



## Use of Roof Materials in Broad Region in Rural India: A Regional Analysis

Seema, Assistant Professor. Guest Faculty, Dept. of Geography, Jat College, Rohtak,  
(rvijaysangwan@gmail.com)

### Abstract

The environmental and economic conditions of the people are reflected in the use of building materials. Generally, the houses in a rural set up are built by using materials available locally. The use of roof materials differs significantly due to physiographic and climatic conditions of the region in India. In the present research work an attempt has been made to examine the dominant materials used in roofs in rural India. The district wise 2011 census household data has been used. Census of India has classified roof materials used for residential houses into nine types like, Grass /Thatch/ Bamboo\wood\mud etc., Plastic/Polythene, Handmade tiles, Machine made tiles, Burnt Brick, Stone\ slate, GI/Metal \Asbestos sheets, Concrete and Other materials in rural India. It is recorded that the about 20 per cent roofs are made of grass/thatch/ bamboo\wood\mud, followed by handmade tiles (18.33 %) concrete (18.32 %), GI/Metal \asbestos sheets (15.95 %), machine made tiles (10.39 %), stone\ slate (8.85 %), burnt Brick (7.21%). Only 1 per cent houses used different sources of roof materials like plastic/polythene (0.63%) and any other materials (0.37 %) in rural India as per census 2011.

ISSN 2454-308X



Further, it is observed that 27.36 % total houses have used grass /thatch/ bamboo\wood\mud etc in eastern part in rural India followed by south eastern part (22.09%) and northern part (19.85%) as per census 2011. On the other hand handmade tiles are maximum used by 25.40 % in northern part, followed by 25.16%, eastern part, 12.43% western part and 9.18% southern part. The roof of the houses (31.24 %) in southern part is made of concrete. Machine made tiles used in western part (25.99%) and southern (24.44%) part in rural India. Burnt brick used in northern western part (18%) and northern part (16.84%) in rural India. More than 82 % roof of the houses in islands and 73.20% in southern eastern part are made of GI/Metal \Asbestos sheets. On the other hand stone/slate are maximum used by 18.85 % in northern part, followed by



15.25% north western part, Only 1% houses used different sources of roof materials like, plastic/polythene (0.63%) and any other materials (0.37%) in rural India as per census 2011.

**Key Words: Roof materials, Concrete, Brunt Bricks, Grass/Thatch/Bamboo/Stone/Wood.**

## **Introduction**

House is a social concept, its nature and cognition varying with caste, class, religion and region.(Unni, 1965). A house holds a most significant place in the geographical hierarchy of phenomena, reflecting the cultural heritage of the people who build them in the region (Dickenson: 199-206).The basic geographic phenomena is meant to include “not only the dwelling house, ranging from the humblest huts of a poor to the most elaborate and massive city mansions, but all other human structure as well, where people congregate or where their grains are stored, such as schools, factories, warehouses, churches and stores etc.” (Finch and Trewartha 1964). Environment and economic conditions of the people are reflected in the use of building materials. Generally, the rural dwellings depend upon the availability of local building materials, the soil, the vegetation, etc. The rich and well-to-do people generally build their houses of burnt bricks or stone while the poor class lives in mud walled and tiled or thatched roof houses. The function and utilization of houses is a very complex structure showing disparateness and distinction at several levels of man-to-man, man-to-technology, man –to-economy and man –to-land relations of the culture. In India “the geographical factors did not have an important deterministic influence on the nature of house” (Unni, 1965). The main deterministic coordinates structures the nature of houses are resources available to the society-cultural traits, traditions and economic levels. The internal organization and the external outlook of houses is the true representative of integrated culture between the man and his society and the natural environment. A house is one of the three basic needs of the mankind. Its importance varies in various climatic conditions yet the basic need remains more or less the same, as it provides shelter and protection from the rigours of climate. The word has been used as a synonym for census house, which is defined as, “a building or a part of a building having a separate main entrance from the road or common courtyard or staircase, etc., used recognized as a separate unit. It may be occupied or vacant. It may be used for a residential or non residential purpose or both (Census of India,



2011). Rural settlements are congregation of houses. It encompasses residential besides factories, shops, warehouses, school, temple and mosque etc. Kiss and Singh (1997) studied the changes in rural life and living conditions in Hungary. They observed that since 1989 due to the political, social and economic changes the rural social and economic life have also completely transformed. Chamar (2002) studied the distribution of rural dwellings, their types based on size, functional characteristics, building materials and house plan in Bhiwani districts.

