

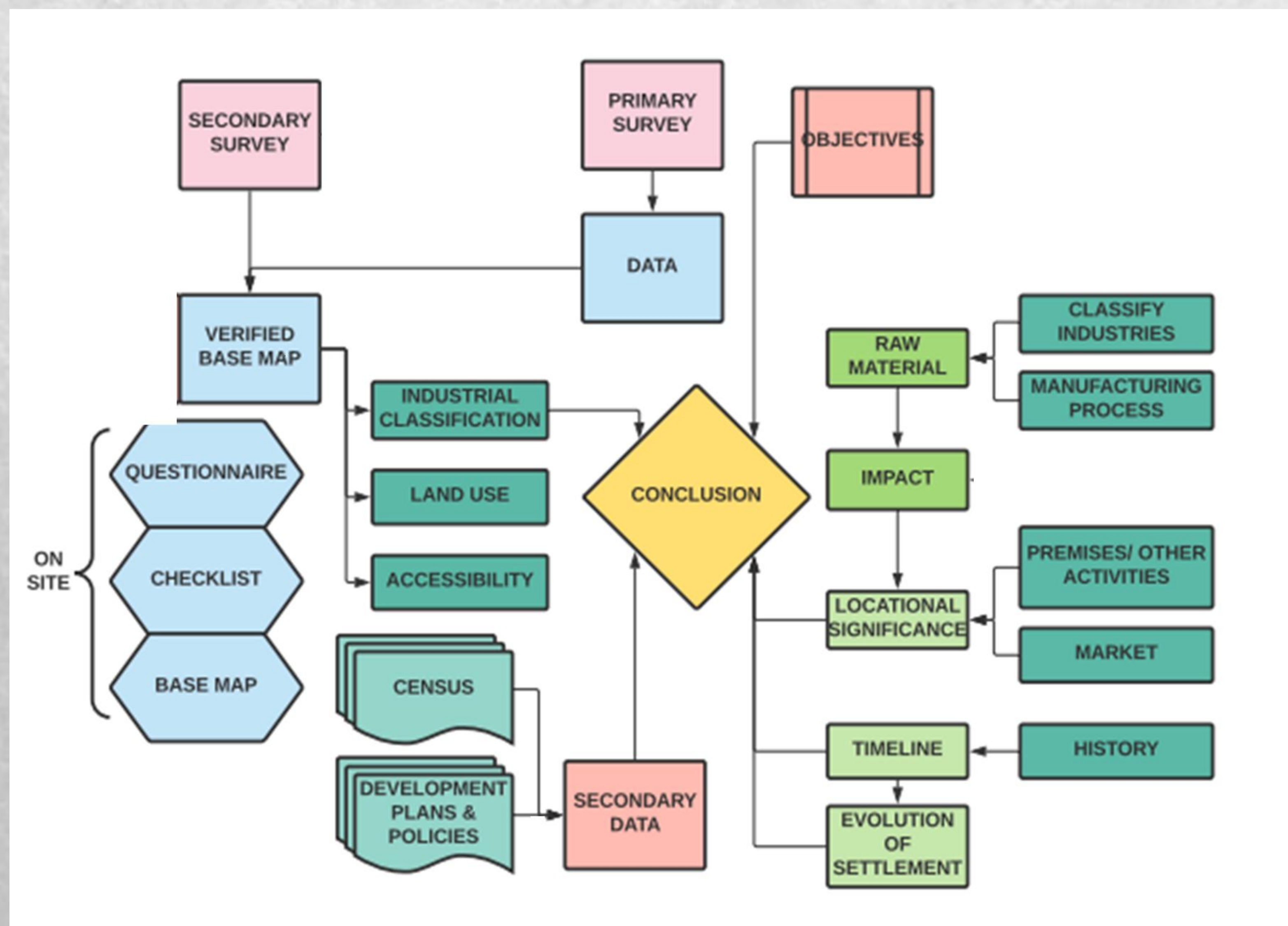
## AIM

To study the link between various components of an economic activity and its impact on a settlement.

## OBJECTIVES

- To study the predominant economic activity of Firozabad;
- To understand the industrial process and manufacturing activities with respect to space requirement and land use compatibility;
- To analyse the impact of the economic activity and associated policies on the town with respect to employment, commerce, maintenance, allied activities, environment, society and culture;

## METHODOLOGY



**STUDY OF ECONOMIC ACTIVITY :**

**FIROZABAD**

## ABOUT FIROZABAD

- The ancient name of the city is Chandwar Nagar
- Firozabad is located in the north central india in western Uttar Pradesh
- It is 40 km from Agra and 240 km away from Delhi
- The boundaries of Firozabad district touch Etah district in North and Manpuri & Etawah district in East.
- The area of the district is about 0.8% of the total area of Uttar Pradesh and population is 1.5% of state total population.
- It is famous for glass and bangle manufacturing industry and about 400 glass industries registered.
- Half of the population of these units is exported and there are countless number of household bangle manufacturing and assembling units



# HISTORY AND EVOLUTION

During ancient times, invaders brought a lot of glass articles to india. The rejected articles were collected and melted in locally made furnaces called '**bhainsa bhatti**'. In this furnace, **wood was used as a fuel**. These traditional furnaces are still used in aligarh and at purdal nagar. The glass industry specially the modern glass bangles technology was started and invented by ustad Rustam. One bangle at a time, bangles had no joints, kadechhal ki chudi.

|             |                                                                                                           |
|-------------|-----------------------------------------------------------------------------------------------------------|
| 1700s       | Mughal era – development started – sheeshgars community – migrated from Rajasthan, Gujarat, 2-3 clusters. |
| 1908        |                                                                                                           |
| 1910        | British era - industrialize it to a mass level. Direct fired furnace was set up by Austrian expert        |
| During WWI, | all over Firozabad – furnace replaced with regenerated furnace – mass production – Asian countries        |
| 1918        | Imports from Czechoslovakia, Belgium, England and Germany stopped. Indians worked hard to fill the void.  |
| 1932-35     | Competition with Japanese and Czechoslovakian varities.                                                   |
| 1950        | Belan were developed.                                                                                     |
| 1939- 1953  | 20-22 factories, Ustad Qadir Bux and Rustam Ustad were the developers.                                    |
|             | golden period of glass industry, different units after that 'suhaag nagari'                               |
|             | automation in industries mechanization                                                                    |
| 1980s       | coal replaced electric furnaces, new policies                                                             |
|             | New policies came regarding glass industries.                                                             |



|      |                                                                                                                                                                                                                                                                                                 |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1989 | Firozabad district came into existence.                                                                                                                                                                                                                                                         |
| 1996 | Taj Trapezium Zone (TTZ), the area earmarked around Taj Mahal, following the Supreme Court order on a PIL petition on environmental pollution.<br>The apex court <b>banned the use of coal</b> in industrial unites falling within TTZ and directed for <b>the use of natural gas as fuel</b> . |
| 2004 | Teri and SDC helped 140 industries, they replaced retrofitted furnaces with pot furnaces which saved gas.                                                                                                                                                                                       |

Now industries are closing down because there **is shortage of gas**.

60 years ago, **5000-6000 people were employed**, for them hospital and labor colony was built. But now for 6 lakh people there no hospitals and almost no labor lives in labor colony.

Conditions of working is dangerous and they replace the worker immediately if he died or leaves due to health issues.

| year | No of units |
|------|-------------|
| 1950 | 30          |
| 1960 | 144         |
| 1970 | 170         |
| 1980 | 273         |
| 1990 | 342         |
| 2000 | 554         |

In Firozabad, there are about **200 glass-manufacturing factories** and **6 lakh people** are employed in the sector. The glass industry's annual turnover is estimated to be around **4000 crore rupees**. (source- media)

