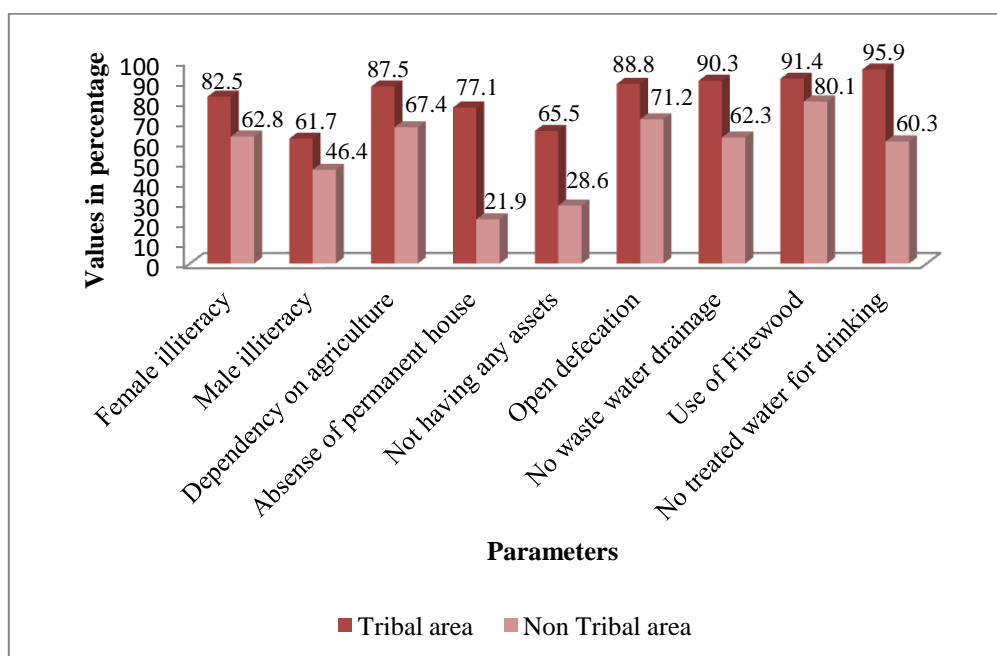


Fig. 2 Comparison between tribes and non tribes of Visakhapatnam District (Rural)

Source: Compiled by the author

5.1.1. Access to Knowledge:

The analysis on access to knowledge was determined by using two parameters viz. female and male illiteracy. It was observed that in the sub districts of Visakhapatnam female illiteracy varies from 52.55 per cent in Paravada to 91.22 per cent in Peda Baylu. The condition of Paderu, is best among tribal sub districts where relatively only 66.9 per cent of the females are illiterate. Among non-tribal sub districts Nakkapalle is having highest (69.5 per cent) female illiteracy. Male illiteracy varies from 68 per cent for Chintapalle (tribal) to 34.5 per cent for Pendurthi (non-tribal). Paderu is again better than all other tribal sub districts with 46.9 per cent illiterates and it is also better than 12 sub districts of the plain area.

5.1.2. Economic Status

The dependency on agriculture varies largely in the sub districts. It is very low in Paravada (33.4 per cent) to very high (91.64 per cent) in Chintapalle. Among tribal sub districts, Koyyuru has little economic diversity as about 71 per cent are dependent on agriculture. In terms of availability of permanent house the variations are highest among the sub districts. In Peda Bayalu as large as 87 per cent household have no permanent house, but in Pendurthi except 7.9 per cent households remaining all have permanent houses. Among tribal sub districts Humkumpeta is relatively better placed with 62 per cent of households having permanent houses. Again, the households who do not have any kind of specified assets show great difference. In the tribal sub districts the variation range from 57 per cent to 74.6 per cent, while in non-tribal sub districts it is only 13 to 40 per cent. The overall economic status indicated that Paravada is the most economically developed sub district and Munchingi Puttu is the most backward.

