



# The Eastern Nayar Watershed: A Study Of Occupational Change

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## ABSTRACT

Occupational structure, one of the important characteristics of population, which helps to understand a region's standard of living, sources of income, and level of socio-economic development. The occupational classification primarily relates to several branches of activity depending on the type of organization, a product produced, or a service provided. For ease of analysis of information in this regard, it is divided into three occupational activities namely the primary, secondary, and tertiary. In addition, the participation of workers is also a key factor in a region's economic development; therefore, understanding the proportion of workers among the varied occupations in a region is significant. The proportion of workers who are economically employed in various occupations determines a region's socio-economic progress. For the present study, the Eastern Nayar watershed in the Garhwal district was selected and the purpose was to examine the rate of changes in the occupational structure as well as the shift of the workers from agricultural to non-agricultural activities. In order to achieve the aims of the study, main and marginal workers are taken into account, which was further subdivided into four workers categories. The result shows that the agricultural economy of the watershed employs 77.67 percent of its workforce. However, with the advancement of technology and new government policies, there is a slight shift in workers' percentages in various occupational structures.

**KEYWORDS:** Occupational Structure, Socio-Economic Development, Workers, Agricultural and Non-Agricultural Activities.

## 1. INTRODUCTION

Man engages in a number of activities in his everyday life in order to meet his economic needs. The nature of these economic activities varies by location and region. Because it is difficult to analyse all the individual activities of the man, they are classified as cultivators, agricultural workers, household industrial workers, manufacturing industrial employees, construction, trade and transport, service, and other activities for viable analysis (Teli, 1991). According to the 2011 Census of India, "economic activities are subdivided into agricultural laborers, cultivators, household industrial workers, and other workers".

