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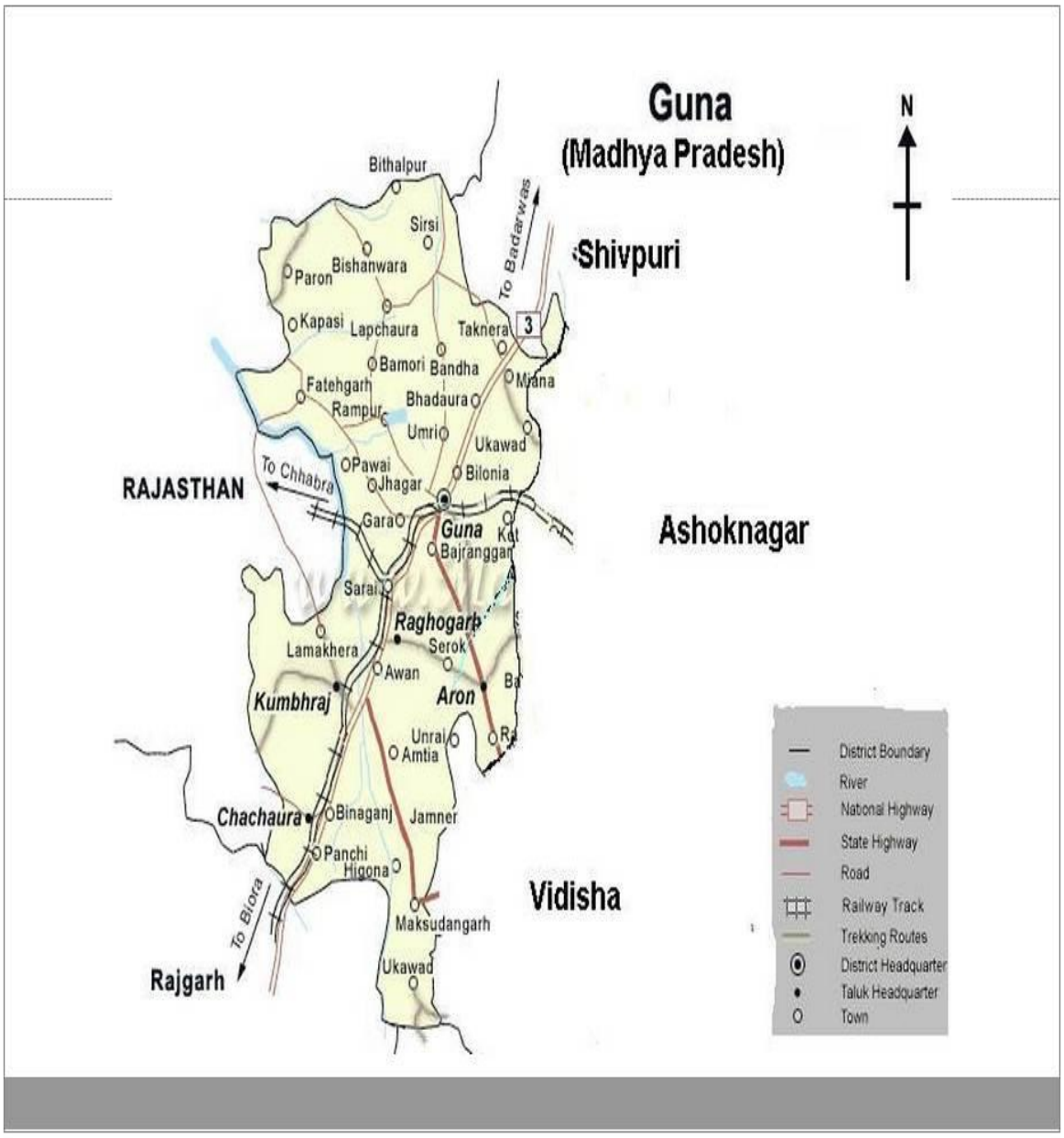
Geographical & Location Analysis for Wireless Network Plan at Guna, Madhya Pradesh



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Introduction

Economic and social backwardness have left many traditional communities including tribal groups and locations deprived of information, media and communication infrastructure, resources and channels. This has aggravated development, digital divides, information access deprivation, and access to rights in general.

It is also believed and the cases have proven that access to information and media have invariantly empowered societies who have often been deprived of the economic and livelihood accomplishment.

On the other hand, there are existing provisions like free spectrum allocations as provided by the Government not being utilized to provision information and media infrastructure to reach out to unreached communities. Globally, and in India, frequency bands in 2.4 Ghz, 5.8 Ghz and 3.3 Ghz have been kept aside as free spectrum that can be used by anyone without taking a license or paying a fee to the Government.

