

# Status of Household Stone Carving Industry in Agra City of Uttar Pradesh: A Spatio-temporal Analysis

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## ABSTRACT

The study has done in Agra City where the lack of awareness among the people and workers of the stone carving industry creates major issues and restrict the proper development of this industry. To know the present status of the stone carving industry the present study has done and collected the secondary sources of data from the District Industries Centre Agra, Agra Nagar Nigam etc. In this study we found that the stone carving industry growth is stagnant from 2011-2019 and the major concentration is found in south-east part of the city. This industry is major cause for solid waste production in the city. stone carving industry has a huge potential for further employment after the proper development of this industry. The finding has the implications, that there is a need to government has the responsibility to prohibit the all those things which is the cause for restriction in the growth of stone carving industry.

**KEYWORDS:** Development, solid waste, Household stone carving industry

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## INTRODUCTION

Stone carvings are the earliest Figurative artworks still in existence. Often, unlike painted work, marks cut into rock or petroglyphs will persist. Venus Figurines from the prehistoric era, like the Venus of Berekhat Ram, are made of tuff and limestone and could be as old as 800,000 years. Although more resilient materials like antlers have occasionally been used for relatively soft stone, these early carvings on stone are the result of striking or scratching softer stone with a harder one. A different early method for removing the undesirable portion from the stone was rubbing it with an abrasive. All stone carving was done using an abrasion process before any culture discovered steel after rough hewing the stone block with hammers. The reason for this is that only the softest stones can be worked with bronze, the hardest metal on hand before steel.

The passion for stone has persisted throughout history, but the Mughal era, when the Taj Mahal was built, saw this craft in Uttar Pradesh reach creative heights of excellence. When the Tajmahal was being

built, it is thought that the first expert artisans arrived from Iran and Afghanistan. They settled in Agra and passed on their knowledge of marble carving to the primarily Muslim population there, as well as later to other communities. Agra is the only location in the world, excluding Florence in Italy, where all types of marble inlay work are skillfully completed.

Two stone craft traditions from Agra are well-known. The oldest of these is carving in stone. It is carried out on the medium-hard stone. The preferred material is soapstone. It comes in a variety of colours, including grey, pink, and yellow, and is sourced from Madhya Pradesh and Rajasthan. On the outskirts of the city, factories cut and roughly shape large blocks of soapstone. Skilled artisans who live in the city of Agra perform the carving job. Fine designs are carved with very simple tools. The artisans are also experts at the "undercut" method, which involves carving out forms inside of other forms. The stone carving of Agra, which was once used in significant architectural

applications, is now primarily done on little objects like jewellery boxes, vases, and lamps.[1]

The city of Agra in the Indian state of Uttar Pradesh is renowned for two types of stone carving: Pacchikari, or the art of setting precious and semi-precious stones into marble, and the Jali work, or stone tracery, which is created from a single piece of marble. The Jali, or Jaali as it is known in Hindi, is a fine marble filigree that has been intricately and skillfully carved to resemble the fretted surface of stone lattices. Two unique symmetrical designs tend to cross each other in these types of stone tracteries before blending to create an unending network of geometrical combinations. These patterns were frequently created by duplicating and repeating a single unit or design over and over again in order to create the screen's symmetrical pattern. The Mughal emperors established this beautiful skill of stone tracery on a huge scale at Agra during the Middle Ages. In addition to serving as decoration, the Jali provided unrestricted airflow, which is essential given the severe climate of northern India. Although geometrical patterns predominate in many Jali works seen throughout India because they are simpler to carve, there are also some examples of motifs based on vegetation in the stone works of Ahmedabad.