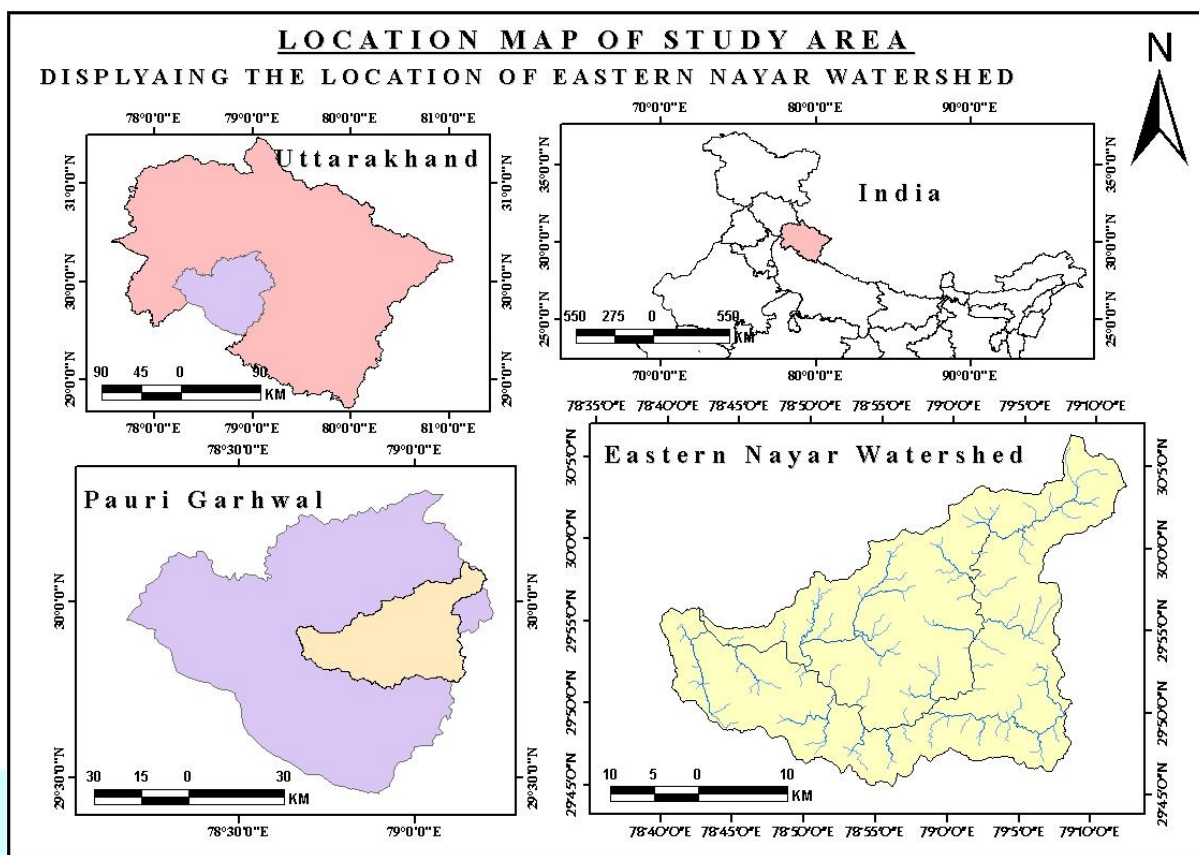
Another important characteristic of a population is its occupational structure that helps to understand a region's standard of living, stage of development, patterns, sources of income generation, economic achievements and failures, population quality, education patterns, and human capital formation, and so on (Ghosh, 1985). Employment in various economic activities provides information about the occupational structure. In an agrarian economy, agriculture and related activities engage the majority of the working population. As a result, the economy has exhibited a high reliance ratio and a poor level of economic diversification. "The occupational structure is the unified relationship of an area's three occupational components (Clarke, 1977) - primary, secondary, and tertiary sectors working population - that constitute the core of the economic system. The most important social attribute of a given individual or group is occupation" (Paul, 2008). It is highly relevant for population analysis because the nature of work influences both the physical and cultural surroundings to a large extent. Agricultural cultivators, laborers, grazing, forestation, fishing, hunting, mining, and quarrying are examples of primary activities that extract a substance directly or indirectly from nature. Manufacturing, energy, and construction are examples of secondary occupations. It is a technique for transforming a single material or combining several materials into more useful or desired products such as manufacturing, handicrafts, and factory products in which the shape, size, utility, and qualities of the goods materials are modified through the process of reproduction. Tertiary activities support and provide the necessary infrastructure for primary and secondary activities. This category includes transportation and communication, commercial activities, legal advisers, the supply of technical and non-technical labour, the provision of scientific and technological know-how, and so on. This industry offers services rather than commodities.

The occupational structure of the region is the result of a combination of interrelated activities, including agriculture, domestic industry, development and urbanization. If the economy of an area is based on primary activities, especially agriculture, then the possibilities of business diversification in that area will be very less (Godara & Godara, 2020). However, when the size, shape, utility, and quality of materials derived from the primary activity are modified through a process of reproduction, the occupational structure diversifies. This diversification process is further aided by secondary activities, which provide a variety of employment opportunities. As science and technology improve and develop, they bring specialization into the occupational structure by creating highly specialized jobs. All these innovations are promoting a new socio-economic culture that is largely service oriented. It significantly changes the occupational structure (Chandna, 1986). The importance of a region's occupational structure is based on the fact that it clearly indicates the socio-economic qualities of the individuals who reside in that region. As a result, it is one of the most important indicators of the region's socio-economic development.

## 2. STUDY AREA

Eastern Nayar watershed lies in the eastern part of the Garhwal district, with latitudes ranging from 29°45' to 30°8' north and longitudes ranging from 77°40' to 79°10' east, covering an area of 1010 km<sup>2</sup>. With successive mountain ranges and river valleys, the entire region is mountainous. The elevation ranges from 565 metres to 3119 metres above sea level. The Gorakhnath Formation, the Chaura Formation, the Dudhatoli-Purola Formation, the Chandpur Formation, the Bijni-Mandali Formation and the Nilkanth Formation etc. are the geological features

of the watershed. More than 70 percent of the watershed is made up of the rocks belonging to Nagthar, Gorakhnath, Chandpur and Bijni-Mandali formations.