Unlicensed spectrum offers other advantages compared with licensed air waves. Therefore, it is quintessential that specific programmes are adopted on both advocacy and ground implementation levels to address the wider issue of network & access infrastructure and media access to deprived communities.

In order to utilize the unlicensed spectrum in channelized manner, DEF & Ford Foundation came together and decided to implement the project 'Wireless in Unlicensed Band' in Guna, being centrally located in Madhya Pradesh and one of the country's 250 most backward districts. The report has analyzed communication facilities that could be provided in 16 villages of Guna district, Madhya Pradesh. The main objective of the study is to understand the demand and availability of communication services in communities and their perception to enhance the information about the current service facilities/resources available in the region.

Background

Provision of telecom services in rural areas is still a concern thrust area to attain the goal of accelerated economic development and social change. Although the telecom network has grown rapidly in recent years, its growth needs to be accelerated further. According to the national programme of Bharat Nirman -telecom connectivity constitutes an important part of the effort to upgrade the rural infrastructure. Under the Bharat Nirman Programme, Rural teledensity of at least 40% by 2014, and Broadband coverage of all 250,000 village panchayats & Setting up of Bharat Nirman Common Service Centers at Panchayat level by 2012 were to be achieved.

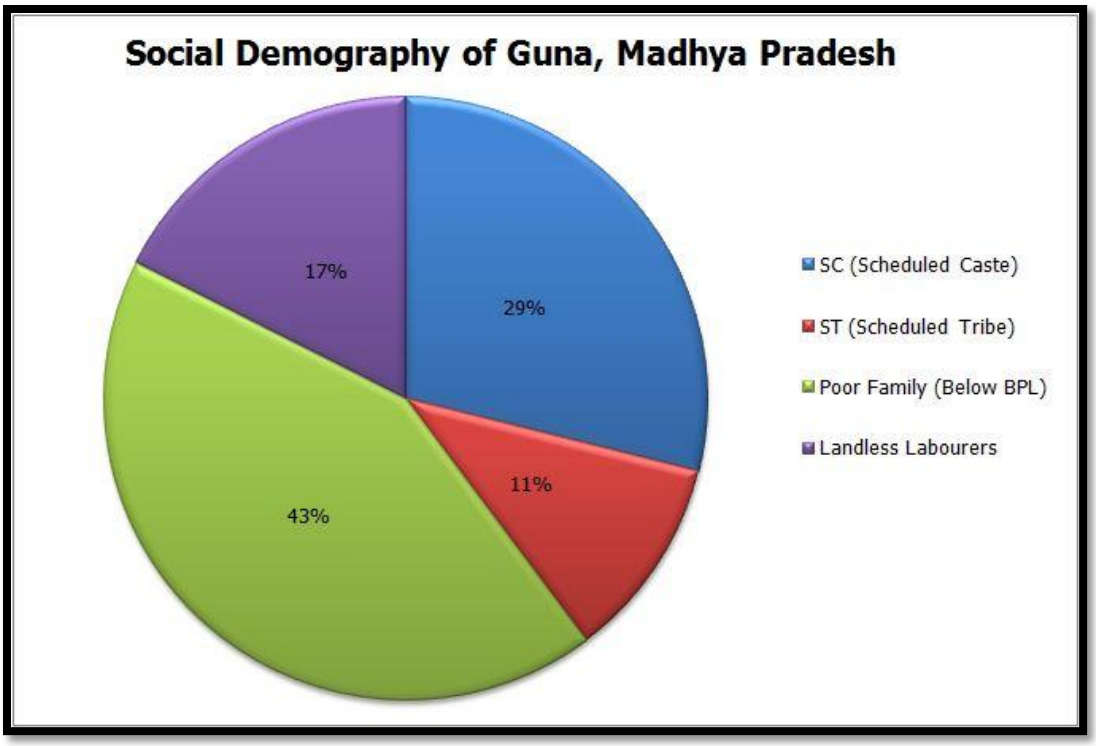
As a result of these measures, the broadband subscribers are stated to have grown from 0.18 million in 2005 to 8.8 million as on 31st March 2010 and 10.92 million, at the end of the December, 2010. However, these figures are far from required numbers to address digital divides and increase accessibility including media access and information reach. Provisioning wireless network and access infrastructure using free spectrum will provide the much needed thrust to reach out to unreached areas and communities.