### **Source of Data and Research Methodology**

The 2011 census data has been used for the present research work. The data in respect of rural houses and uses of roof materials have been used. The roof materials like Grass/Thatch/Bamboo/Wood/Mud etc., Handmade Tiles, Concrete, G.I/Metal/Asbestos Sheets, Machine Handmade Tiles, Stone/Slate, Burnt Brick, Plastic/Polythene and any other materials at broad region level in proportion to total rural houses have been calculated in per cent in India. The study area has been divided into seven broad regions, viz; north western, northern, eastern, north eastern, western and southern and islands as demarcated by Ahmed. Finally, the diagram have been prepared with the help of choropleth method.

### **Study Area**

India is a country of great geographical extent. It sprawls from the snowy range of the Himalayas in the north to the shores of the Indian Ocean in the south. It belongs to Asia which is the largest continent of the world. With an area of 32, 87,263 sq kms., it extends from 8° 4' north to 37° 6' north latitude and 68° 7' east to 97° 25' east longitude. India is a union comprising of 28 states and seven union territories. It has 640 districts as per 2011 census, out of which nine districts have nil rural population. The total population of India is 121.05 crore which resides in 24.94 crore households. Out of the total population in the country 68.85 % population lived in 67.57 % households in rural areas and 31.15 per cent in 32.43 % households in urban areas.

### **Factors Affecting House Types**

The landform and location environment are responsible for the variations of house types in different parts of the world. These are physical and cultural factors as follows: Relief of the Land and Slope, Climate, Ease of Water Supply, Building Materials, Economic condition, Social and Religious Tradition, Administrative Law ect.



## Factors affecting the use of Roof Materials

The environmental and economic conditions of the people are reflected in the use of building materials (Singh, 1957). Generally, the houses in a rural set up are built by using materials available locally. However, affordability may produce exceptions in the afore-mentioned rule. If the owner of a house can afford to bring materials from other areas, by bearing the cost of transportation and the materials, he may construct his house of choice, not restricted to locally available material. The use of roof materials differs significantly due to physiographic and climatic conditions of the region in India. Besides that; Literacy rate, Levels of educational attainment, Income level, Percentage of population below poverty line, Government's policy vis a vis financial assistance/ loans are some of the important factors which have controlled the housing quality and the materials used for roof in particular. It may be noted that Census of India has published detailed data on materials used in constructing residential dwellings. Census of India (2011) has also classified roof materials used for residential houses into nine broad types; Grass/Thatch/Bamboo/Wood/Mud; Handmade Tiles; Concrete; G.I/Metal/Asbestos Sheets; Machine Made Tiles; Stone /Slate: Burnt brick; Plastic/Polythene and Other materials.

## Material of Roof Used in Rural India

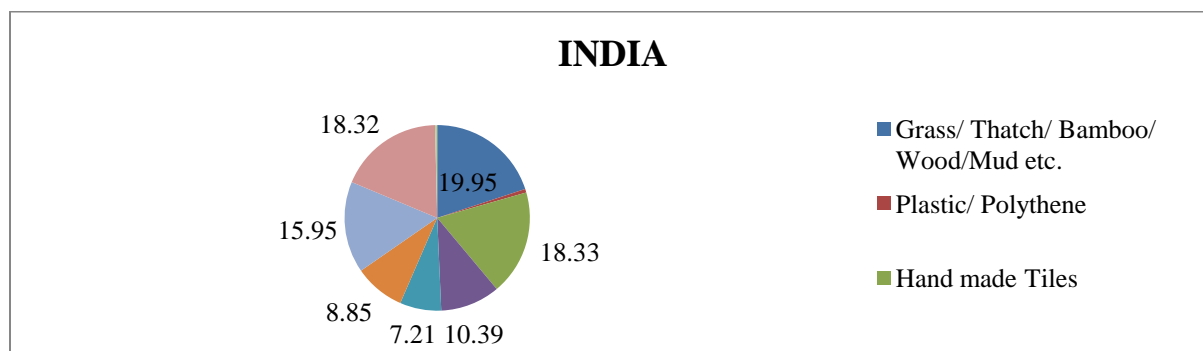
It is recorded that nearly one/fifth of the total houses have used