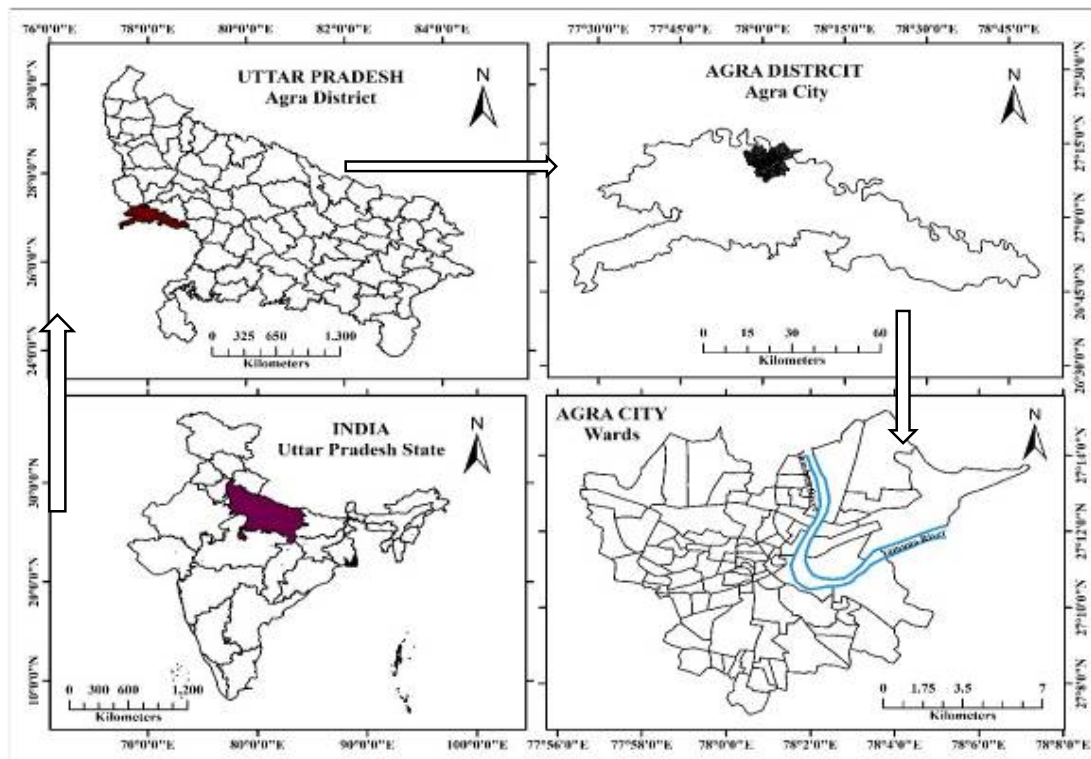
Being the major hub for stone carving, Agra is renowned for its marble mosaic, inlay work, and fretwork made of perforated stone. Even though stone jali work is almost exclusively used for architectural purposes, there is a small marble trade in Agra where the craftsman often uses the same marble carving techniques to create small fret-cut boxes and other items like lamp shades and ornamental boxes that are specifically made for the tourist trade.

There are around 25,000-30,000 marble carvers or inlay craftsmen in Agra or even more than that who

continue to live around the Tajmahal in slum colonies in the Nai ki Mandi, Gokulpura area. About 30,000 artisans, the living force behind this age-old tradition, can be found creating wonders from stone in these areas. The marble and stone craft Industry contributes 100 cr. Rs. of turnover of Indian marble and stone craft industry, the share of exports turnover is 50% of total turnover that is 100 cr. Rs. This is because of the huge global demand. [4]

## STUDY AREA

Agra is a city in India's Uttar Pradesh state, located on the banks of the Yamuna River. It's 206 km (128 mi) south of the city of New Delhi, India's capital. Agra is the 4th most populated city in Uttar Pradesh and 24th most populous city in India. Agra is one of the western cities of Uttar Pradesh. The latitudinal and longitudinal extension of city lies between the 27.0554° north to 27.1430° north latitude and 77.5240° east to 78.0449° east longitude. The study area like Agra is economically forward where the level of development is as good as compare to the other city of the western up. Agra is a popular tourist city because to its several Mughal period structures, including the Taj Mahal, Agra Fort and Fatehpur Sikri, which are all UNESCO World Heritage Sites. Agra is one of the three cities that make up the Golden Triangle tourism circuit, which also includes Delhi and Jaipur, as well as the Heritage Arc of Uttar Pradesh, which includes Varanasi and Lucknow. The Braj cultural region includes Agra. The city has huge number of stone carving household industries to provide the livelihood condition. Therefore, the large number of nearby village people is migrating to city to earn the good amount of money and sustain the livelihood. As a result of this, the encouragement of household industries in Agra city is some extent to provide the employment for the city and rural people to sustain their livelihood.[3]



**Fig. 1 Study Area Map drawn with the help of GIS Arc View 10.2.3**

## OBJECTIVES

The study set out the status of the household stone carving industries in the city with the objectives of to find out the present status of household stone carving industry in the city; examine the nature of household stone carving industry development pattern in the city.