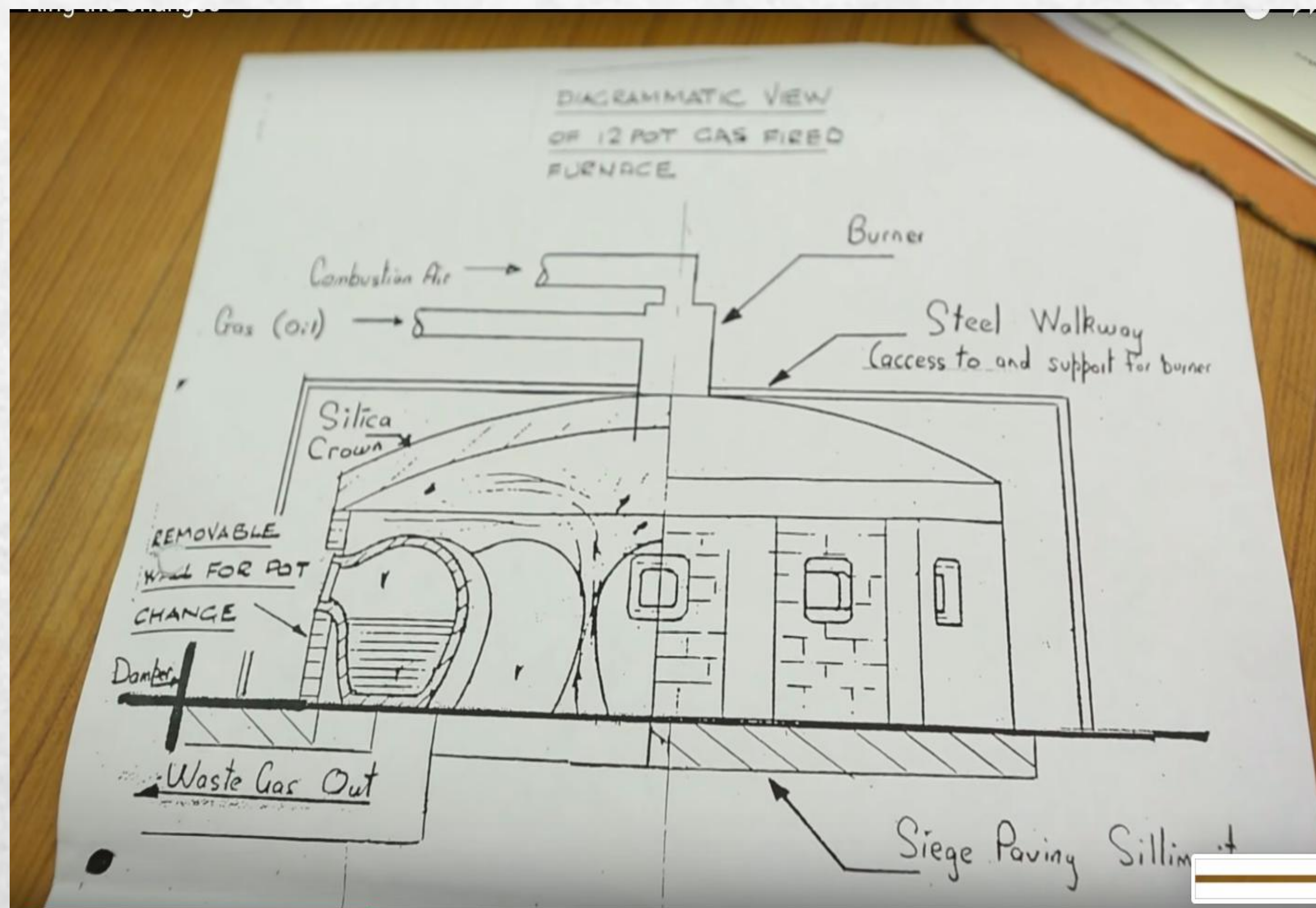
However, this industry faces a threat from cheaper Chinese items. It is estimated that Chinese glass products occupy 80% of the local market.

Glass industries are facing difficulties like having to shift there location as it falls in **TTZ region**. Second, **shortage of skilled workers** and the third difficulty is that factory workers work in **extreme conditions, high temperatures and toxic gas**.

The government setup, **center for development of glass industry** under MSME ministry is lending businesses and providing machines.

Centre for development of glass industry was established at Firozabad in **1992** as a joint venture program of government of India.



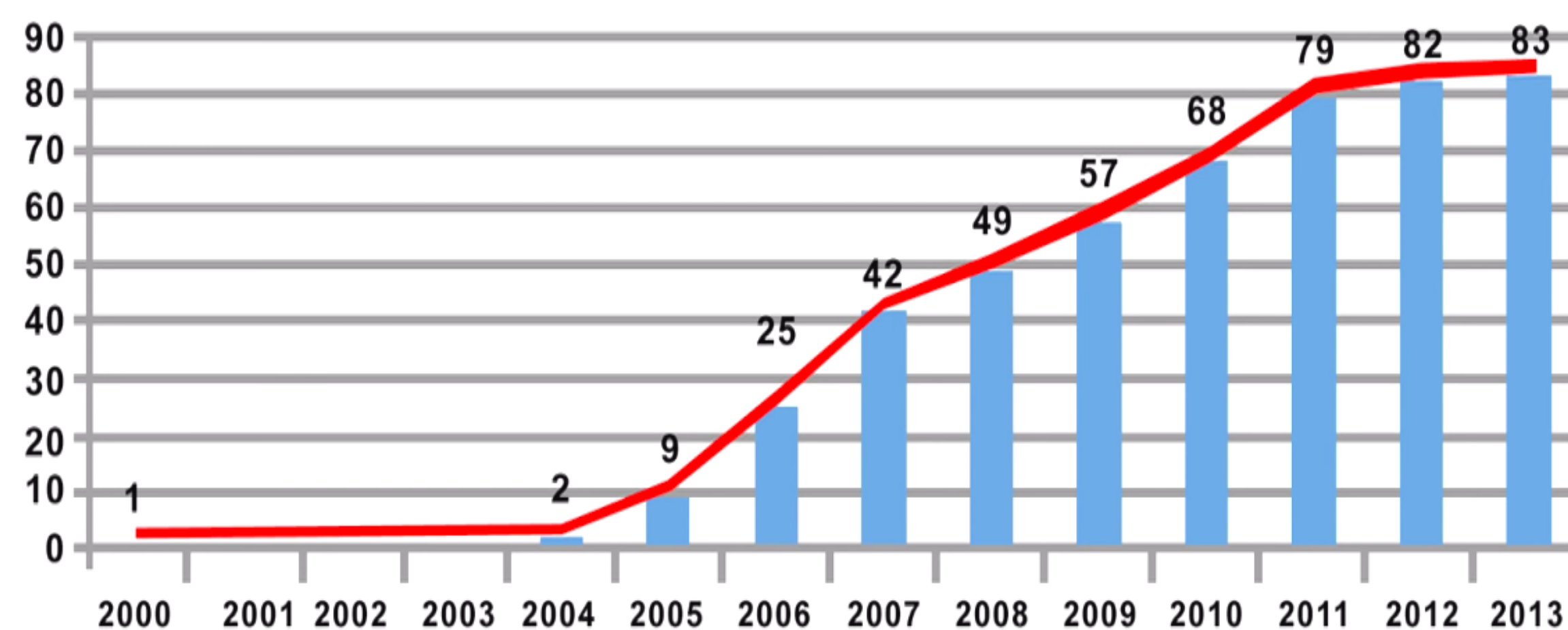


**Retrofitted Gas Furnace**



**TERI-SDC Furnace**

### Cumulative Replications



Cumulative Energy Saved: 98,000 ToE

TERI and SDC helped 140 industries by replacing retrofitted furnaces with pot furnaces which saved gas.

**STUDY OF ECONOMIC ACTIVITY :**

**FEROZABAD**



# GLASS INDUSTRY OF INDIA

- Glass industry came into being in India in 16th century when items like bangles, small bottles and flasks were made.
- By **17th century**, enameled glass was produced at a number of places in Karnataka and Uttar Pradesh.

## NATIONAL LEVEL GLASS INDUSTRY

- Indian glass market is estimated to increase at a compound annual growth rate of 15% over the next three years.
- The organized glass industry employs 30 lac people directly and provides indirect employment to 5 lac people whereas unorganized sector employees around 5-6 lac people
- The per capita glass use in India is 1.2 kg compared with 8-9 kg in developed countries.

## STATE LEVEL GLASS INDUSTRY

- 70% of the total glass production in the unorganized sector is contributed by Firozabad.
- The highest share in number of factories is in UTTAR PRADESH (36.9%), followed by GUJARAT (15%).

## LOCAL LEVEL- FIROZABAD

- India's biggest glass industry cluster
- Nearly 5-6 lac people employed directly and plenty more employed indirectly.
- Around 50% of the total produce of the units are exported to different countries.
- Firozabad is the only cluster producing bangles thus catering the entire requirement of the nation.