Sr. No.	Material of Roof	Number of Households	In Per cent
1.	Grass/Thatch/Bamboo/Wood/Mud etc.	33488428	19.95
2.	Hand Made Tiles	30778785	18.33
3.	Concrete	30747815	18.32
4.	G.I/Metal/Asbestos Sheets	26775354	15.95
5.	Machine Made Tiles	17441636	10.39
6.	Stone /Slate	14861263	08.85
7.	Burnt Brick	12112030	07.21
8	Plastic\Polythene	1054923	00.63
9.	Other Materials	614057	00.37
<b>Rural India</b>		<b>167874291</b>	<b>100.0</b>
Source: Census of India. Compiled by Authors.			



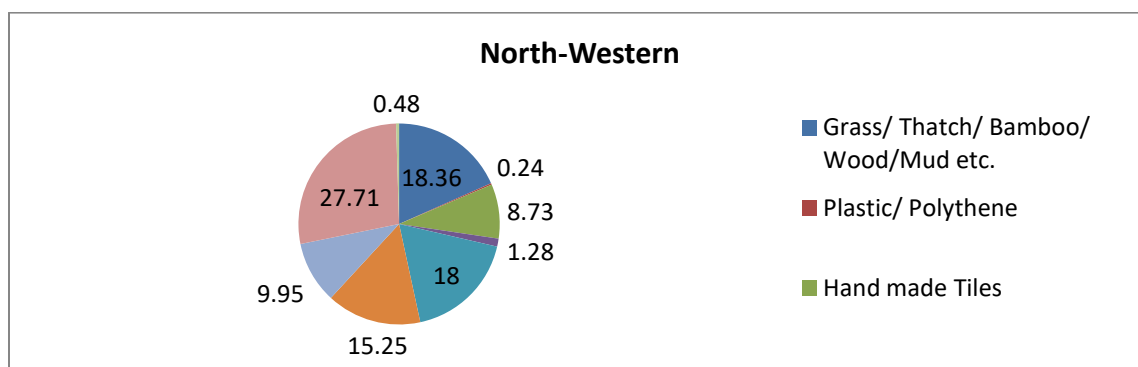
Grass/Thatch/Bamboo/Wood/Mud as roof material in rural India followed by Handmade Tiles (18.33 %) and Concrete (18.32 %) in 2011 [Table-1].

Similarly, the proportion of houses using G.I/Metal/Asbestos sheets and Machine Made Tiles as roof material was 15.95 per cent and 10.39 per cent respectively. While 16 per cent houses used Stone/Slate and Burnt Bricks of the total houses in rural India. Only one per cent houses used Plastic/ Polythene and other materials. Diagram (1.1)



#### Region- Wise Used Roof Materials in Rural India

It is recorded that the maximum houses roof are made of (19.95 %) Grass /Thatch/ Bamboo\wood\mud etc., followed by handmade tiles (18.33%) Concrete (18.32 %), GI/Metal \Asbestos sheets (15.95%), Machine made tiles (10.39 %), Stone\ slate (8.85 %), Burnt Brick (7.21%) and Plastic/ Polythene (0.63%) in rural India.



It has been observed that 19.95% of the houses in the study region have used grass\thatch\bamboo\wood\mud etc. as roof material.