## METHOD OF DATA COLLECTION

This paper primarily based on the secondary source of data which is collected by government organizations like, Agra Development Authority (ADA), Agra Municipal Corporation, DIC-Agra, Ministry of SSI Report and online Published journals etc.

### A. Processing

After completion of data collection, the individual slip was processed and data were converted into the tabular form for categorization of data and preparing thematic maps.

### B. Analysis

Processed data were statistically presented for logical analysis. Both quantitative and qualitative methods were used in the present study. M.S. Office and other computer-based techniques were used for mapping, analyses. The finding was obtained on the basis of analysis.

### C. Problems Face During Data Collection

It is very difficult task to collect the data from government organizations. They always said this data has no access to third party. After many visits, they provide data.

## Stone Carving Products

In Agra during the Middle Ages, the Mughals introduced the makrana marble carving as decorative art. Since then, the city has become renowned for its stone crafts. However, the delicate carving of jaali, or fretted stone lattices, demonstrates the true mastery of Agra's artisans. A fretted stone work called jali incorporates Persian design elements with geometrical designs. The Mughals used this style of stone carving to highlight the beauty of both Persian and Indian arts by utilising various geometrical shapes. It was based on the idea of the paradise effect. A small group of Agra craftsmen have adopted the technique of fretted stone work to produce items like ornamental boxes, incense boxes, and lamp shades of various grades, especially for the tourist trade, despite the fact that this type of stone jali work was originally intended for architectural purposes. Alabaster products such as table lamp shades, containers, fret boxes, decorative items in the shape of eggs, and numerous other nesting animals like elephants, owls, and tortoises are also produced in Agra. [7]

## Characteristics of Stone Carving and their Components

Marble, gorara soapstone, and occasionally cuddapah are the primary stone crafting materials in Agra. In the stone carving industry, adhesive, colours, ruby, manik, dye, and grease are also used. When cutting, grinding, buffing, and polishing stone, Agra's artisans occasionally use domestically produced machinery. In some regions,



artisans still carve out curving patterns and shapes with a chisel and hammer before polishing and grinding them.

The craftsman first observes the natural design found in the stone they have chosen to work on for the sajjar pathar. After that, the shaping is done very meticulously with a chisel and hammers. In order to prevent heat generation, water is sprayed repeatedly. By rubbing it with sandpaper or a file, the stone is made smoother. A stone slab has dimensions for the created Figure marked on it. By using a hammer, extra edges are eliminated from the slab. On large slabs of stone that have been sliced vertically into smaller slabs, sketchy designs have been done. With the use of a saw, the object is removed from the slab. Using a hammer and a chisel, this slab is now shaped into the appropriate shape. A sharp chisel is used for delicate carving. To further polish, use a hammer and chisel. The stone is chemically prepared and then left in boiling water for a whole night before carving. The stone's surface becomes whiter and smoother as a result. With sand or particles of carborundum, polishing is done for the ultimate finishing. Many of the carved objects have been painted. Others have fittings made of brass, seeing glasses, etc.

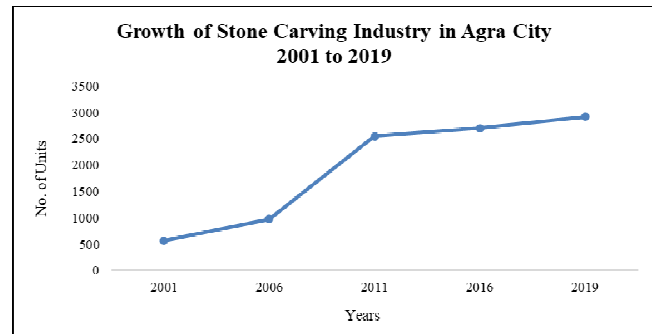
The stone carver draws a preliminary outline of the sculpture on the stone block before beginning to carve the image. The artisans frequently mist the stone with water while they work because the friction created by the continual removal of waste material causes the tools to heat up. Finishing can be done in a variety of ways, such as using sandpaper, multani-mitti, clay, oil, or cloth. On a piece of soft or hard stone that has already been precisely cut to size, an outline is drawn. After the shape's outline has been cut out, the final Figure is revealed by trimming away the extraneous pieces. While this is accomplished with softer stones by chiselling the superfluous material out of the tougher stones. A sharp flat-edged iron tool is used to scrape out the same in order to do this. [4]

**Temporal Analysis of the Stone Carving Industry**  
Agra stone craft units have shown an ever-increasing growth during 2001 to 2019.

