

RNI MAHIMAR

36829-2010

ISSN- 2229-4929

Peer Reviewed

Akshar Wangmay

International Research Journal

UGC-CARE LISTED

Special Issue - III

Interdisciplinary View on Socio-Economic, Educational,
Management, Environmental, Research, Language and
Sustainable Development in Covid-19 Pandemic Situation

January 2021

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Price :Rs.1000

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Spatio-Temporal Assessment of Power Consumption in Yavatmal District

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Abstract

The availability of infrastructural facilities of any kind is the basic need for the development of the region. An infrastructure not only helps to boost the economy but also lead to provide a quality of life. In the field of geography the spatial patterns of such infrastructural aspects may reveals by examining the causes and effects of geographical conditions simultaneously understanding the causes and consequences on socio-economic aspects of the society of varying development. Energy is an engine of growth which proliferate human resource, enhances productivity of industries and agriculture. The National Electricity Policy of India 2005 highlights the importance of electricity. It recognized electricity as a basic human need and signifies that it is a critical infrastructure on which the socio-economic development of the country depends. Although there is an utmost importance has been given to the energy at country level, the regional imbalances are seen in the many parts of the country in terms of energy consumption in different sectors of an economy. The present study explains the availability and variations in the infrastructural facility of electricity in Yavatmal district by using tahsil level data and also tries to find out the geographical and socio-economic factors associated with it.

Keywords: Development, Power, Electricity, Infrastructure, Geography

Introduction

Development works hand in hand with infrastructure. In developing countries like India, infrastructure plays vital role in enhancing the lives of its stakeholders while simultaneously ensuring the economic growth. Infrastructure includes basic facilities such as Electricity, Sanitation, Transport, Health care, Communication etc. These basic facilities provides a platform for the development of any region. Among all the infrastructural facilities, electricity is seen to have major contribution in the development process and economic growth. All the other facilities somehow depend on the electricity. A regional studies can therefore show a distinctive patterns of consumption and summarizes the determinant factors for a particular trend. It is therefore important to understand the regional characteristics of electricity consumption and their spatial distribution and to seek what are the different factors are associated with the varying trend of consumption? How these factors are operated spatially? and how the consumption trend has been changed over the years? According to Energy Statistics 2019 report India, the total electricity consumption in the year 2008-09 was 5,53,995 kwh which is been considerably increased to 11,30,244 kwh in 2017-18. Out of the overall electricity consumption industrial sector consumed high i.e. 41.48 % followed by domestic (24.20%), Agriculture (18.08%), Commercial (8.51%) and Others (7.74%) of electricity from the year 2008-09 to 2017-18. This sector wise distribution of at the regional level may differ than that from the national level. The regional distribution of the electricity consumption is seen to be very much dependent on local characteristics of the economy and resources. Much progress has been made in recent decades in connecting the people of the world to reliable supplies of electricity, but some regions remain particularly under-served. According to Census 2011, Out of total 64,03,85 households only 44,65,16 (69.73%) has main source of lighting through electricity in Yavatmal district. Where 64.38 % rural and 91.27% urban households has main source of lighting. For the present study Yavatmal district is selected which lies between 19°26' and 20°42' north latitudes and 77°18' and 79°9' east longitudes (Map 5.1 (A)). It falls in parts of the Survey of India Toposheets No. 55L, 55I, 56E, 56I, 56M, covering 13582 sq. km. The district has 16 tahsils and 2,137 villages. The present study has made an attempt to understand the spatio-temporal distribution of electricity consumption in the district by using tahsil level data.

Rationale of the Study

The previous studies have extensively focused on the economic aspects and its impact on the various developmental factors. Infrastructural development can be identified at various levels of geographical regions such as national levels, zonal levels, state levels and district levels. The district level spatial studies is then helpful for providing the geographical causes which affects the

development of any region. The access to the basic infrastructure is low in rural areas as compared to the urban sector. The study analyzes the effectiveness of electricity in the process of development of the district which would give the spatial dimensions of development. It helps in strategic planning for the development by providing a more comprehensive, rigorous and integrated knowledge base. The spatial studies of such type will also be useful in opening new arenas for the geographical studies.

Objectives

The main objective of the present study is to analyze the spatial distribution of electrical energy consumption and its sector wise consumption levels. The study also illustrate the reasons associated with the uneven distribution of the electricity consumption on the tahsil level as well as in between each economic sector.

Methodology

The present study can be divided into three phases. They are:

Literature Survey

An exhaustive literature survey has been carried out. An important and relevant literatures are only incorporated and critically assessed to know the tools , techniques and methodology used in those research works. The results obtained in literature was then summarised to see the gaps and to understand the scope for further research.

Collection and Compilation of Data

For the present work the data is gathered from secondary sources it includes the socio-economic abstract of Yavatmal district 2007-08 to 2017-18, District Census Handbook 2001 & 2011 and District and Tahsil level Shapefiles. The required data is extracted from the source files, corrected and tabulated in an excel worksheet for further analysis over it.

Analysis and Representations

The tabulated data is analysed using simple mathematical operations and then represented by using various graphical techniques to see the results. The tools and techniques used for the representation of data includes graphs and pie diagrams and maps. For this purpose Arc-map and MS-Excel are deliberately used.