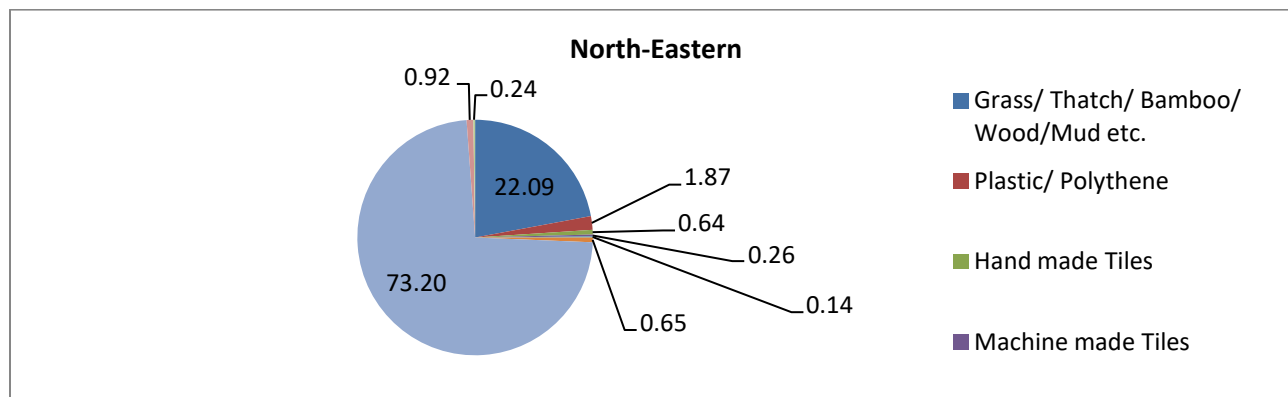
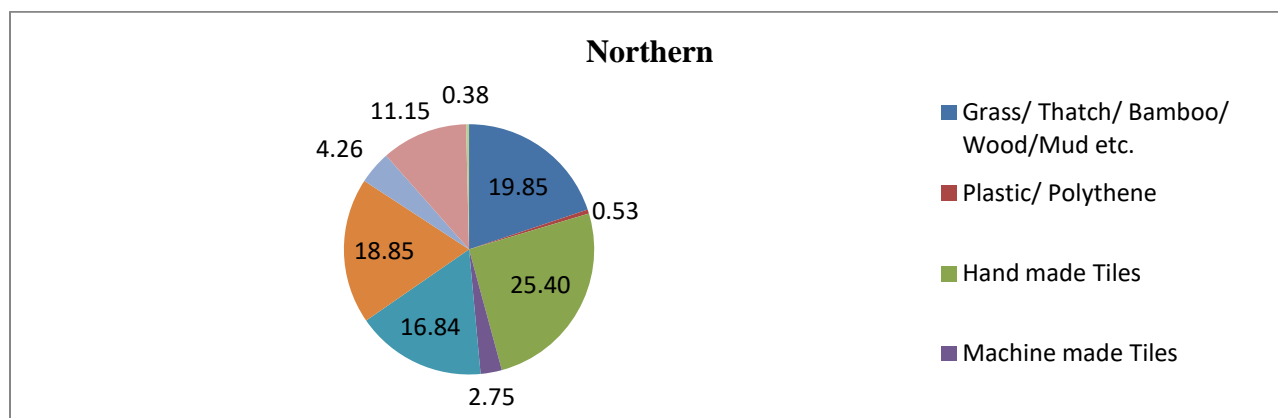
Sr. No.	Name of Material	North Western	Northern	Eastern	North Eastern	Western	Southern	Islands	India
.									