STUDY OF ECONOMIC ACTIVITY :

FIROZABAD

# INFRASTRUCTURE PROVIDERS IN FIROZABAD

| INFRASTRUCTURE | PROVIDED BY  |
|----------------|--------------|
| ELECTRICITY    |              |
| WATER SUPPLY   | UP JAL NIGAM |
| DRAINAGE       | NAGAR PILIKA |
| SEWAGE         | UP JAL NIGAM |

## GLASS MELTING UNITS

|                                             |                  |
|---------------------------------------------|------------------|
| Total number of units                       | : 190            |
| Entrepreneurs(owners/partners)              | 540              |
| Investment on plat and machinery            | 213 crore        |
| Total investment                            | 413 crore        |
| Total natural consumption in glass industry | 950000 sq.m/ day |
| Glass drawing capacity                      | 1920 MT/day      |
| Finished glass                              | 1230 MT/day      |
| % of finished glass                         | 65%              |
| Annual turnover                             | Rs. 2623 crore   |

## DESIGN AND DECORATION UNIT (GLASSWARE)

### GLASSWARE AND ARTWARES

|                                           |                |
|-------------------------------------------|----------------|
| Total number of units                     | 39             |
| Technology                                | Traditional    |
| Employment                                | 1165           |
| Total investment on plant and machinery   | Rs. 3.9 crore  |
| Average investment on plant and machinery | 0.1 crore/unit |
| Total investment                          | Rs. 6 crore    |
| Total turnover                            | Rs. 33 crore   |

### DECORATION BY METALLIZING UNITS

|                                           |                     |
|-------------------------------------------|---------------------|
| Number of units                           | 50                  |
| Investment per unit                       | Rs. 10 lac          |
| Average investment on plant and machinery | Rs. 0.09 crore/unit |
| Total investment                          | Rs. 5.5 crore       |
| Employment                                | 1000                |
| Annual turnover                           | Rs. 17 crore        |

## MICRO UNITS

These units are engaged in the activities which are post production works of glass bangles such are bangles joining, bangle cutting, frosting, painting, decoration by zari, mina, moti and heat treatment of bangles

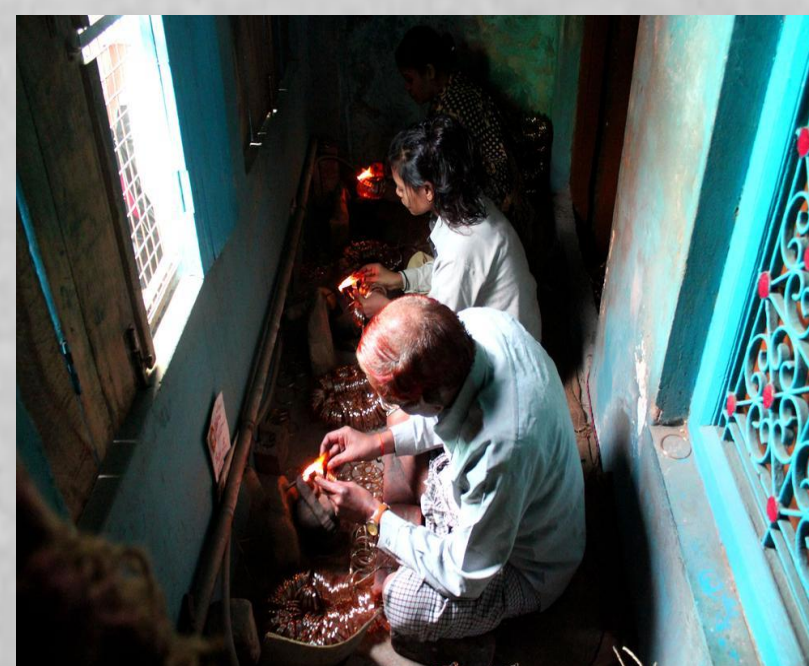
|                                  |                                          |
|----------------------------------|------------------------------------------|
| Total number of units            | 8550                                     |
| Investment on plat and machinery | 13.6 crore                               |
| Total investment                 | 9.65 crore                               |
| Level of technology              | <b>primitive with some modifications</b> |
| No. of persons involved          | 82000                                    |
| Annual turnover                  | Rs. 221 crore                            |



# HEALTH AND ENVIRONMENTAL HAZARDS OF GLASS INDUSTRY

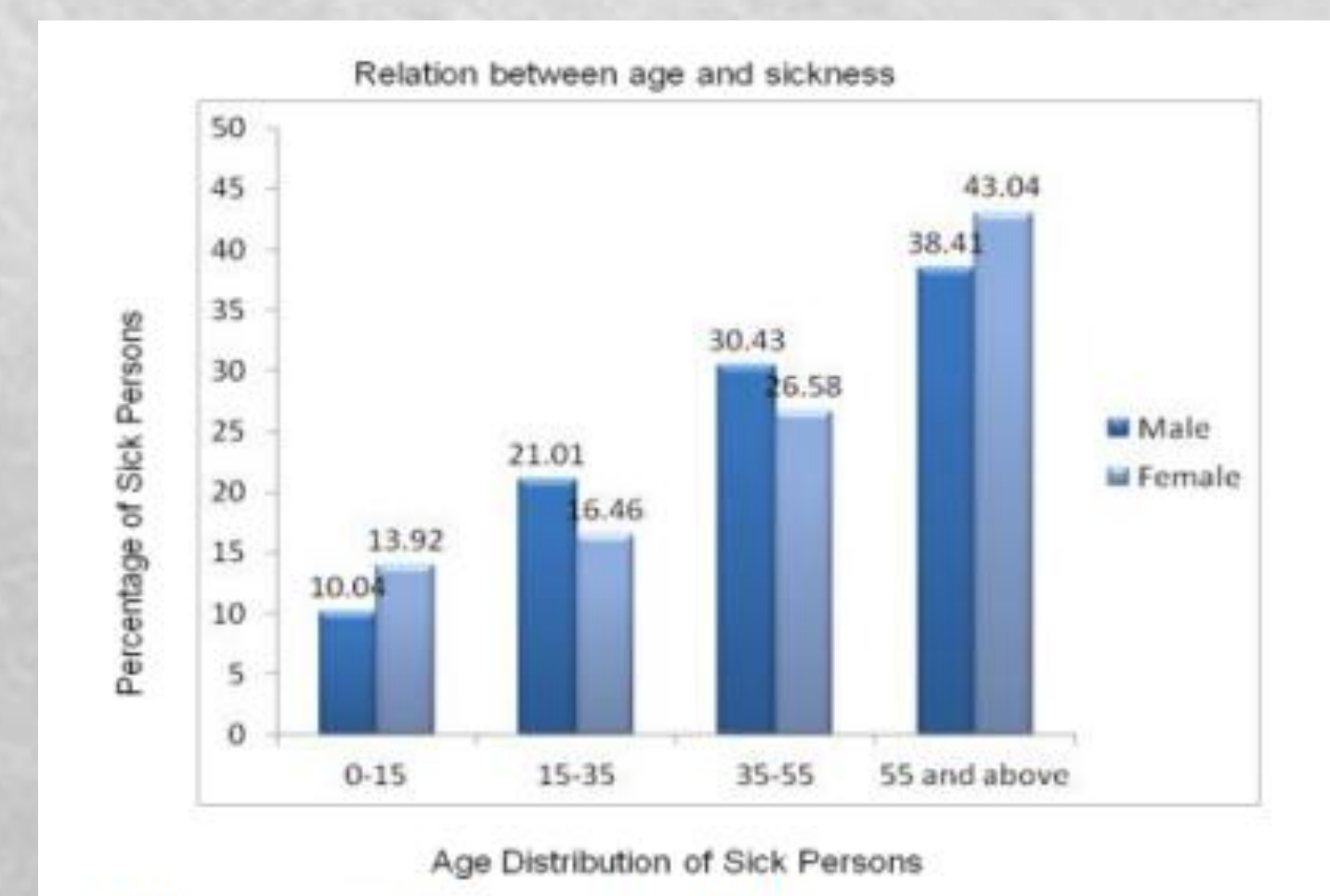
## CONDITIONS OF WORKPLACE

- The small industrial or household units are still based on traditional coal fired furnaces for processing of unfurnished bangles and other glass products.
- The working temperature of furnaces in large scale production units is about 1200C which consumes a lot of fuel.
- A number of chemicals are used in glass industry to make glass of desired shape, colour and quality, irrespective to their hazardous nature.
- Chimneys of the factories are not capable enough to flue the gases from factory premises and surroundings.
- While dealing with hazardous chemicals no safety measurements are used by the owners as well as the workers



## HEALTH IMPACTS

- several elements such as lead, boron, arsenic, nickel, copper and cobalt in their various chemical forms along with silica dust are used in precarious working conditions in glass industries.
- coal fired furnaces and filthy condition of factories have made the health of workers miserable.
- Due to saving of the cost on fuel, furnaces kept burning without any time off and this practice compels the workers to work without any leisure time.
- This continuous exposure to immense heat and sound which is far beyond permissible levels adversely affects the workers and the residents of the area



## ENVIRONMENTAL IMPACTS

- The continuous use of harmful chemicals for production of glasswares, and use of coal in small processing units in furnaces has misbalanced the appropriate ratios of gases in city surroundings.
- These glass industries emit large amount of carbon dioxide, carbon monoxide, nitrogen oxides, sulphur dioxide, lead, ozone, hydrogen sulphide, hydrocarbons, cadmium, polynuclear aromatic hydrocarbons (PAH), particulate matter and fly ash in atmosphere.
- Incomplete combustion of coal as fuel and lack of proper exhaustion of heat and smoke in makes situation bitter small scale production units which releases Carbon Mono Oxide (CO) in their surroundings.