**Fig. 1. Location Map of Eastern Nayar Watershed**

Eastern Nayar is the major tributary of the Nayar river which originates from Dudhatoli and meets with Western Nayar at Satpuli. The Eastern Nayar watershed is also one of the most prominent watersheds of the Nayar basin, with a diverse range of landforms. Dense forest, open forest, and scrubs make up the vegetation in this area. Dudhatoli, Kainyur, Gabini, Chanchariya, Ameli, Buraspani, Lakhaura, Pachpola, Dibadanda, Malana, Gwari, Chhetra, and Kauriya Reserved Forests are among the protected areas. The climate in the watershed varies from subtropical to alpine, with hot summers, mild winters, substantial rainfall in the monsoon, and high-temperature variation. Rainfall in the watershed is mainly received during the monsoon season and is also brought by western disturbances in winter.

### 3. OBJECTIVE

- i.) To analyse the changes and rate of changes in the occupational structure of the watershed over the last decade 2001-11.
- ii.) To analyse the shift in employment from agricultural to non-agricultural activities.
- iii.) To evaluate the growth of workers in various categories from 2001 to 2011.

### 4. METHODOLOGY

The present paper concentrates on secondary data. The data mode was selected in accordance with the needs of a specific theme. The necessary data were obtained, analysed and processed in accordance with the objectives of the study. The essential data on the occupational structure was retrieved from the Census of India 2001 and 2011, as well as the District Statistical Handbook released by the Economic and Statistical Department, Garhwal. All aspects have been presented in a meaningful cartographic manner using relevant approaches and procedures.

The data was analysed on computers using a variety of statistical programmes, including the software SPSS. Diagrams have been created to illustrate the processed data.

## 5. RESULT AND DISCUSSION

### 5.1. Occupational structure

It is essential to include the working population as a primary parameter in the occupational structure of rural settlements, as the working population plays an active part in the region's economic development (Kadam & Rathod, 2013). For the sake of ease and to minimize confusion, the functional activities of the study area have been regrouped under three occupational activities listed below:

**Table.1 Occupational Structure of Study Area 2011**

| S. N. | Functional Activities (Census of India 2011) | Regrouped          |
|-------|--|--------------------|
| 1     | Cultivators                                  | Primary Activities |
| 2     | Agricultural Labourers                       |                    |
| 3     | House Hold Industry                          | Secondary Activity |
| 4     | Other Services                               | Tertiary Activity  |

### 5.2. Occupational structure of population in the Eastern Nayar

The present study was conducted to examine occupational structure dealing with both total working and non-working populations of the watershed. The population of the watershed is divisible into three groups of workers, viz., main, marginal and non-workers. Total workers comprise main and marginal workers. The proportion of total workers to the total population involved in various economic activities in a particular area is an indicator of its socio-economic development. Given the study area's workforce status, it is quite evident that out of the total population, 46.11 percent (i.e., total workers) were involved in productive activities, while the remaining 53.89 percent were non-workers (table-2). The percentage of non-workers is quite high, indicating a high dependency ratio. Table-2 reveals that in 2011, one-fourth (26.48%) of the total population was classified as main workers, while 19.63% were classified as marginal workers. This indicates that among the total workers, the main workers are more than the marginal workers. The main workers are mostly cultivators because the area is predominantly agricultural and people work in activities related to agriculture. During the last decade, from 2001 to 2011, the occupational structure of the watershed experienced major change. In 2011, the share of total workers was calculated to be 46.11 percent of the total population. Between 2001 and 2011, the percentage of both main and marginal workers increased by around 1.48 percent and 3.45 percent points, respectively (Table-2 and Fig.2).