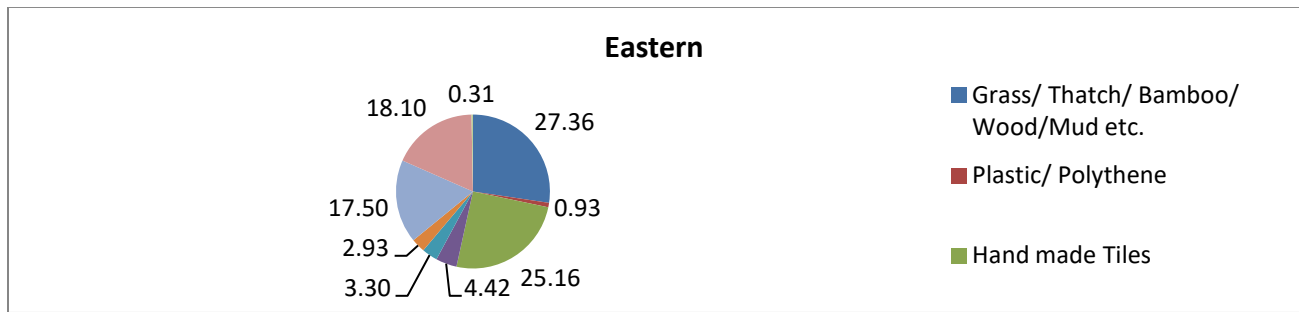
1.	Grass/Thatch/ Bamboo etc.	18.36	19.85	27.36	22.09	6.97	18.30	7.86	19.95
2.	Concrete	27.71	11.15	18.10	0.92	16.43	31.24	5.50	18.32
3.	Handmade Tiles	8.73	25.40	25.16	0.64	12.43	9.18	0.07	18.33
4.	G.I/metal	9.95	4.26	17.50	73.20	34.13	10.52	82.76	15.95
<b>Total</b>		<b>64.75</b>	<b>60.66</b>	<b>88.12</b>	<b>96.86</b>	<b>69.96</b>	<b>69.24</b>	<b>96.82</b>	<b>72.55</b>

Source: Compiled by Author.

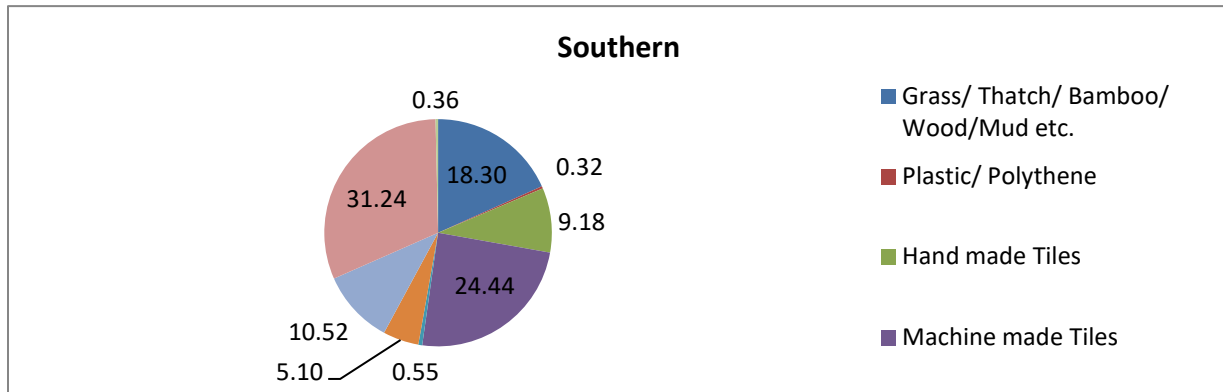
However the percentage of such houses was relatively high that is 27.36 % in eastern region followed by north-eastern (22.09 %), Northern (19.85 %) and north-western (18.36 %) region in rural India.