**Labor:**

According to population of Firozabad in year2001, total no. of labours were 120477(27.83%), the projected population in year 2031.

**Trade and commerce:**

main business centers of Firozabad city are: are: Saddar bazar marg, jalesar marg, ganj ganj marg, imambara, s n marg, bohran gali, gali, station marg, fatehabad marg, katra katra sunaranmarg etc.

Total no. of shops existed in 2010 were 24092 in which 5270 were of bangle and and glass

Proposals in trade and commerce sector sector

**1.BAZAAR STREET:**

In zone 1 of Firozabad, 15m depth should be should be proposed for bazaar street on on both the sides of the main roads in existing areas , with min12m row of the road road and 6m front setbacks shall be provided. Proposed land : 67.20HA.

**2. CITY CENTER:**

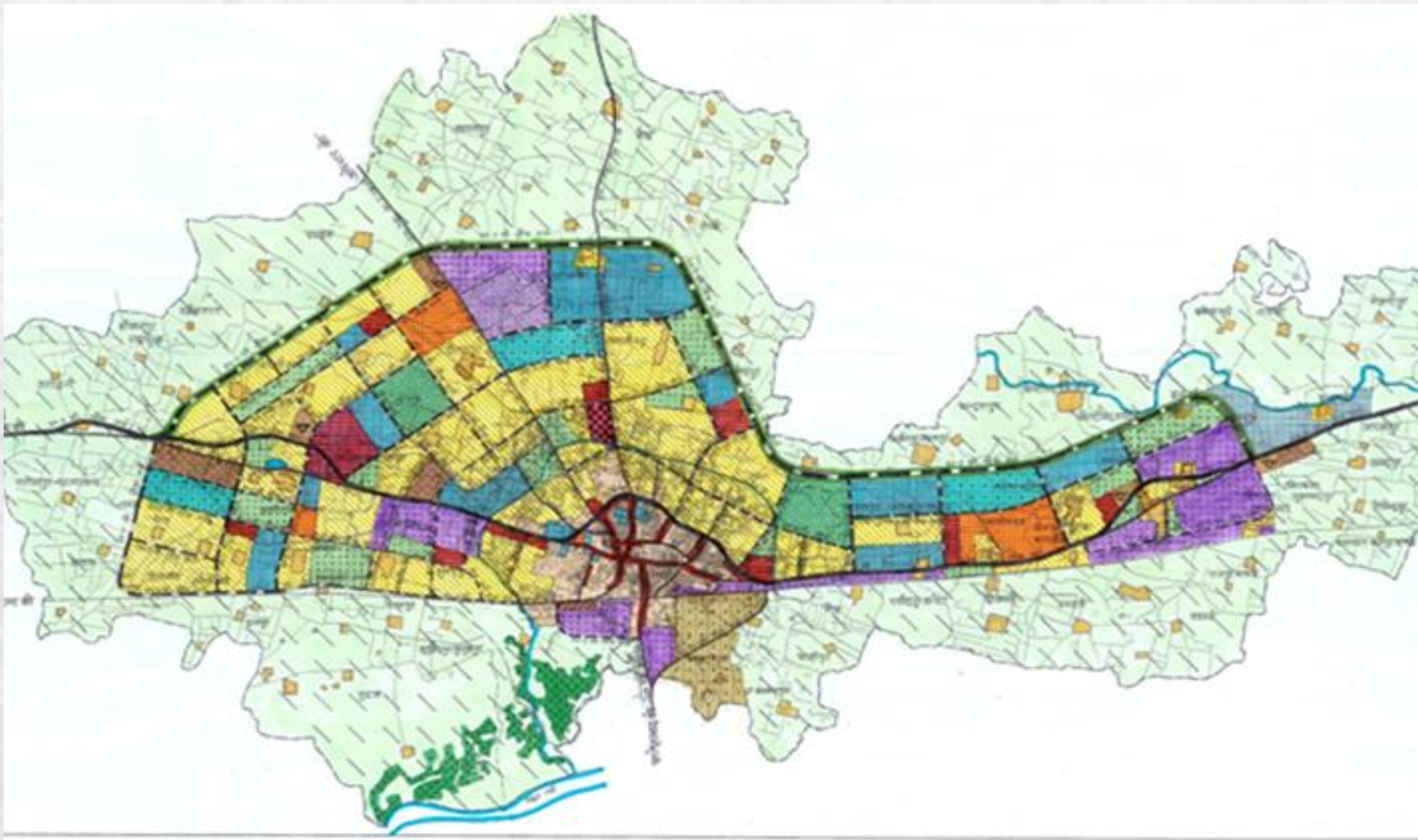
Proposed land : 81.92 HA.

**3. UP NAGAR KENDRA:**

up nagar Kendra are to be provided at different places. Proposed land : 177.92HA. 177.92HA.

**4. WHOLESALE MARKET:**

Proposed land : 35.84 on kotla marg.



| s no. | business category       | year1991        |                | year2001        |                | year2031(projecte<br>d) |                |
|-------|-------------------------|-----------------|----------------|-----------------|----------------|-------------------------|----------------|
|       |                         | total<br>labour | percenta<br>ge | total<br>labour | percenta<br>ge | total<br>labour         | percenta<br>ge |
| 1     | primary category        | 1394            | 1.9            | 1108            | 0.92           | 4365                    | 1              |
| 1.1   | castkar                 | 689             | 0.94           | 542             | 0.45           | 2095                    | 0.48           |
| 1.2   | farmer labour           | 485             | 0.66           | 566             | 0.47           | 2270                    | 0.52           |
| 1.3   | animal<br>husbandary    | 197             | 0.27           | -               | -              | -                       | -              |
| 1.4   | miner                   | 23              | 0.03           | -               | -              | -                       | -              |
| 2     | secondary<br>category   | 43194           | 58.89          | 72888           | 60.5           | 288090                  | 66             |
| 2.1   | household<br>industries | 1647            | 2.25           | 11194           | 9.29           | 53650                   | 10             |
| 2.2   | other industries        | 40416           | 54.73          | 59286           | 49.21          | 235710                  | 54             |
| 2.3   | manufacturer            | 1401            | 1.91           | 2409            | 2              | 8730                    | 2              |
| 3     | tertiery category       | 28755           | 39.29          | 46481           | 28.58          | 144045                  | 33             |
| 3.1   | trade and<br>commerce   | 14301           | 19.5           | 25023           | 20.77          | 96030                   | 22             |
| 3.2   | transport and           | 2017            | 2.75           | 3614            | 3              | 19643                   | 4.5            |
| 3.3   | other activities        | 12021           | 16.39          | 898             | 0.74           | 6547                    | 1.5            |
| 3.4   | marginal karmik         | 416             | 0.57           | 16946           | 14.07          | 21825                   | 5              |
|       | total                   | 73434           | 100            | 120477          | 100            | 436500                  | 100            |

**Industries:**

Industries are very important for the development of any city.

Total registered industries in Firozabad are 410 in which 183 are of glass industries working on gas fuel.

Existing land :290.05HA.

**SMALLSCALE**

**INDUSTRIES:**

proposals in industrial sector:

As Firozabad is located in Taj trapezium, polluting industries re restricted. Total land proposed :751.36HA ( mauja dholpur on agra marg, mauja maiyundinpur on jalesar marg, mauja pampura raipura on fatehabad marg and mauja kishanpura on shikohabad marg.

**2 LARGE SCALE**

**INDUSTRIES:**

All the large scale industries are located in shikohabad as it is outside the Taj trapezium.