**Table 1: The Growth in the Number of Units from 2000-2001 to 2018- 2019**

Year	No of Units
2001	566
2006	982
2011	2553
2016	2701
2019	2922

*Source: DIC, AGRA 2019, Computed by Author*

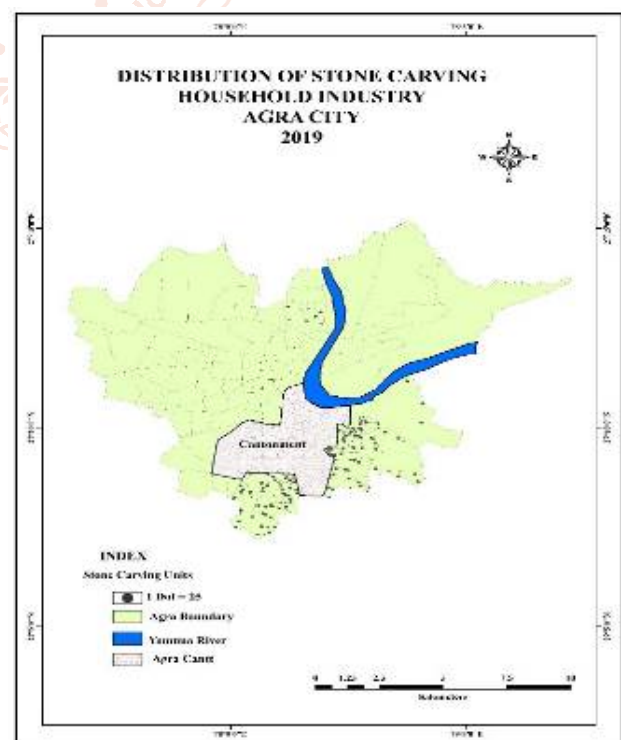


**Fig. 2**

Table 1 & Fig. 2 show, that the number of stone craft units in the year 2001 was recorded at 566. In 2006 this number increased to 982. It further recorded the increased number of units as 2553 in the year 2011. In 2016, an increased number of stone craft units recorded 2701. This total number suddenly increased in 2019 are 2922. This increase in units shows the continuous potential for the growth of stone craft units in Agra City.

### **Spatial Distribution of Stone Carving Industry**

The production unit is highly concentrated in the Tajganj zone of Agra City. This zone consists of 12 wards of Agra City. Apart from these concentrated areas, the production units are also found in different areas of the city with less concentration. [6] The Fig. 3 shows that the Stone Craft industry is highly concentrated only in the South-East zone of Agra city like carpet Industry Which consist of Fatehabad Road, Vibhav Nagar, Gover Chowki, Shaheed Nagar, Nagla Mewati, Tal Firoz Khan etc. [2]



**Fig. 3**

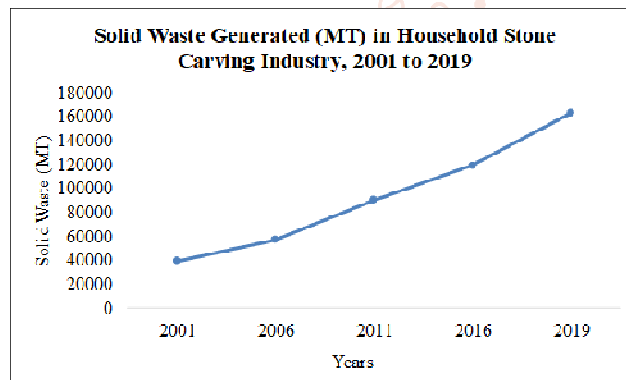
### Waste Generated from Stone Carving Industry