5.1.3. Access to basic amenities

Open defecation is widely practiced in the rural areas of Visakhapatnam District. The situation is comparatively better in Mungapaka sub district where about 50 per cent households have specified closet for toilet facilities and remaining half are deprived. The situation is worst in Munchingi Puttu. Here, 95 per cent of the households are deprived. In Padmanabham which is a non-tribal sub district about 87.8 per cent are bound to open defecation. Among tribal sub districts the deprived per cent in Dumbriguda is relatively less (71 per cent)

and is better placed than other tribal sub districts. Provision of drainage for waste water is found better in Pendurthi than others as the deprived portion is only 27.1 per cent. Among tribal sub districts, in Araku Valley 82.67 per cent of the households are deprived, where as in Peda Bayalu the deprived portion is 94.77 per cent. Firewood is also a common source of fuel for cooking. In rural Visakhapatnam, it varies from 59 per cent in Paravada to 96 per cent in G. Madugula. Among tribal sub districts the dependency on firewood varies from the lowest 81.8 per cent in Dumbriguda to 96 per cent in G. Madugula. In non-tribal sub districts the variation is from 59.2 per cent in Paravada to 92.6 per cent in Rolugunta. This huge dependency shows threat to natural vegetation. A very different scenario is found in the availability of treated water for drinking among non-tribal households. The proportion of deprived households in Munagapaka, S.Rayavaram, Yelamanchili, Anakapalle, Kasimkota and Chodavaram are only in the tune of 27 to 41 per cent. Among the tribal households this proportion ranges from the minimum 91 per cent in Ananthagiri to the highest 99 per cent in Munchingi Puttu.

5.2. Ranking of Sub districts

Z-scores helped in determining the position of sub districts in each variable. It also enabled to compare and combine two scores from different parameters. Based on the combined z-scores under each parameter all the sub districts were ranked and the results are shown in Table 2. The relative position of each sub district under the three aspects under consideration is very clear. The non-tribal sub districts are having better ranks in almost all the parameters. The rank of Paderu, which is the head quarter of Paderu revenue division (tribal), is better than many other non-tribal sub districts in terms of access to knowledge, but in terms of economic development and basic facilities it is backward. This leads to infer that even the access to knowledge could not influence the economic status and standard of life. Nakkapalle, a non-tribal sub district lags behind another two tribal sub districts namely Koyyruru and Araku valley. Among the non-tribal sub districts, standard of life is lowest in Cheedikada. Among all the sub districts of Visakhapatnam, Pendurthi is most developed, followed by Paravada and Anakapalle. Peda Bayalu is the most backward sub district followed by Munchingi Puttu and Chintapalle.

5.3. Categorisation of sub districts according to the level of backwardness:

Based on the scheme of classification (Table 1) the sub districts have been classified and spatial distribution maps were prepared for various indices. Index of access to knowledge as shown in the spatial map (Fig. 3) indicates variations among the sub districts. Among the tribal sub districts Paderu and Koyyruru have medium access to knowledge, followed by Humkumpeta and Araku Valley. In the remaining tribal sub districts access to knowledge is very poor. Again, it is observed that the sub districts adjacent to GVMC area have better access and it is declining gradually towards North -West.

Table 2 : Ranking of sub districts according to ascending levels of backwardness

Rank	Access to	Economic Status	Access to basic	Levels of
1	Pendurthi	Paravada	Pendurthi	Pendurthi
2	Paravada	Pendurthi	Munagapaka	Paravada
3	Sabbavaram	Anakapalle	Paravada	Anakapalle
4	Munagapaka	Bheemuniapatnam	Anakapalle	Munagapaka
5	Anakapalle	Munagapaka	Kasimkota	Kasimkota
6	Yelamanchili	Sabbavaram	S.Rayavaram	Yelamanchili
7	Kasimkota	Kasimkota	Yelamanchili	Narsipatnam
8	Narsipatnam	Atchutapuram	Chodavaram	Sabbavaram
9	Chodavaram	Narsipatnam	Narsipatnam	S.Rayavaram
10	Rambilli	Anandapuram	Atchutapuram	Chodavaram
11	S.Rayavaram	Chodavaram	Bheemuniapatnam	Atchutapuram
12	Payakaraopeta	Rambilli	Makavarapalem	Rambilli
13	Atchutapuram	S.Rayavaram	Madugula	Bheemuniapatnam
14	Madugula	Payakaraopeta	Kotauratla	Payakaraopeta
15	K.Kotapadu	Yelamanchili	Anandapuram	K.Kotapadu
16	Makavarapalem	Nakkapalle	K.Kotapadu	Anandapuram
17	Kotauratla	Padmanabham	Sabbavaram	Makavarapalem
18	Golugonda	K.Kotapadu	Payakaraopeta	Madugula
19	Paderu	Makavarapalem	Rambilli	Kotauratla
20	Bheemuniapatnam	Devarapalle	Butchayyapeta	Devarapalle
21	Anandapuram	Kotauratla	Devarapalle	Golugonda
22	Devarapalle	Butchayyapeta	Ravikamatham	Ravikamatham
23	Nathavaram	Ravikamatham	Nakkapalle	Padmanabham