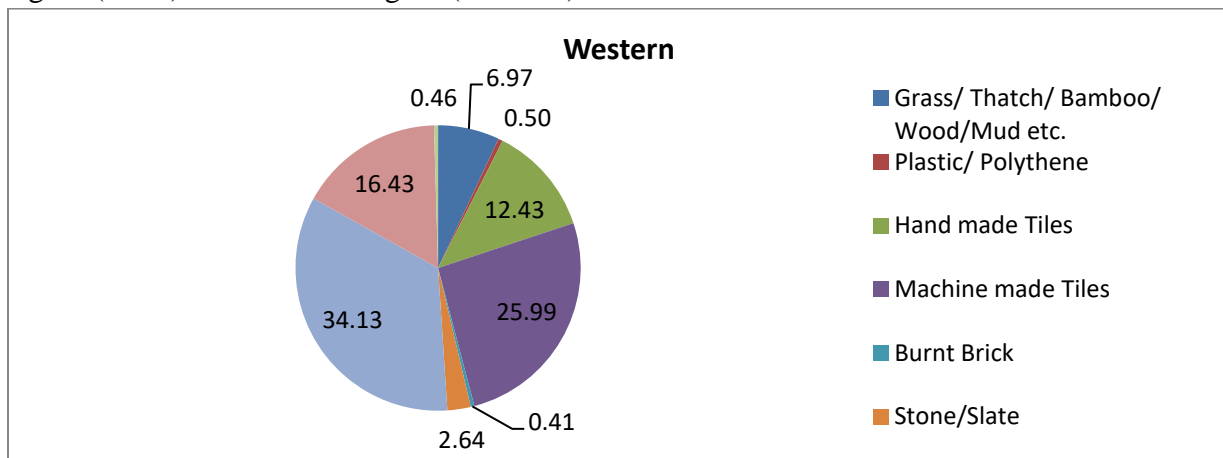
Similarly, the proportion of houses using handmade tiles as wall material was 18.33 % in rural India. About 25.40 % residential houses in northern part and 25.16% in eastern region, 12.43 % in western region have used as roof materials.



The houses using concrete as roof material accounted for 18.32% in the study region and 31.24% of the houses in southern region followed by 27.71% in north-western and



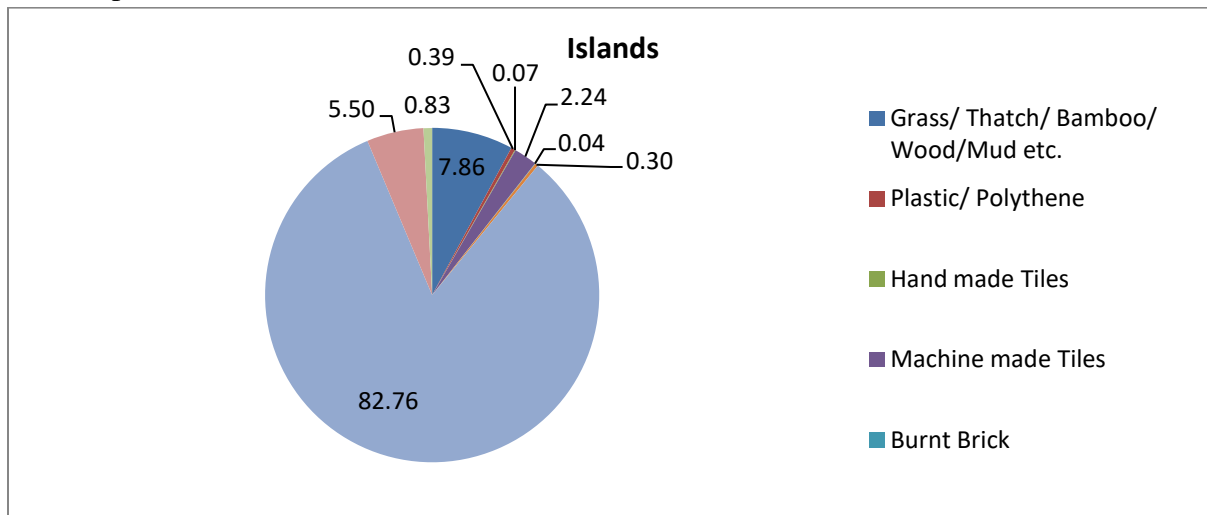
only 18.10% of the houses in eastern region followed by 16.43 % in western region in rural India. GI/metal asbestos sheets as roof material has been used in 15.95% of the houses in the region as compared to Islands region (82.76 %). Machine made tiles used in western region (25.99 %) and southern (24.44 %) region in rural India. Burnt brick used in northern western region (18 %) and northern region (16.84 %) in rural India.



While the roof of the houses (82.76 %) in islands and (73.20 %) southern eastern region is made of GI/metal asbestos sheets. On the other hand stone/slate are maximum used by 18.85 % in northern region, followed by 15.25 % northern western region, only 1 % houses have used



different sources of roof like, plastic/polythene 0.63 % and any other materials 0.37 % in rural India as per 2011.