There are examples on ground from Chanderi in Madhya Pradesh and Dharamsala in Himachal Pradesh as to how and why wireless network infrastructure and access have impacted communities with information and service opportunities in education, health and livelihood.

Considering the entire last mile connectivity and media access, there is a need to understand micro-level deployment and capabilities of broadband access that could drive inclusive growth by the way of mobile banking, tele-education, e-governance, tele-medicine, etc. In an effort to harness the ongoing efforts of DEF in setting up wireless mesh network and providing broadband connectivity using unlicensed spectrum, Ford Foundation & DEF decided to analyze micro-and macro-level sustainability model of utilizing wireless in unlicensed band in Guna, Madhya Pradesh.

Guna: Geographical & Social Analysis

A gateway of Malwa & Chambal, Guna is located on the northern-eastern part of Malwa Platue. With a population of 12,40,938 (2011 census), Guna district is bounded by Shivpuri district on the northeast and by Ashoknagar district on the east, on the southeast by Vidisha district, on the southwest by Rajgarh district, on the west and northwest by Jhalawar and Baran districts of Rajasthan state. Being highly populated with tribal communities, in 2006, the Ministry of Panchayati Raj named Guna as one of the country's 250 most backward districts. Technically, the district is situated between the radiameters 23'53" N and 25'6'55 N and langumate 76.48' 30"E and 78', 16'70"E.



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Study Objective

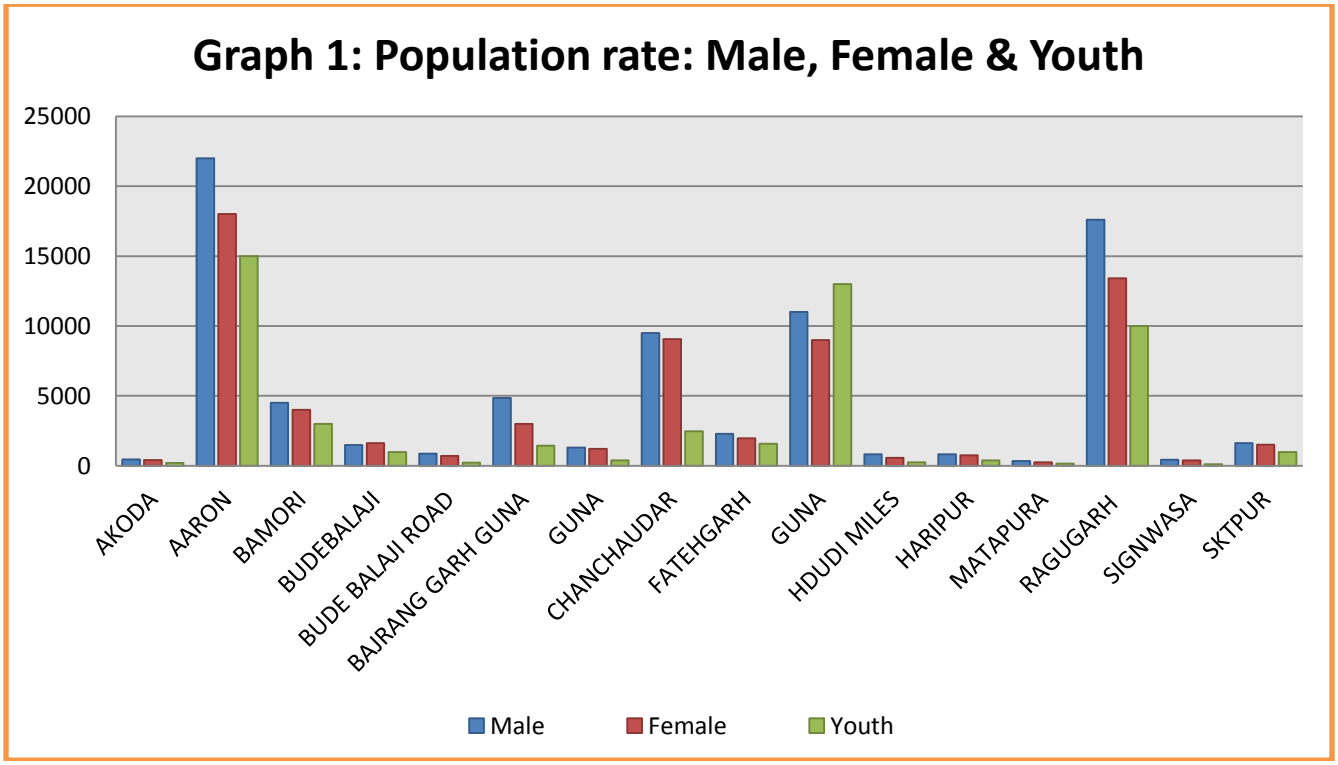
The report has analyzed communication facilities in sixteen (16) villages of Guna district, Madhya Pradesh, India. The study of the facilities of communication available is prepared to understand the present status of resources in the select villages. The main objectives of the study includes assess the demand and availability of communication services in communities and their perception, enhancing the information about the current service facility/resources of villages. Along with above said objectives, the present study has few limitations which include: quality of services that has been used in the analysis is based only on the observations by field visits or by the information provided by the community.