**Table-2 Percentage of Worker and Non-worker Population in the Watershed, 2001 And 2011**

| Categories       | 2001  | 2011  | 2001-11 |
|------------------|-------|-------|---------|
| Main workers     | 25    | 26.48 | 1.48    |
| marginal workers | 16.18 | 19.63 | 3.45    |
| total workers    | 41.18 | 46.11 | 4.93    |
| non-workers      | 58.82 | 53.89 | -4.93   |

Source: *Census of India 2001 and 2011*

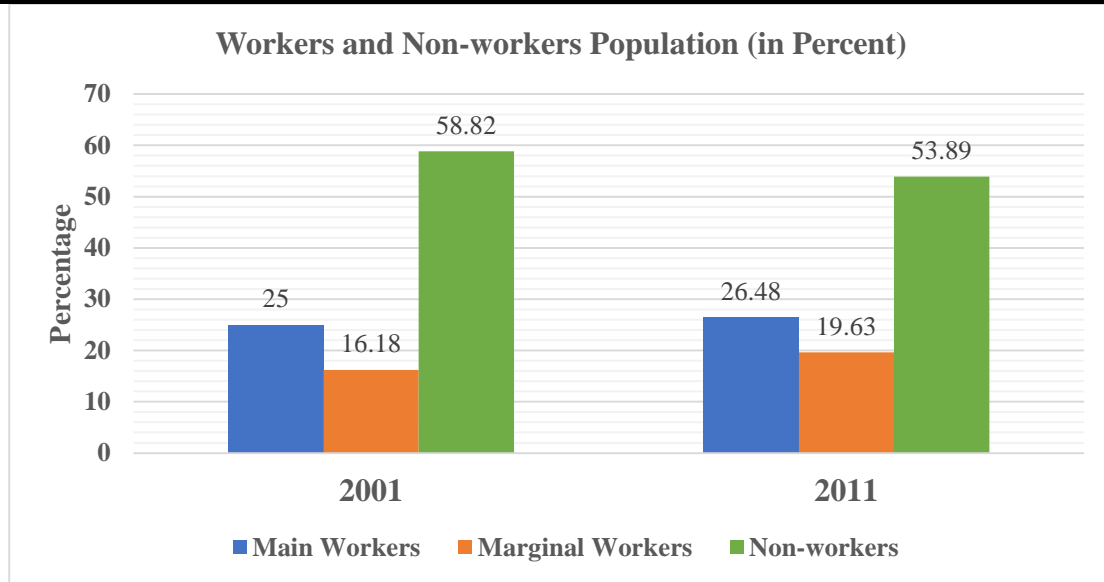


Fig. 2

According to the table.2, the total working population of the watershed increased by 4.93 percent in 2011 as compared to the previous census. This can be linked to new job opportunities in the region, a decrease in population growth as well as migration of rural people in search of work and other possibilities in urban areas. According to the 2011 census, the total workers account for 46.11 percent of the total population. Out of the total workers population of the watershed, 26.48 percent are main workers and 19.93 percent are marginal workers. It is important to highlight that, despite a decline of 4.64 percent in main workers between 2001 and 2011, the percentage of main workers to total workers increased. Main workers accounted for 25 percent to the total workers in 2001, which increased by 1.48 percent to 26.48 percent in 2011. However, the proportion of marginal workers was 16.18 percent in 2001. Which increased to 19.63 percent of the total workers in 2011 at a decadal growth rate of 3.45 percent. The share of non-workers is quite high in the watershed, accounting for 53.89 percent of the total population, indicating a decline of 4.93 percentage points during 2001-11. The high proportion of such workers indicates high dependency, unemployment and limited job opportunities. As a result, there are more dependents, and population pressure on families is high. This leads to a lower standard of living.

### 5.3. Decadal growth of workers

In the watershed, analysis of the changes in the growth of the total workers reveals an upward trend in the decadal growth. Between 2001 and 2011, the total workers increased at a decadal rate of 0.82 percent. However, there was a drastic decrease in the percentage of main workers between 2001 and 2011, with a negative decadal growth rate of -4.64 percent, the greatest among all worker categories (Table-3). It can be linked to the increase in the watershed's level of unemployment, migration, less socio-economic development of the populace and lack of industries.