Agra is famous for its artefacts all over the world and produces a large quantity of stone waste. It produces about 450 tons per day of stone waste mainly generated from the stone carving household industry, which is found in the south and south-east part of the city. There are around 2922 stone carving household industry units. The condition is worst in the wards of stone carving household industry, as the stone waste dumped in nalas and choked the nalas attracts flies, mosquitoes and strays too. In some areas like khuns gate, Taj Firoj Khan, Gobar Chauki, Bundu Katra etc. the stone carving waste is recklessly dumped along the drain. [9]

**Table 2: Generation of Solid Waste in Stone Carving Household Industry (2001 to 2019)**

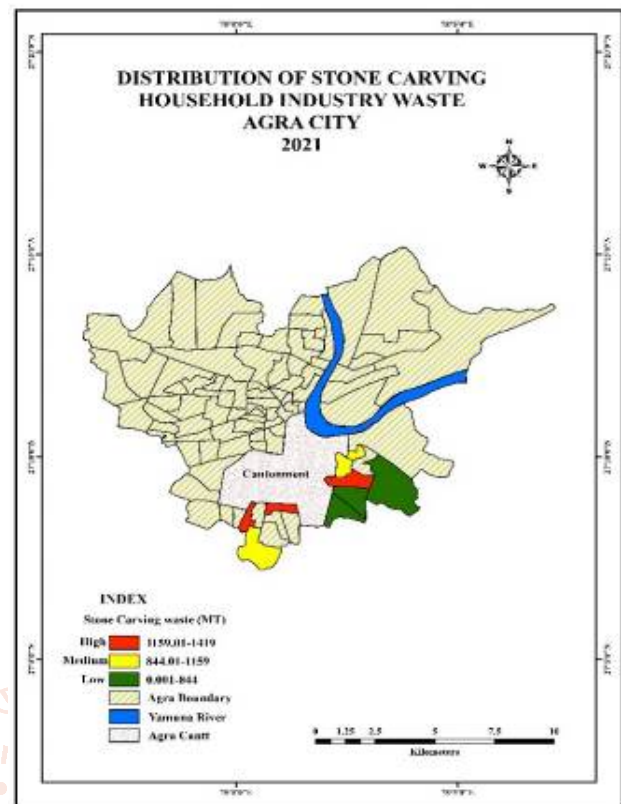
Years	Waste Generated (MT)
2001	38940
2006	56690
2011	89750
2016	118560
2019	162250

*Source: Agra Nagar Nigam, 2019, Computed by Author*



**Fig. 4**

Table 2 given above shows the waste generated in million tons in the stone carving household industry of Agra city. It is evident from Fig. 4 shows that the waste generated in Agra city is about 38940 tons in 2001. The generation of waste continuously increased from 2001-2019. The year 2019 recorded the highest waste generation i.e., 162250 tons.



**Fig. 5**

The highest waste-generating wards are Bundu Katra, Taj Firoj Khan and Gobar Chauki. Followed by medium waste-generating wards are Sarai Maluk Chandra, Vibhav Nagar and Katra Fulel and the lowest waste-generating wards are Nagla Mewati, Shaheed Nagar and Urkhara (Fig. 5).

### CONCLUSION AND SUGGESTIONS

Analysis reveals that presently the growth of stone carving household industry is stagnant. The new entrepreneur and workers don't want to engage in stone carving work due to low wages and demand. This industry presently run by the old workers and the present units also cause for a huge solid waste generation. This solid waste dumped in the drains and along the road due to improper dumping facility. To enhance the growth of Agra stone carving household industry there are some suggestions discussed below.

- (1) To enhance Agra's stone carving cluster, it is propose that all of the units be brought under one roof. As a result, a plan to create "HUB," or plots, should be made accessible to entrepreneurs as needed, along with the necessary infrastructure.
- (2) Proper management of Stone carving solid waste because in present the waste dump in the drains cause for various health issues.
- (3) Environmental awareness in workers is also important because workers and family members of the household stone carving industry suffer from diseases.
- (4) Training, marketing, a test facility, and the raw materials and components are readily available, among other things, should all be

available so that they don't waste time and have access to all of the resources in one place. (5) This will improve their spirit, and the layer will undoubtedly visit them because they will be in a united form. As a result, as government agencies / Concordia are interested in this cluster, this 'HUB' can be produced. Thus, all the suggestion has been demarcating the future orientation of the research that will be done the other researchers by going through this literature work. And government has intended to take their interest with their best regards for the complete implementation of the scheme, whatever, left out in the former implementation pattern.

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