Result and Discussions

The figure 5.1 shows the temporal distribution of electricity consumption in the district from the year 2008-09 to 2017-18. The Consumption of electricity in agricultural sector has been increased significantly from 35% in the year 2008-09 to 49% in 2017-18. The main reason is being the installation of electric pumps for irrigation purpose i.e. 84190 in 2009-10 and 112928 in 2017-18. The domestic sector has doubled electricity consumption between two years i.e. 2008-09 and 2009-10 which accounts 24% and 48% of total electricity consumption in the district. It can be justified by the establishment of new electric connections in the respective years i.e. 3.72 and 4.2 lakh however the overall consumption has been declined in domestic sector from 2008—09 to 2017-18. A prominent decreased of electricity consumption is seen in the industrial sector. Where, 19% of total consumption were accounted in 2008-09 which falls down to only 2% in the year 2017-18 which can be attributed to the closing down of industries in the region. A spatial distribution of electricity consumption shows that there are some tahsils which are polarised in a specific sector (Map 5.1 (B), (C) & (D)). For example in 2011-12 Yavatmal, Zari-zamni and Wani tahsils consumed more electricity in other sector. In 2014-15 Digras, Yavatmal and Zari-zamni consumed more electricity in industrial sector.

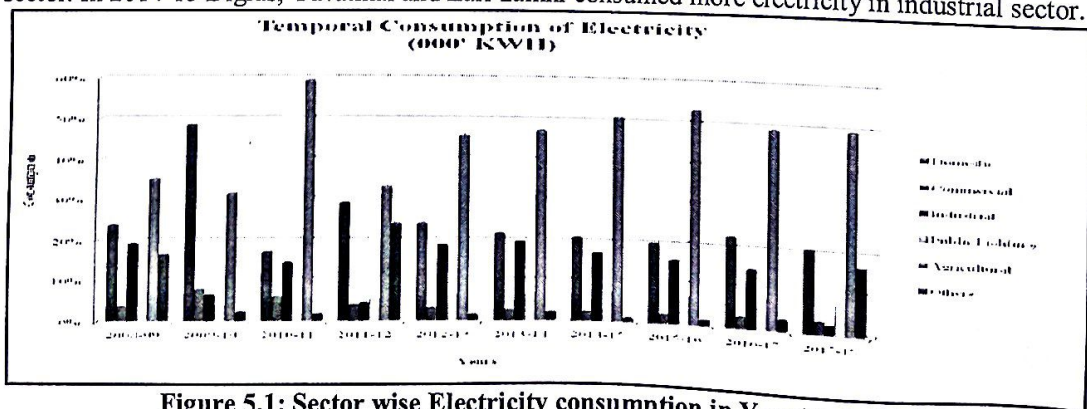
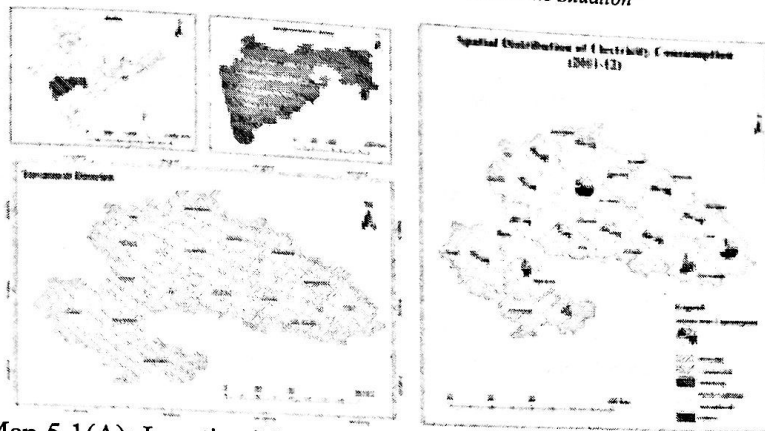
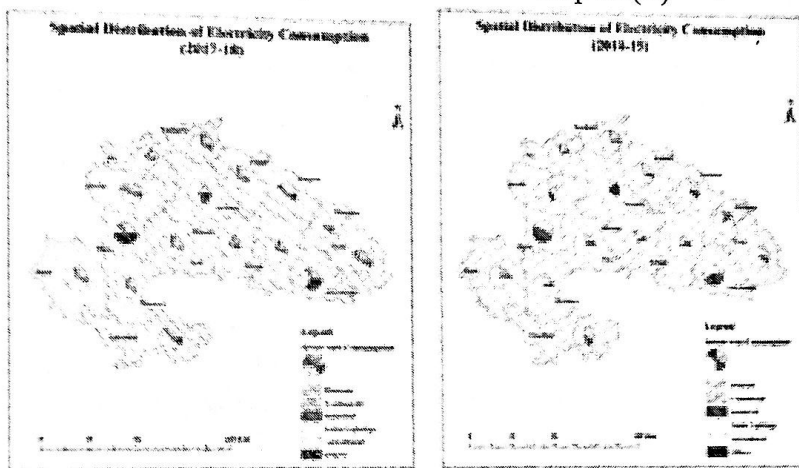


Figure 5.1: Sector wise Electricity consumption in Yavatmal district



Map 5.1(A): Location Map

Map 5.1(B)



Map 5.1(C)

Map 5.1(D)

Conclusion

Yavatmal is an industrially backward district and hence it is important to understand that whether the electricity consumption and spatial distribution of electricity is responsible for this underdevelopment or not. There is need to seek into the situations which are responsible for this uneven pattern of electricity consumption. The polarization of a particular sector in electricity consumption is advising a certain geographic cause to the same. It is also observed that the declining trend in industries is the major reason behind falling electricity consumption in the industrial sector.

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