**Table-3: Decadal Growth of Workers 2001-2011 (in percent)**

| Categories       | 2001-11 |
|------------------|---------|
| Main Workers     | -4.64   |
| Marginal Workers | 9.26    |
| Total Workers    | 0.82    |
| Non-Workers      | -17.50  |

Source: *Census of India 2001 and 2011*

However, the decadal growth of main workers did not match that of marginal workers. During the decade 2001-2011, the percentage of marginal workers increased at a significant rate of 9.26 percent. Non-workers in the watershed experienced a decadal negative growth rate of 17.50 percent between 2001 and 2011. This was due the growth of the population is high and mortality rates are low, senior citizens and children are included in this category and the number of villages having non-workers has increased over the last decade. The non-worker growth pattern indicates high unemployment and dependency population in the study area.

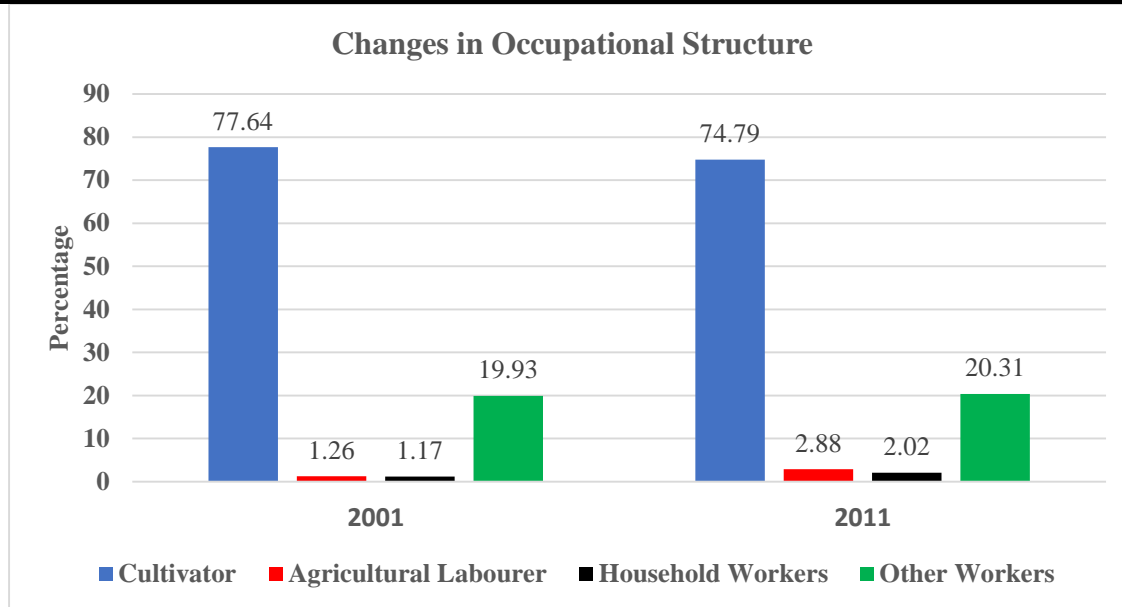
#### 5.4. Changes in the occupational structure

Following independence, the Indian economy began to diversify. As a result, changes in occupational structure have occurred in tandem with economic expansion, although at a slow pace. Because of these economic changes, there has been a rapid expansion in the secondary and tertiary sectors of the occupational structure. As a result, the percentage of cultivators has decreased. Furthermore, as a result of inheritance laws, the small size of agricultural land holdings has started the process of reducing marginal farmers or farmers with unprofitable holdings (Godara & Godara, 2020). The study area reflects the changes in traditional occupational structure that took place at the national and state levels. According to the Census 2001, the share of cultivators to the total workers was 77.44 percent in the study area. This share of cultivators dropped to 74.79 percent in 2011 (Table 4 and Fig.3) As a result, the watershed witnessed a declining decadal growth rate of -2.87 percent between 2001 and 2011. The main reason for the decrease in the number of cultivators is the inclination of local people towards non-agriculture activities including jobs, over agriculture because agriculture is neither considered a source of employment nor generates income, therefore agricultural activities are performed only for subsistence. The following are the reasons behind the decreasing interest of people towards agriculture; traditional agriculture, the less and inferior yield from agriculture, damage to crops by wild animals, climate change and migration etc. Furthermore, the growth of education in the watershed has played a significant role in shifting people away from agriculture and towards non-agricultural activities.