Guna: Study Area

The Table 1 - the population of Guna district is 1,240,938, constituting 53% male population and female population is 47%. Guna has an average literacy rate of 67%, higher than the national average of 59.5%, male literacy is 75%, and female literacy is 57 %. In Guna, 15% of the population is under 6 years of age (Census of India, 2011). For the study, 16 villages of Guna districts have been covered are as under;

Village	Male	Female	Youth
Akoda	450	403	213
Aaron	22000	18000	15000
Bamori	4500	4000	3000
Budebalaji	1476	1624	976
Bude Balaji Road	856	711	220
Bajrang Garh Guna	4850	3006	1435
Guna	1300	1200	375
Chanchaudar	9500	9070	2465
Fatehgarh	2280	1955	1587
Guna	11000	9000	13000
Hdudi Miles	830	570	250
Haripur	826	750	376
Matapura	350	250	150
Ragugarh	17600	13400	10000
Signwasa	440	395	115
Sktpur	1625	1500	975

Table 1: Population Rate – Male, Female & Youth



Methodology

The present study is primary level study that has adopted the methodology of purposive sampling to initiate detailed enquiry into the issues that have been identified in objectives of study and to address the concerns of communities and individuals in communication facility at village level. The data in the study has been procured through intensive fieldwork in sixteen villages. Fieldwork techniques such as participant observation, key informant interviews, both unstructured and structured, with open-ended questions and closed ended questions were used for procuring the primary data. A number of secondary sources were also referred for procuring information. Sixteen (16) villages of Guna district were selected. The sample size for collection of data was taken as 160 households along with survey of the local institutions through questionnaires.

The study conducted in 16 villages in Guna district:

The survey covered:

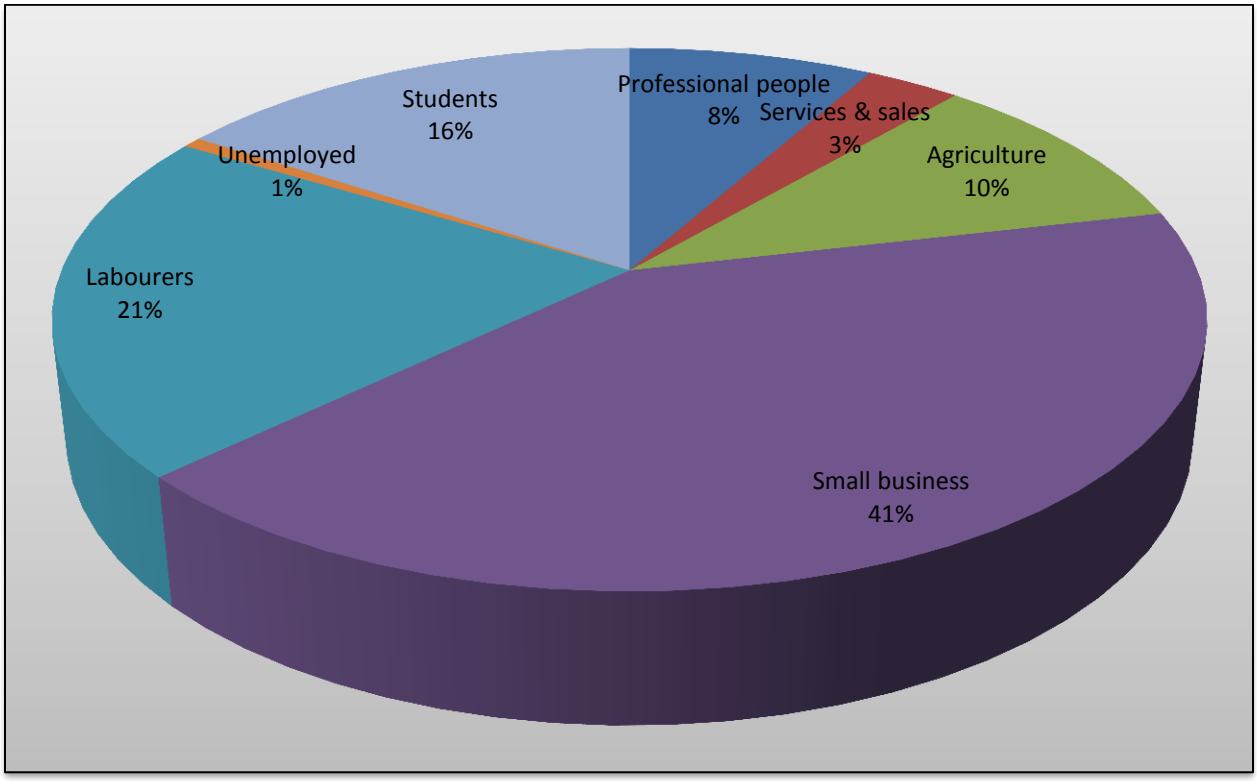
- ❑ Total Households: 160
- ❑ Institutions: 38