24	Rolugunta	Cheedikada	Padmanabham	Rolugunta
25	Cheedikada	Madugula	Nathavaram	Butchayyapeta
26	Ravikamatham	Rolugunta	Rolugunta	Nathavaram
27	Butchayyapeta	Golugonda	Golugonda	Cheedikada
28	Padmanabham	Nathavaram	<i>Dumbriguda</i>	Nakkapalle
29	<i>Koyyruru</i>	<i>Koyyruru</i>	Cheedikada	<i>Paderu</i>
30	Nakkapalle	<i>Paderu</i>	<i>Paderu</i>	<i>Koyyruru</i>
31	<i>Araku Valley</i>	<i>Araku Valley</i>	<i>Araku Valley</i>	<i>Araku Valley</i>
32	<i>Hukumpeta</i>	<i>Hukumpeta</i>	<i>Hukumpeta</i>	<i>Dumbriguda</i>
33	<i>G K Veedhi</i>	<i>Dumbriguda</i>	<i>G K Veedhi</i>	<i>Hukumpeta</i>
34	<i>Dumbriguda</i>	<i>Ananthagiri</i>	<i>Ananthagiri</i>	<i>G K Veedhi</i>
35	<i>Ananthagiri</i>	<i>G.Madugula</i>	<i>Koyyruru</i>	<i>Ananthagiri</i>
36	<i>MunchingiPuttu</i>	<i>G K Veedhi</i>	<i>PedaBayalu</i>	<i>G.Madugula</i>
37	<i>G.Madugula</i>	<i>Chintapalle</i>	<i>Chintapalle</i>	<i>Chintapalle</i>
38	<i>Chintapalle</i>	<i>Peda Bayalu</i>	<i>G.Madugula</i>	<i>Munchingi Puttu</i>
39	<i>Peda Bayalu</i>	<i>Munchingi Puttu</i>	<i>Munchingi Puttu</i>	<i>Peda Bayalu</i>