**Table-4 Changes in Occupational Structure in the Study area (2001 and 2011)**

| Categories            | 2001  | 2011  | Change in Percent |
|-----------------------|-------|-------|-------------------|
| Cultivators           | 77.64 | 74.79 | -2.85             |
| Agricultural Labourer | 1.26  | 2.88  | 1.62              |
| Household Worker      | 1.17  | 2.02  | 0.85              |
| Other Workers         | 19.93 | 20.31 | 0.38              |

Source: Census of India 2001 and 2011



**Fig. 3**

Table-4 and Fig.3 indicate that the proportion of agricultural labourers and household workers and other workers is low compared to that of the cultivators. The share of agricultural labourers increased. It increased from 1.26% in 2001 to 2.88 % in 2011. Although this growth was nominal, it corresponded to a shift in the conventional occupational structure of agriculture and allied sectors. The household industry in the study area is in miserable condition due to insufficient resource utilization and a lack of awareness among rural residents. Though, positive changes were observed in the proportion of workers involved in household industries. The proportion of workers employed in the household industry was 1.17 percent in 2001 and increased to 2.02 percent in 2011. Between 2001 and 2011, the decadal growth rate of such workers was 73.69 percent (Table 5 and Fig. 4). Household industries are traditionally associated with functional castes such as Lohar, Tamta, Koli, Mistry and Das, etc. Woollen-based, agro-based, timber-based, and livestock-based businesses are all important household industries.

**Table-5 Decadal Growth of Workers 2001-11**

| Categories            | 2001-11 |
|-----------------------|---------|
| Cultivators           | -2.87   |
| Agricultural Labourer | 130.85  |
| Household Worker      | 73.69   |
| Other Workers         | 2.74    |
| Cultivators           | 0.82    |