Research Type:

- ❑ Primary
- ❑ Secondary

The information at the community level was collected from a wide array of stakeholders that included elected

representatives of Gram Panchayat, village opinion makers, members belonging to different caste groups, women, etc. The villages covered under were: Bamori, Haddi Mill, Guna, Singwasa chak, Aaron,Buddha balaji, Sakatpur, Buddha Balaji Road, Haripur, Akoda, RadhoGarh, Chand Shah Baba Dargah, Bajrang garh, Chanchora, Matapur, Fatehgarh.



The above pie-chart shows that small businesses comprise of 41 per cent people, while 21 per cent people are daily-wage laborers, 10 per cent rural citizens' main occupation is agriculture. Around 8 per cent people are in professional services and 16 per cent of the population is student.

Outcome

Community resource stats were created with help of different stakeholders which are depicted in graph. It represents the location based information of different services available to community for their use. These graphs depict services available at the location. These services include power supply, number of telco operators, number of schools, number of NGOs, number of enterprises, and ICT services in terms of agriculture, small businesses, etc.

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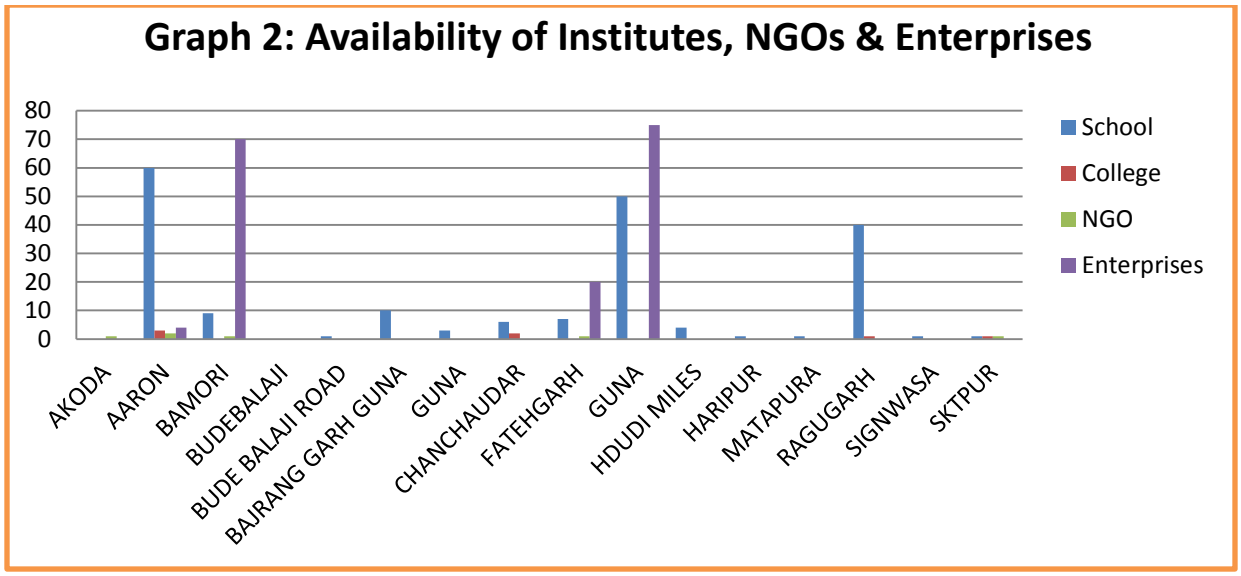
Institutions & Enterprises Services in Guna

The Table 2 shows the number schools, colleges, NGOs and enterprises available in the district.