Source: compiled by author

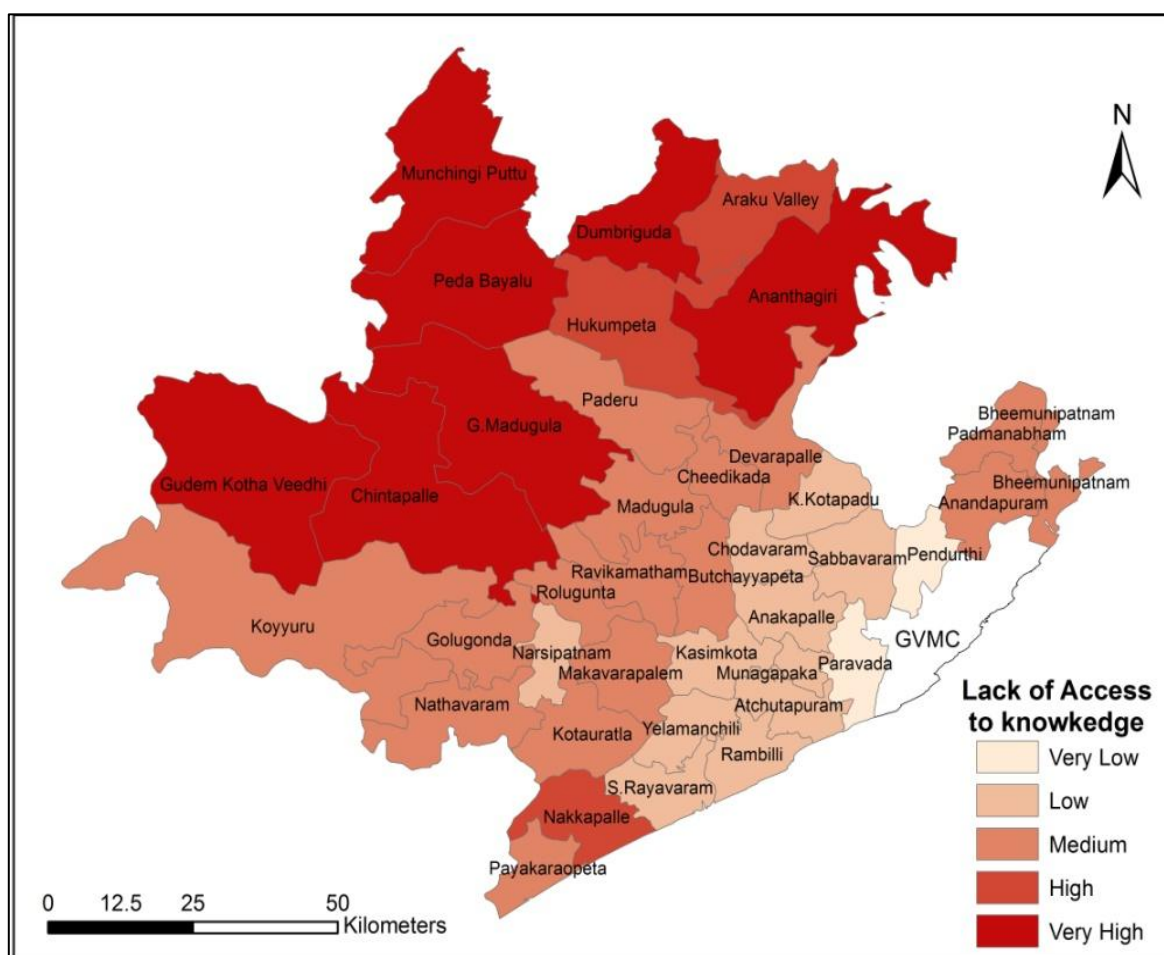


Fig. 3 Diversity in Lack of Access to Knowledge in Visakhapatnam District (Rural)

Source: Compiled by the author

The spatial pattern of index of economic status (Fig. 4) shows that five tribal sub districts namely Munchingi Puttu, PedaBayalu, G. Madugula, Chintapalle and G K Veedhi have very high level of economic backwardness. Paravada, Ankapalle and Pendurthi are the three sub districts with very low level of backwardness and are thus economically very developed.

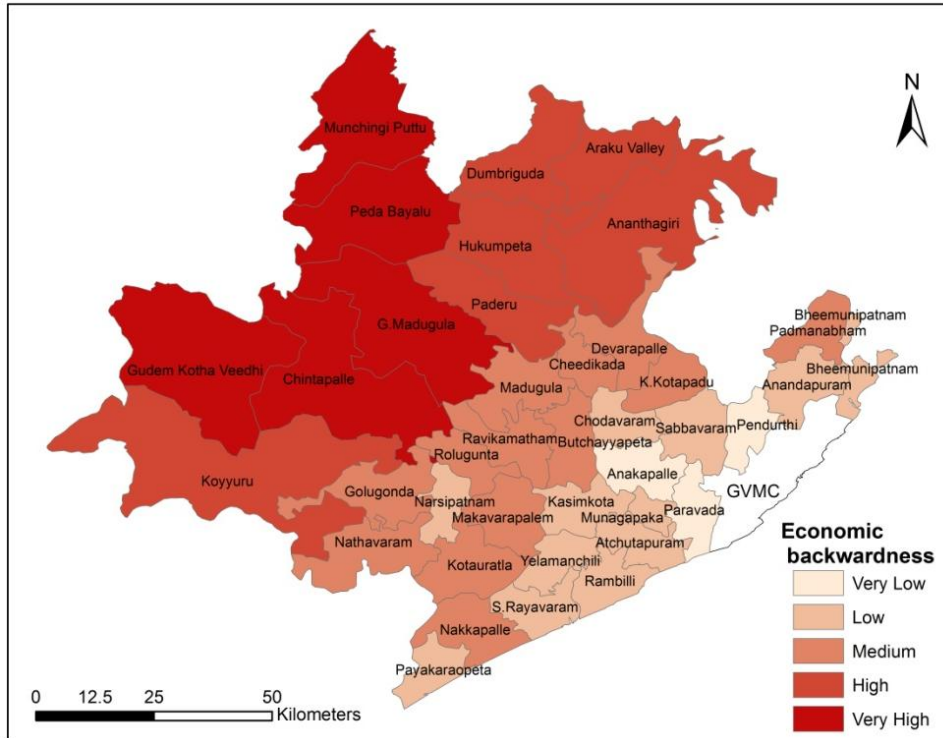


Fig. 4 Diversity in Economic backwardness in Visakhapatnam District (Rural)