**3. UPSIDC**

Uttar Pradesh state industrial development corporation have developed around 130.56Ha



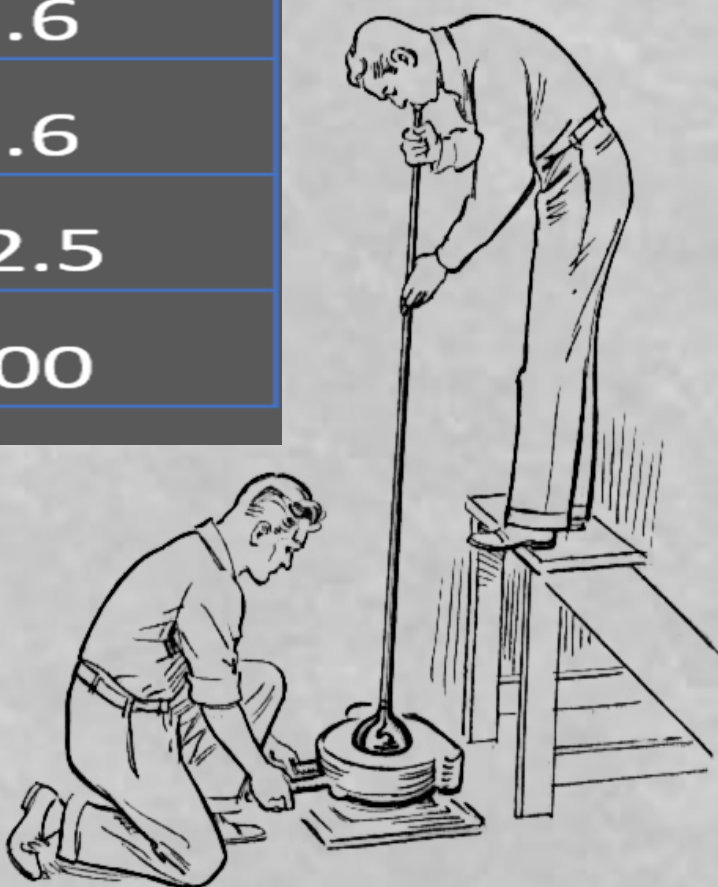
# land use of Firozabad 2010

| s no. | land uuse              | proposed | percentage | existing | percentag<br>e |
|-------|------------------------|----------|------------|----------|----------------|
| 1     | residential            |          |            |          |                |
|       | rural population       | 222.4    |            | 222.46   |                |
|       | developed              | 525      |            |          |                |
|       | residential            | 2696.96  |            | 1155.07  |                |
|       | total                  | 3444.36  | 41.36      | 1377.53  | 65.15          |
| 2     | commercial             |          |            |          |                |
|       | bazaar street          | 67.2     |            |          |                |
|       | city center            | 81.92    |            |          |                |
|       | sub city center        | 177.92   |            |          |                |
|       | wholesale market       | 35.84    |            |          |                |
|       | total                  | 362.88   | 4.35       | 37.95    | 1.79           |
| 3     | industrial             |          |            |          |                |
|       | large scale industries | -        |            |          |                |
|       | small scale industries | 751.36   |            |          |                |
|       | upsidc                 | 130.56   |            |          |                |
|       | total                  | 881.92   | 10.59      | 290.05   | 13.72          |
| 4     | offices                | 261.12   | 3.14       | 122.62   | 5.8            |
| 5     | facilities             | 979.86   | 11.77      | 92.73    | 4.39           |
| 6     | transport              | 649.03   | 7.79       | 162.29   | 7.69           |
| 7     | recreational           | 1246.84  | 15         | 10.75    | 0.51           |
| 8     | others( utilities)     | 500.19   | 6          | 20.19    | 0.95           |
|       | total area             | 8326.2   | 100        | 2114.51  | 100            |

| S no. | title          | year2001 | Year2031 |
|-------|----------------|----------|----------|
| 1     | Population     | 432866   | 1455000  |
| 2     | Household size | 6        | 5        |
| 3     | Total families | 61625    | 291000   |

- **Population and residential**  
Projected population of firozabad was 400000 in which 317000 was of firozabad mun icipal area and 83000 was of rural area.
- Population of any area is decided by economic and social development.
- Migration is the cause of industrialization.
- The main cause of the increase in population and migration from nearby areas in ferozabad is glass and bangle industries

| proposed land use 2001 |                      |      |      |
|------------------------|----------------------|------|------|
| s no.                  | land use             | area | %    |
| 1                      | residential          | 925  | 52.2 |
| 2                      | industrial           | 370  | 20.9 |
| 3                      | trade and commrce    | 83   | 4.7  |
| 4                      | community facilities | 42   | 2.5  |
| 5                      | recreational         | 100  | 5.6  |
| 6                      | offices              | 30   | 1.6  |
| 7                      | transport            | 223  | 12.5 |
|                        |                      | 1773 | 100  |



# GLASS MANUFACTURING PROCESS

## Process

The most familiar type of glass used for centuries in windows and drinking vessels is soda-lime glass, composed of about 75% silica, sodium oxide, calcium oxide and several minor additives. For mass production, this type of glass is melted in large gas fired units. Glass is totally recyclable. There are different types of processes for making bangles, tableware (glass-blowing) and small items like toys, idols for worship etc. (glass-fusing)



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STUDY OF ECONOMIC ACTIVITY :