Village	School	College	NGO	Enterprises
Akoda	0	0	1	0
Aaron	60	3	2	4
Bamori	9	0	1	70
Budebalaji	0	0	0	0
Bude Balaji Road	1	0	0	0
Bajrang garh Guna	10	0	0	0
Guna	3	0	0	0
Chanchaudar	6	2	0	0
Fatehgarh	7	0	1	20
Guna	50	0	0	75
Hdudi Miles	4	0	0	0
Haripur	1	0	0	0
Matapura	1	0	0	0
Ragugarh	40	1	0	0
Signwasa	1	0	0	0
Sktpur	1	1	1	0

The Graph 2 shows that Aaron village is one of the most developed villages as it has the maximum number of schools, college, and NGOs available in the village, whereas in Akoda is the least developed village. However, the highest number of enterprises is available in Guna. Most of villages do not have basic educational facilities such as school and colleges.



A series of factors including literacy and education, language, time, cost, geographical location of facilities, social and cultural norms, information search and dissemination skills constrain individual's access to information technology. Information technology can offer significant opportunities for virtually to all in Guna district, including poor men, women living in rural areas. However, their ability to take advantage of these opportunities is contingent upon encouraging policies, an enabling environment to extend communications infrastructure to where women live, and increased educational levels.

Services Available – Power, No. of Telcos, & ISPs

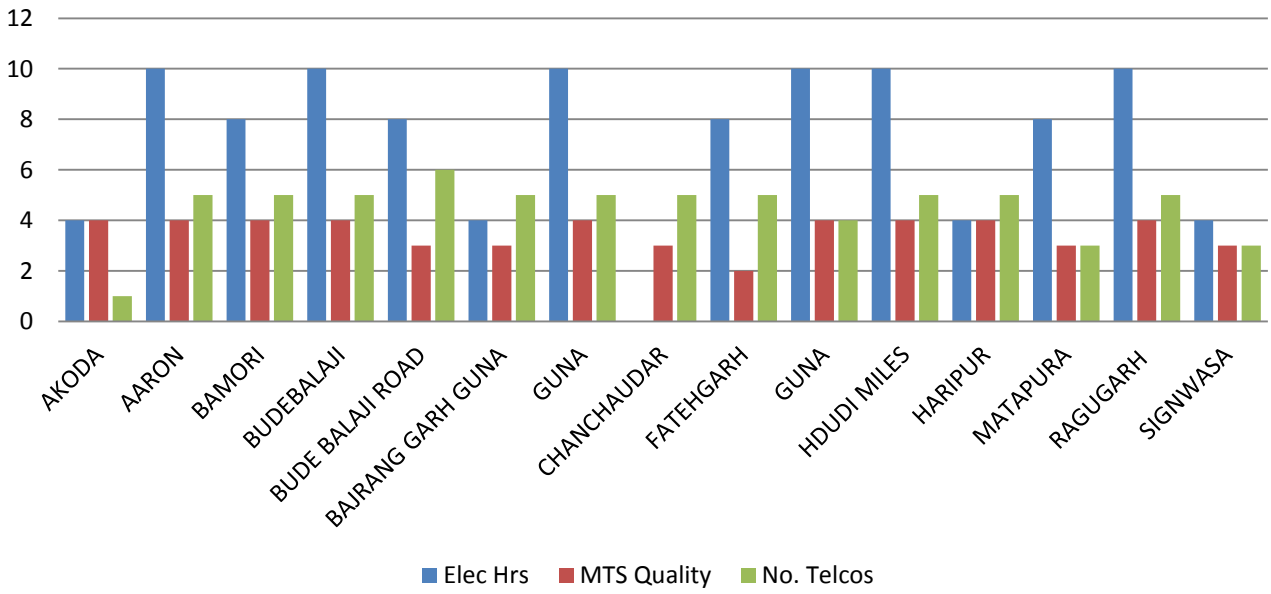
The Table 3 represents the number of electricity and quality of MTS service available in the district. Analyzing the Table 3, the Graph 3 represents the present status of electricity and other facilities in the villages of Guna district.