Source: Compiled by the author

As it clear from Fig. 5 only two tribal sub districts namely Munchingi Puttu and G. Madugula have very poor access of basic amenities. Remaining tribal sub districts could make it for next high level in this parameter.

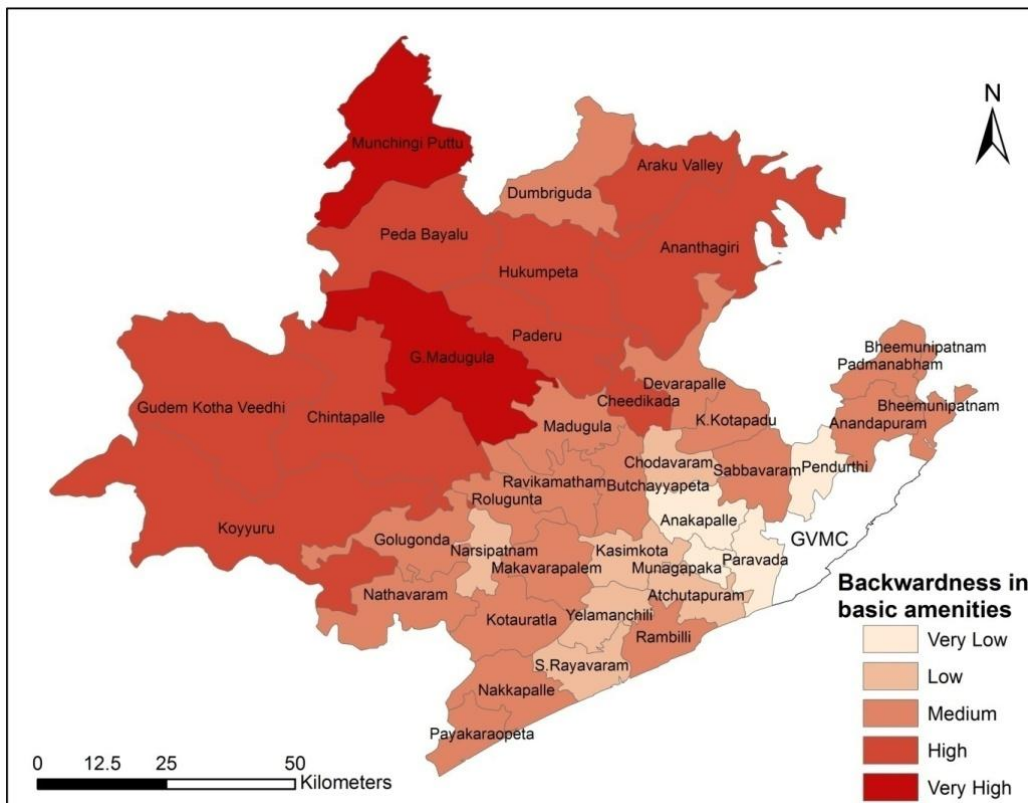


Fig. 5 Diversity in access to Basic Amenities at Visakhapatnam District

Source: Compiled by the author

From the spatial distribution pattern of the composite score (Fig 6), it is very clear that the levels of backwardness are very much dictated by the distance from the urban centre and elevation.