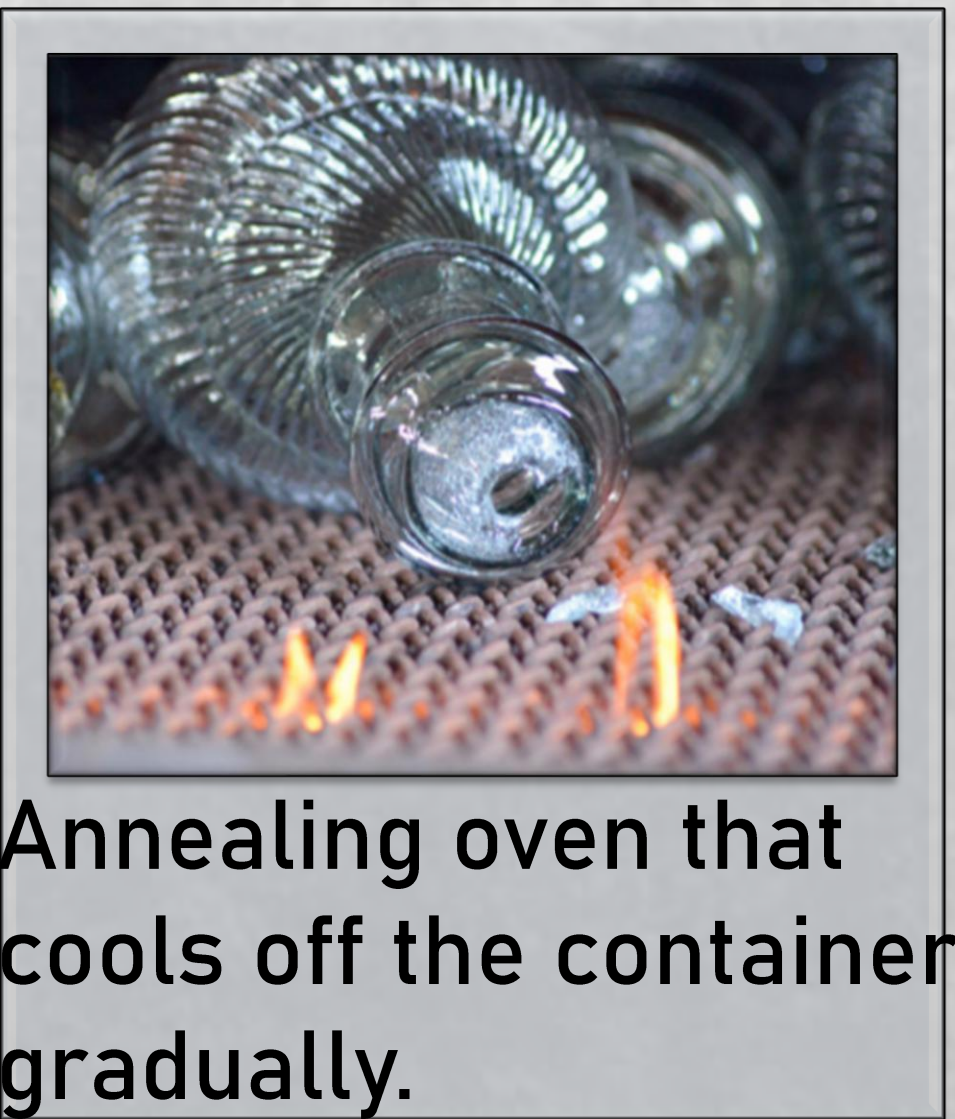
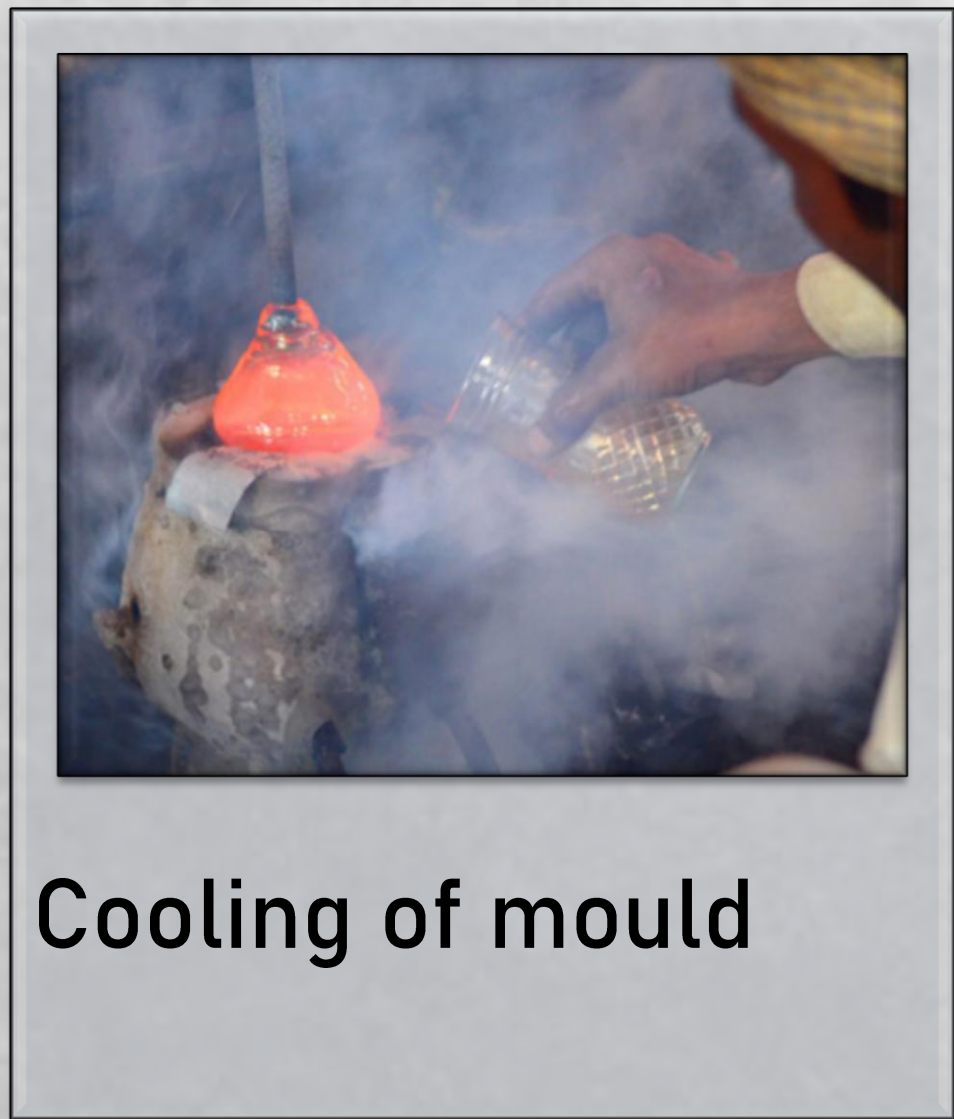
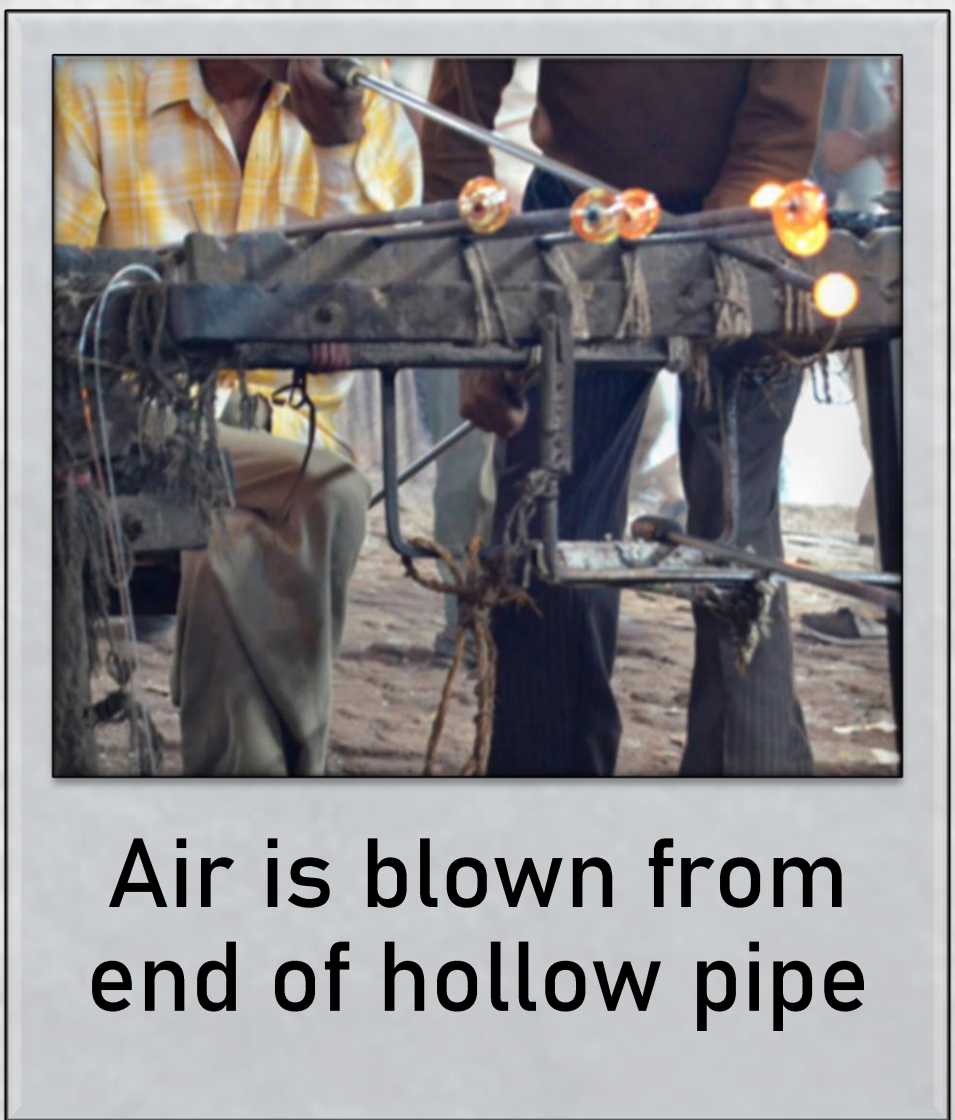
FIR07ABAD



# GLASS BLOWING

**Manual-** A stream of molten glass, at its plastic temperature (1050°C-1200°C), is cut with a shearing blade to form a cylinder of glass, called a gob. The process starts with the gob falling, by gravity, and guided into the blank moulds, two halves that are clamped shut. Akarigar blows air into the hollow pipe from the other end to make the glass take the shape of the mould. Water is sprinkled over the mould to cool it off after every piece. The vessel is then picked up from the mould and kept to cool. As glass cools, it shrinks and solidifies. Uneven cooling causes weak glass due to stress and break. For even cooling, these are kept into an annealing oven that heats the container to about 580°C then cools it. Similar process is followed for making plates too but the only difference is that air is not blown into the pipe to make the plate take the shape of the mould. Molten glass is pressed in between two metallic die plates.

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# GLASS BLOWING

**Automatic** The glass shells of bulbs (that we use at home) are all made by the ‘forming machines’. These are fully automatic. Generally powered by compressed air, the mechanisms are timed to coordinate the movement of all the parts of the machine. Silica is fed into the furnace once at the beginning and that keeps forming the molten glass that is the necessary ingredient for making any product. Temperatures controller monitors the temperature of each component of the machine. Once ready, the shell falls off gradually on to various conveyor belts of controlled temperature. The rejects of the entire process are put back into the furnace for recycling. One more quality check is done manually and the product is ready to be packaged and shipped.