**Source: Census of India 2001 and 2011**

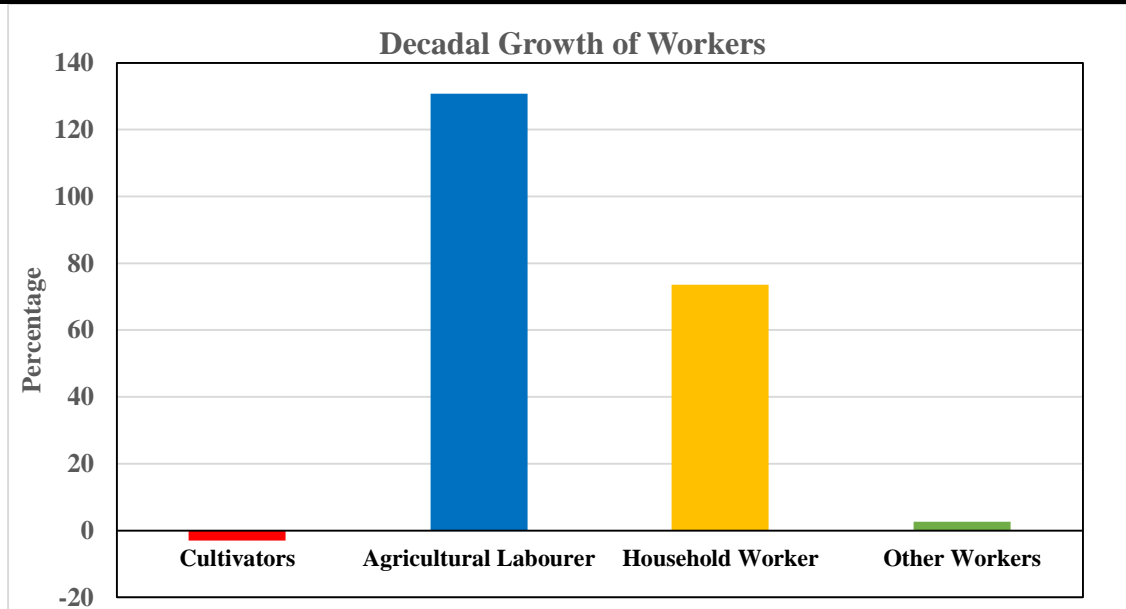


Fig.4

Similarly, the proportion of other workers increased from 2001 to 2011. In 2001, the share of other workers was sizable, accounting for 19.93% of all workers. The percentage of other workers increased to 20.31 percent in the 2011 census, representing a 2.74 percent decadal growth rate from 2001 to 2011. Except for cultivators, all the other three categories of workers demonstrated a positive result growth rate during 2001-11 in addition to the share of workers to total workers, implying that workers shifted from traditional agricultural occupations to other diverse forms of economic activities such as industries, private sector and government sector, and etc. Furthermore, agriculture is unprofitable for sustaining the farmers and their entire families. This also highlighted the shift from agricultural to non-agricultural activities in the watershed.

### 5.5. Shift from agriculture to non-agriculture activities

The number of the workforce and its distribution into various economic activities are evident indicators of the social status of the area population. The trend in the workforce and their proportion in various occupational categories vividly reflects the changing pattern in the occupational structure of a region (Godara & Godara, 2020). According to the 2001 census, the share of workers involved in agricultural activities was 78.90 percent, which includes both cultivators and agricultural laborers. However, in 2011, the share of these workers dropped to 77.67 percent of total workers, indicating a declining trend. This clearly suggests a significant shift in proportion of workers from agriculture to non-agricultural sectors.

**Table-6 Agricultural Workers and Non-Agricultural Workers in the Study area (As percentage to total workers), 2001-2011**

| Categories               | 2001  | 2011  | 2001  | 2011  |
|--------------------------|-------|-------|-------|-------|
| Agricultural Workers     | 43761 | 43435 | 78.90 | 77.67 |
| Non-Agricultural workers | 11704 | 12486 | 21.10 | 22.33 |

Source: *Census of India 2001 and 2011*

Workers engaged in non-agricultural activities, which include both those employed in household industries and other workers, exhibited an increasing tendency throughout the corresponding period. With an increasing trend, the workforce involved in non-agricultural activities increased from 21.10 percent in the 2001 census to a substantial 22.33 percent in 2011, representing a gain of 1.23 percent points.



## 6. CONCLUSION

An upward trend can be observed when the increase in the working population in the Eastern Nayar watershed is analysed. Between 2001 and 2011, the total number of workers (main and marginal) recorded a decadal growth rate of 0.82 percent. The main workforce, however, had a drastic decline from 2001 to 2011 including a decadal growth rate of -4.64 percent. This can be due to the increase in the watershed's level of unemployment, migration, less-economic development of the populace, and lack of industries. The percentage of cultivators to total workers decreased by -2.85 percent points between 2001 and 2011, while agricultural laborers increased by 1.62 percent points, household industries by 0.85 percent, and other workers by 0.38 percent points, denoting a shift of workers from the agricultural sector to non-agricultural activities like government and private jobs, trade, and commerce, etc. The reasons for the decrease in the number of cultivators are education, low yield due to traditional methods of farming, the dependence on rain, lack of economic benefits from farming, etc. Considering the broad industrial categories of workers, between 2001 and 2011, those employed in the household sector witnessed a decadal growth rate of 73.69 percent, contrary to a decline of 2.87 percent within cultivators. The 2.74 percent decadal growth rate was recorded by the other workers. The study above reveals clearly that there is a slight shift in workers from agricultural to non-agricultural sectors.

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