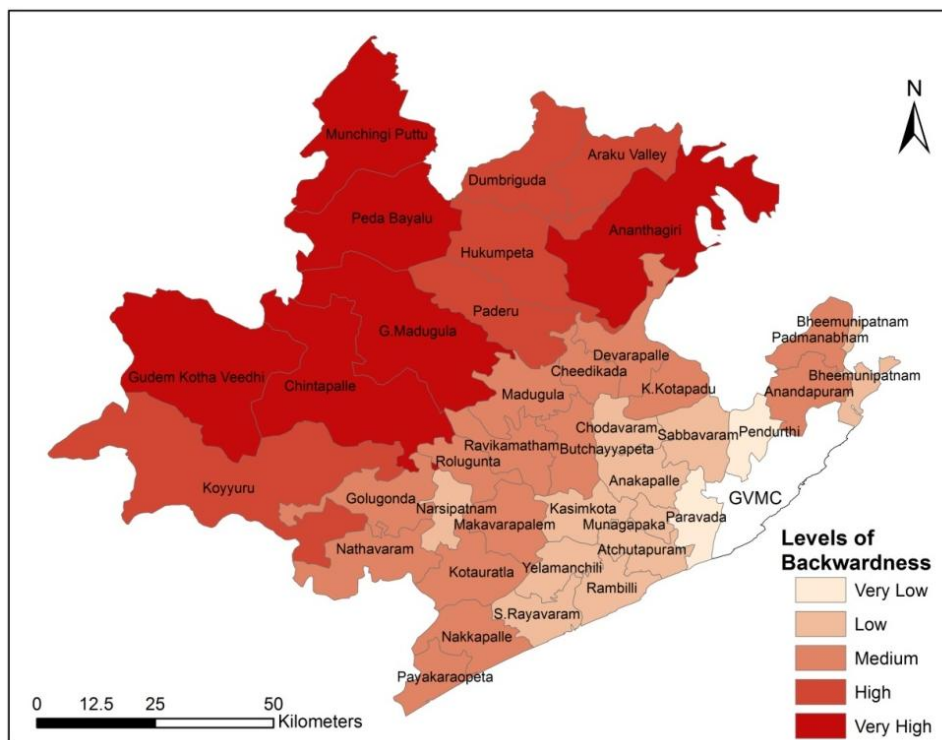


Fig. 6 Diversity in levels of backwardness at Visakhapatnam District (Rural)

Source: Compiled by the author

In all the aspects only tribal sub districts are classified as ‘very high’ backwardness to ‘high’ level of backwardness and all of those are located on hilly terrain. None of the non-tribal sub districts are backward. Rugged topography has restricted the influence of urban area towards north-eastern parts. It is for this reason that Anandapuram, Bheemunipatnam and Padmanabham sub districts are although nearer to Visakhapatnam urban area, the levels of backwardness are found to be ‘medium’. Sub districts nearer to the GVMC boundary and are gifted with plain topography only are having ‘very low’ levels of backwardness and thus are designated as very developed. Pendurthi and Paravada come to this category.

5.4. Identification of the most backward areas

With the help of Table 2 it is found that all the tribal sub districts (shown in italics) are occupying the bottom position among the sub districts. All non tribal sub districts have better rank than tribal sub districts. Among non-tribal sub districts Ravikamatham, Padmanabham, Rolugunta, Butchayyapeta, Nathavaram, Cheedikada and Nakkapalle are less developed. Among the 11 tribal sub districts Paderu ranks first followed by Koyyruru, Araku valley and so on with Munchngi Puttu at the last (eleventh). By comparing the values of composite score it is found that Paderu is relatively better, the scores of Koyyruru and Araku valley are closer to each other and are next to Paderu, then Dumbriguda and Hukumpeta are placed with nearly similar scores and as indicated in Fig 6, six tribal sub districts namely G.K Veedhi, Ananthagiri, G. Madugula, Chintapalle, Munchingi Puttu and Peda Bayalu are very backward with increasing order of backwardness in that sequence. So, Munchingi Puttu and Peda Bayalu located in the north-western horn being far away from the main rail-road artery, with rugged terrain are the most backward sub district of Visakhapatnam.

VI. CONCLUSIONS

Measures of backwardness is a dynamic concept. Multiple variables need to be analysed for listing out the backward administrative units. ‘One-size fit for all’ approach is not suitable for macro and meso level studies. Inaccessibility, ruggedness of the topography and distance from the urban area seems to be the causes of backwardness. Very backward and backward sub districts are inhabited by tribal people. Non tribal sub districts are found to be designated as very developed to less developed categories. State or even district level analysis may not be sufficient for identification of backward areas. Village level analysis would be more appropriate to

capture near real scenarios. None of the non-tribal sub districts are found to be backward. The study indicated that out of the eleven tribal sub districts all are backward and six out of those are very backward.

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