## Conclusion

According to census of India 2011, burnt brick, concrete, mud, grass/thatch/bamboo etc. and cement material is mostly used and any other material is used very less proportion of all type of used materials in roof, wall and floor. It has been observed that 19.95% of the houses in the study region have used grass\thatch\bamboo\wood\mud etc. as roof material. However the percentage of such houses was relatively high that is 27.36 % in eastern region followed by north-eastern (22.09 %), Northern (19.85 %) and north-western (18.36 %) region in rural India. Similarly, the proportion of houses using handmade tiles as roof material was 18.33 % in rural India. About 25.40 % residential houses in northern part and 25.16% in eastern region, 12.43 % in western region have used as roof materials. The houses using concrete as roof material accounted for 18.32% in the study region and 31.24% of the houses in southern region followed by 27.71% in north-western and only 18.10% of the houses in eastern region followed by 16.43 % in western region in rural India. GI/metal/asbestos sheets as roof material has been used in 15.95% of the houses in the region as compared to Islands region (82.76 %). Machine made tiles used in western region (25.99 %) and southern (24.44 %) region in rural India. Burnt brick used in northern western region (18 %) and northern region (16.84 %) in rural India. While the roof of the houses (82.76 %) in islands and (73.20 %) southern eastern region is made of GI/metal \asbestos sheets. On the other hand stone/slate are maximum used by 18.85 % in northern region,





followed by 15.25 % northern western region, only 1 % houses have used different sources of roof like, plastic/polythene 0.63 % and any other materials 0.37 % in rural India as per 2011.

## References

1. Ali,S.M. (1942), 'Population and Settlement in the Ghaggar Plain', **Indian Geographical Journal**, Vol.17, pp.157-182.
2. Ahmad, A. (1999), **Social Geography**, Rawat Publications, Jaipur.
3. Census of India (2011): **Primary Census Abstract**, India, CD, New Delhi.
4. Census of India. (2011), **Tables on Houses, Households Amenities and Assets**, HH-Series, New Delhi.
5. Chamar, K.V. (2002), "Rural Dwellings and House Types in Desert Land of Haryana: A Case Study of Bhiwani District", **Transaction, Institute of Indian Geographers**, Vol. 24, No. 1&2, pp. 53-62.
6. Chamar, K.V. and Chamar, S.K. (2013), "Rural Dwellings and House Types in Village Sirsa Kheri: A Case Study", **Eastern Geographer**, (ISSN: 0973-7642) Vol. XIX, No. 1, Jan, pp. 97-104.
7. Mishra, S.N. (1969), 'Human Dwellings in Sonpur Region,(U.P):A Geographical Analysis', **The National Geographical Journal Of India**,Vol.16,pp.8-23.
8. Mitra, A. (1966), "Report On House Types and Village Settlement Patterns in India", Census of India, (1961), Vol., Part IV- A (iii), New Delhi.
9. Subrahmanyam, K.M. (1938), "Four Main House Types in South India", **Journal of Madras Geographical Association**, Vol. XIII, p.168.
10. Sharma, R.C. (1964), "Western Rajasthan: A Study of House Types", **National Geographer**, Vol. III, p. 48.
11. Sinha, V.N.P. (1969), "House and House Types of the Chotanagpur Plateau", **Geographical Knowledge**, Vol. 2, p. 91.
12. Singh A.K. (1985), "Ballia District: A Study in Rural Settlement Geography", **NGSI**, Varansi.
13. Sharma, J.P. (1975) 'Rural Dwelling and House Types in The Himalayan Ravi Chenab Interfluves', **Geographical Review Of India**.pp.30-41.
14. Sinha, V.N.P. (1969), 'Houses and House Types of the Chotanagpur Plateau', **Geographical Knowledge**, Vol.1.2..
15. Singh, S.B. (1976), 'Rural Dwelling in The District Of Sultanpur', **Indian Journal Geography**; Vol.11-12, pp11-18.
16. Unni(1965), 'Social Factors in Housing' in The Rural Habitat, David Oakley, New Delhi.