Village	Electricity (in Hrs)	MTS Quality	No. Telcos
Akoda	4	4	1
Aaron	10	4	5
Bamori	8	4	5
Budebalaji	10	4	5
Bude Balaji Road	8	3	6
Bajrang Garh Guna	4	3	5
Guna	10	4	5
Chanchaudar	0	3	5
Fatehgarh	8	2	5

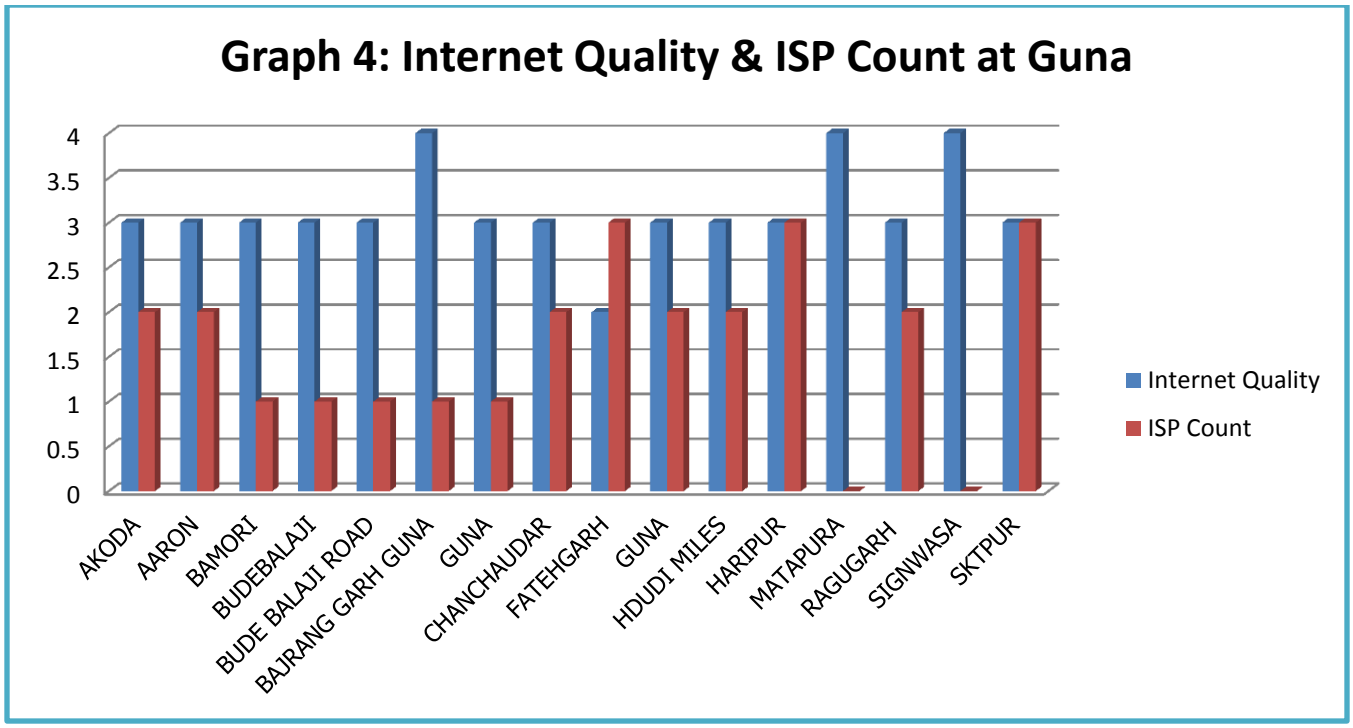
Guna	10	4	4
Hdudi Miles	10	4	5
Haripur	4	4	5
Matapura	8	3	3
Ragugarh	10	4	5
Signwasa	4	3	3
Sktpur	4	3	5

The Graph 3 depicts that average power supply in the district is nine (9) hours and the average quality of MTS available in the district is four (4) hours. In most of villages, the maximum 5 telecom operators are available in the region. MTNL is only telecom that is available in whole district, while other telecom operators such as Vodafone, Airtel, Reliance and Idea are also maintained their availability in the region.

Graph 3: Services - Electricity availability, no of telcos, MTS quality



The Graph 4 shows the quality of internet and no of ISP operators available in the region. In a range of 10, the quality of internet service is not up to the mark, in most of regions, the quality of internet connectivity is below than average. Although major ISP operators such as MTNL, Airtel, Reliance, etc. are available but 80 percent mobile & internet users in Guna face connectivity failure problems.