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pipelines



The temperature  
Control unit



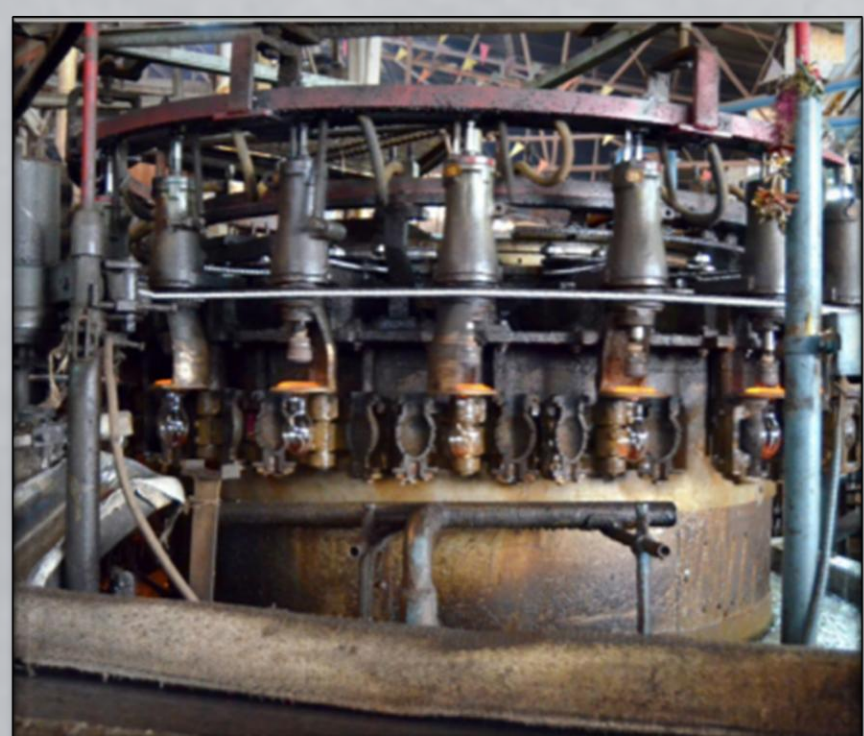
Gas burner of  
furnace



Fan for reducing heat  
In the factory



Auto forming machine  
Making glass shells



Auto forming machine  
Making glass shells



Conveyor belts to cool  
Of the shells



Piece coming out from  
The annealing oven



Glass shells



Glass shells ready  
To be pacaged



Processing the raw glass

- ❖ Raw glass for bangles is of the same material as prepared for other roller. When this molten glass comes in contact with glassware's, which is taken out of the furnace through the pipes. Without removing the pipes, the molten glass is beaten to make its dimensions equal.
- ❖ The glass with the pipe is placed in an another furnace which has an automated the roller, it starts stretching and rolls around it. In this process a spring of glass is formed.
- ❖ To make separate bangles, this spring is then cut with the help of a cutter of diamond. But, at this stage, these bangles have two ends.
- ❖ **Jhadai** –it is the process in which overlapped part of bangle is removed.
- ❖ **Judai** –it is the process in which separate bangle which are open ended and not complete are then taken to join them over a candle or a gas lamp.
- ❖ **Sadhai** - in this process, joints of bangles are made to look neat and straight. Here, the glass is made to melt. Application of little pressure joins both the ends.
- ❖ **Chhatai** –separation of irregular shape bangles.
- ❖ **Chaklai**- counting of bangles and are packed by a string to a bunch of 320 pieces, which is also called one **toda**

MANUFACTURING PROCESS  
[ BANGLES ]



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THE POT FURNACEUSED FOR BANGLES ARE HAVING CAPACITY OF 500 KGS





# GLASS BANGLES

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**STUDY OF ECONOMIC ACTIVITY :**

**EIROZABAD**

# TAJ TRAPEZIUM ZONE

**Taj trapezium zone** is a defined area of **10,400 sq. Km** around the Taj mahal to protect the monument from pollution. The supreme court of India delivered a ruling on December 30, **1996** regarding industries covered under the ttz, it **banned the use of coal/ coke in industries located in the ttz** comprises about 40 protected monuments including three world heritage sites

The ttz comprises monuments including three world heritage sites

- ❖ The Taj mahal
- ❖ Agra fort
- ❖ Fatehpur Sikri.

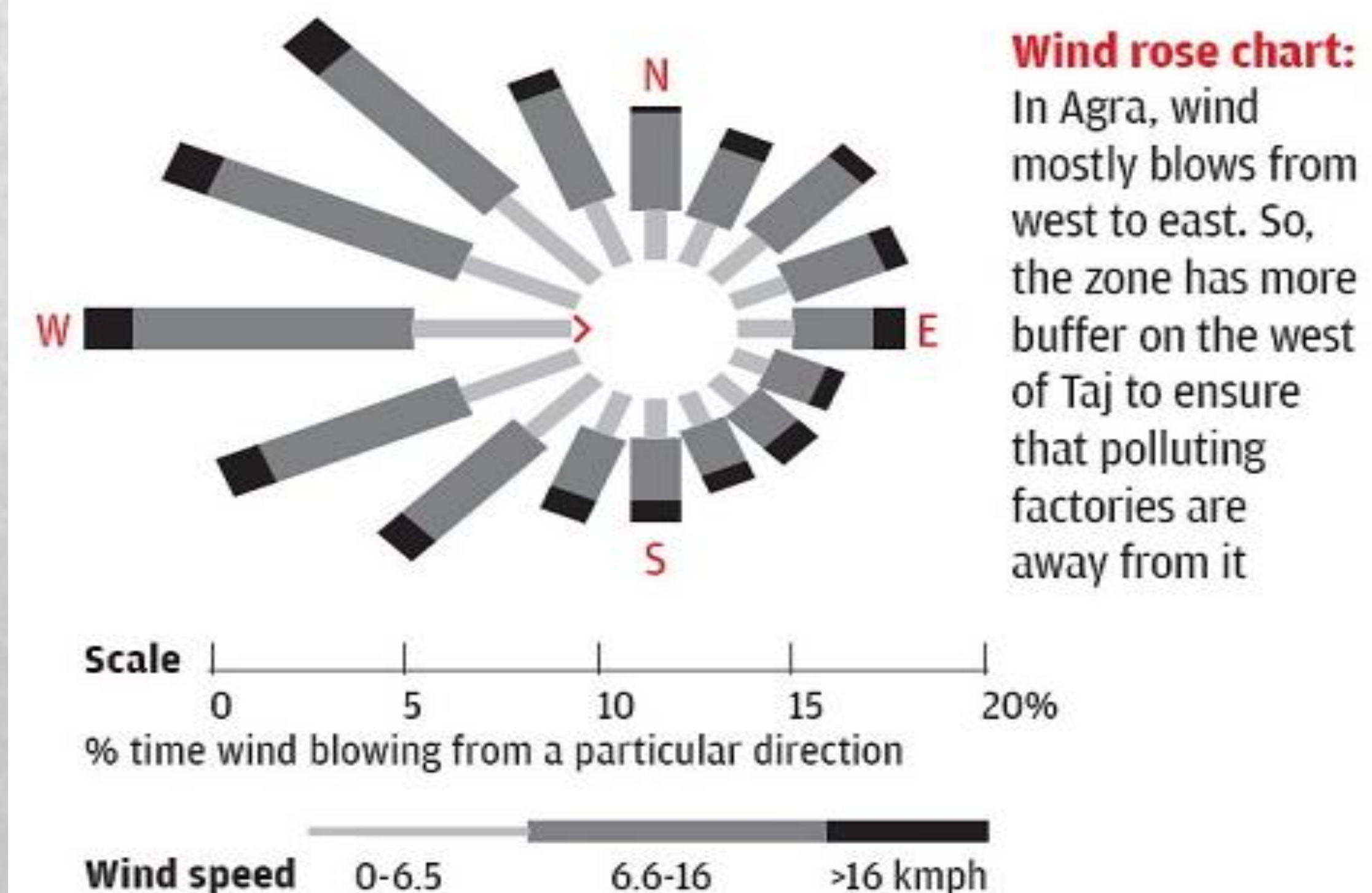
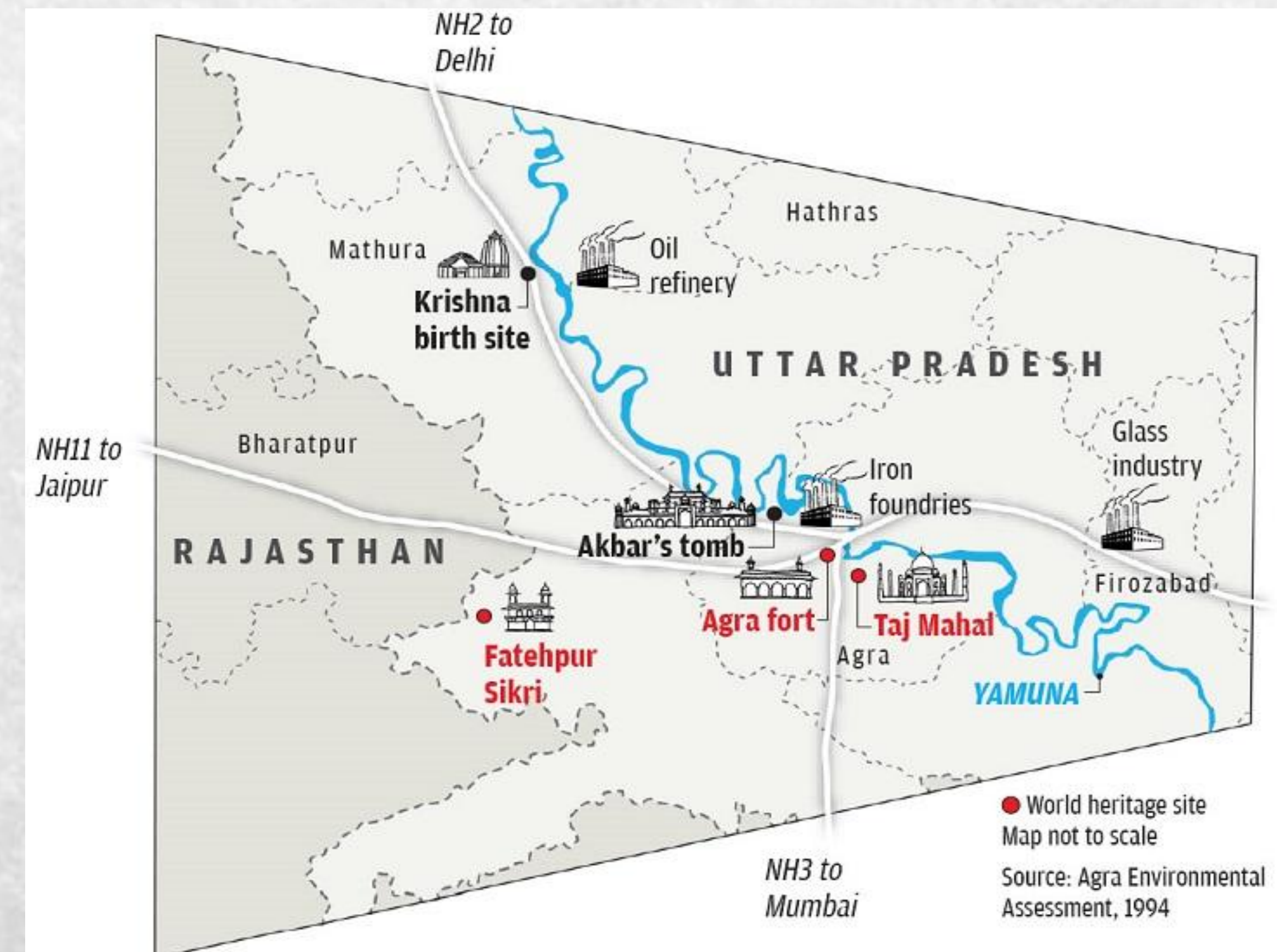
Ttz is so named since it is located around the Taj mahal and is shaped like a trapezoid.