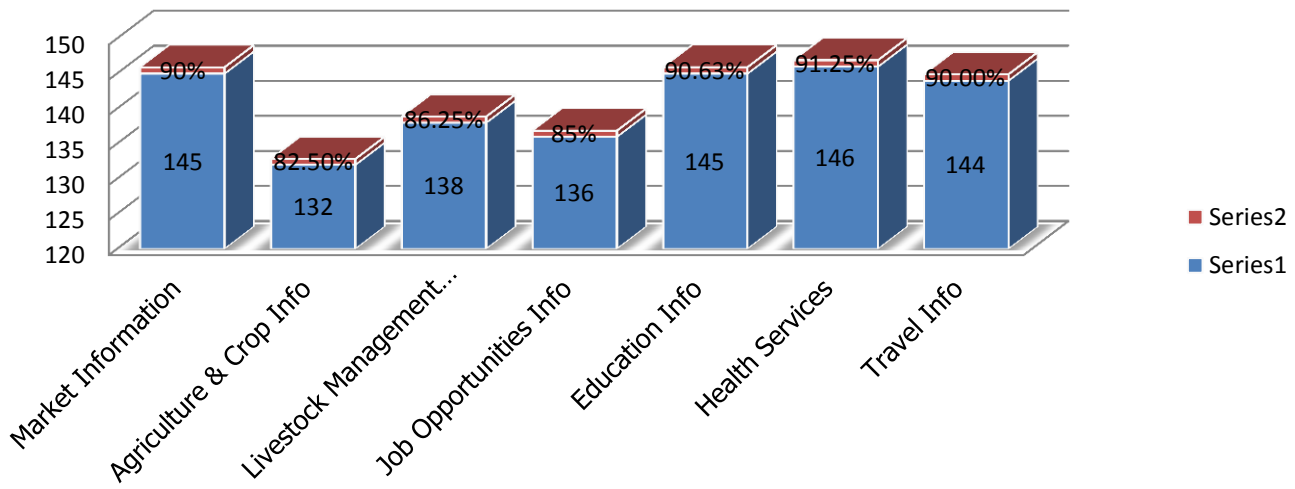
80 percent mobile & internet users in Guna face connectivity failure problems

However, after analysis, with the financial assistance provided to the States, enormous effort to develop the communication facilities have been taken up by the state and service providers. But, due to poor maintenance of the infrastructure created, many of these have become non – functional and valuable public resources going to waste. More than 80% of the mobile or internet users in the rural areas face long hours of connectivity failure problems. This happens due to either less coverage by Mobile tower or lack of electricity supply. In both cases, Network connectivity goes down drastically which is also a serious concern for the communities.

The Demand of ICT Services in Guna

Getting reliable statistics on the use of ICT in Guna is very difficult. Except in upper-income enclaves, access to mobile, a computer or the internet at home is not a typical phenomenon. However, the demand of ICT services for their daily livelihoods in very much in demand. People have shown their interest to receive information & technology based services for their work.

Graph 5: Demand of ICT Services



The Graph 5 depicts the demand of ICT services in the region. Over 91.25 per cent people have shown their intereest to receive health information, 90 per cent have want educational services such as exam results, forms, etc, while 90 percent people want market information and travel information (including rail enquiry, bus info, etc.). The demand of livestock management and agriculture related information is 86.25 per cent and 82.50 per cent respectively.

91.25% - Health Services
90.63% - Educational Services
90% - Market & Travel Information
86.25% - Livestock Management Services
85% - Job Opportunities
82% - Agriculture & Crop Information

The data shows how the villagers of Guna district contradictory literate identities are tightly bound to their immediate context. Based on the situation, there are several of the multiple educational needs in the district. Among those, ICTs can be used to assist people in their current economic activities, including farming, trade, and entrepreneurship. For instance, farmers could greatly increase productivity using information on improved technologies, agricultural inputs, weather and markets. Traders and other entrepreneurs need to find marketing information and disseminate information about their small businesses. Students from the local communities who generally learn computer skills rapidly could be trained to serve as information intermediaries for the older generation. In a tribal district like Guna, the internet may become an important

source of information for the villagers. If they know the use of the internet, they may download important information.

Challenges and Recommendations

The challenges Guna district of Madhya Pradesh faces is how to become a learning society and to ensure that its citizens are equipped with the knowledge, skills and qualifications on information and communication technology (ICT) they will need in the future. ICT revolution imposes particular challenges on communication systems in Guna. These challenges reduce to three broad areas. The first has to do with participation in the information society; the second considers how ICT impacts on access, cost effectiveness and quality of communication, while the third is to do with the way that ICT changes the communication process. However, ICT is contributing to ever-increasing inequalities in Guna district through the so-called "digital divide" that splits the district between those who are "ICT-literate" and the majority who are not and most of them have no access to the Internet and mobile. A series of factors, including literacy and education, language, time, cost, geographical location of facilities, social and cultural norms, and information search and dissemination skills constrain women's access to information technology. Attitude of villagers and communities Villagers is also a major cause of concern. Sometimes, the reluctant villagers hesitate to take initiative even after sufficient infrastructure.