The Taj trapezium zone (TTZ is spread over 6 districts)

- 1.Agra: state of Uttar Pradesh
- 2.Mathura: state of Uttar Pradesh
- 3.Firozabad: state of Uttar Pradesh
- 4.Hatras: state of Uttar Pradesh
- 5.Etah: state of Uttar Pradesh
- 6.Bharatpur: state of Rajasthan

## Industrial sources

There are about 180 glass-based industries manufacturing mainly glass bangles, glass beads, glass rods, glass tubes/shell, glass wares and glass blocks. Dg sets are installed in almost all the glass industries in firozabad district, which are mostly based on natural gas



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STUDY OF ECONOMIC ACTIVITY :

FIROZABAD

- ❖ With a national environmental engineering research institute [NEERI] , report stating that pollution from Firozabad 's glass industries is not reaching Taj mahal ,
- ❖ **Supreme court** in 1996 passed an order , stating that there would be no further expansion of industries in ttz and fixed amount of natural gas would be provided to them, this rule was never followed and excess amount of gas is being supplied to ttz ,which in turn continuously encourages the new factories to come up
- ❖ Expansion of industries in ttz sensing the cheap availability of natural gas at subsidized rates and causing for the damage for Taj.
- ❖ Chairmen of standing committee of petroleum and natural gas requested pm to pass direction to petroleum industry to initiate concrete measures and supply natural gas at competitive market price to the glass units in order to stop expansion of industries.

Read more at:

[http://timesofindia.indiatimes.com/articleshow/54093226.cms?utm\\_source=contentofinterest&utm\\_medium=text&utm\\_campaign=cppst](http://timesofindia.indiatimes.com/articleshow/54093226.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst)



**MAJOR EXPORTABLE ITEM:**  
VARIOUS GLASS PRODUCTS ARE MAIN EXPORTABLE ITEMS FROM FIROZABAD.

**GROWTH TREND:**  
AFTER THE AVAILABILITY OF NATURAL GAS TO THE FIROZABAD GLASS INDUSTRIES, THE PRODUCTION AND QUALITY OF THE PRODUCTS HAS IMPROVED MANY FOLDS APART FROM COST BENEFIT.

FURNACE TUYPE AND PRODUCTION CAP[ACITY

| S.NO                                       | Types of products                  | Glass units        | Number of units | Avg capacity (tpd per unit) |
|--------------------------------------------|------------------------------------|--------------------|-----------------|-----------------------------|
| 1                                          | Glass bangles                      | Open pot furnace   | 95              | 7                           |
| 2                                          | Glass rods,beads,decoratives items | Closed pot furnace | 25              | 5                           |
| 3                                          | Bangles,bulb and tubed             | Tank furnace       | 30              | 40                          |
| 4                                          | Bulb, tube and container glass     | Tank furnace       | 10              | 50                          |
| 5                                          | Container glass, tableware         | Tank furnace       | 5               | 120                         |
| 6                                          | Bangle baking                      | Muffle furnace     | 300             |                             |
| Number of glass industries in the cluster  |                                    |                    | 465             |                             |
| Total glass melt processed (tone per day ) |                                    |                    | 3100            |                             |

**POTENTIAL FOR NEW MSMES**

- 1- FRUIT PRESERVATION
- 2- JAM, JELLY & PICKLES
- 3- NAMKEEN
- 4- SQUASH & SYRUP
- 5- BAKERY & CONFECTIONERY
- 6- RICE MILL
- 7- DAL MILL
- 8- CATTLE FEED
- 9- PHENYL
- 10- POLYTHENE BAGS

**DETAIL OF MAJOR CLUSTERS**

VARIOUS GLASS PRODUCTS LIKE GLASS BANGLES, GLASS WARE, GLASS TUMBLERS, GLASS BOTTLES, GLASS TUBE ARE THE MAJOR CLUSTER OF FIROZABAD.

NO. OF REGISTERED UNITS



STEPS TO SET UP MSMES

| S.No | Type of assistance                                                                                                                  | Name and address of agencies                                                               |
|------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 1.   | Provisional Registration Certificate ( EM-1) & Permanent Registration Certificate ( EM-II)                                          | District Industries Centre (DIC), Firozabad                                                |
| 2.   | Identification of Project Profiles, techno-economic and managerial consultancy services, market survey and economic survey reports. | MSME-Development Institute, Agra<br>DIC, Firozabad                                         |
| 3.   | Land and Industrial shed                                                                                                            | DIC, Firozabad & UPSIDC, Agra                                                              |
| 4.   | Financial Assistance                                                                                                                | UPFC, KVIC, KVIB, NABARD, SIDBI, & All Commercial Bank                                     |
| 5.   | For raw materials under Govt. Supply                                                                                                | UPSIC, Agra                                                                                |
| 6.   | Plant and machinery under hire / purchase basis.                                                                                    | NSIC, Agra                                                                                 |
| 7.   | Power/ Electricity                                                                                                                  | UPSEB, Firozabad                                                                           |
| 8.   | Technical Know –how.                                                                                                                | MSME-DI, Agra<br>CDGI, Firozabad                                                           |
| 9.   | Quality & Standard                                                                                                                  | BIS, Kanpur/ New Delhi & NPC Kanpur/ New Delhi                                             |
| 10.  | Marketing /Export Assistance                                                                                                        | MSME-DI, Agra<br>NSIC, Noida/ Agra<br>ECGC, Agra                                           |
| 11.  | Other Promotional Agencies                                                                                                          | Director of Handicraft & Cottage Industries/ Textile/ Fisheries, Coir Board, Horticulture. |

*SOURCE: DIC FIROZOBAD*



THE GLASS INDUSTRY IN FIROZABAD PRIMARILY PRODUCES CONSUMPTION GOODS. THE UNITS WORKING AT FIROZABAD, CAN BROADLY BE CLASSIFIED IN TWO DISTINCT CATEGORIES.

A. SMALL-SCALE UNITS

B. COTTAGE INDUSTRY OF FIROZABAD.

PRODUCTION CAPACITY OF A UNIT IS APPROXIMATELY 15 TO 30 TONNES OF FINISHED PRODUCTS PER DAY.

ON THE OTHER HAND POT FURNACES ARE USED FOR MAKING BANGLES.

AT PRESENT THE ORGANISED SECTOR COMPRISES OF THE FOLLOWING UNITS.

(A) UNITS OF GLASS BANGLES 184

(B) UNITS OF GLASS WARES 97

(C) UNITS OF BLOCK GLASS WARES 35

(D) UNITS OF GLASS BEADS 18

(E) UNITS OF POTTERY.

- ROUGHLY 50000 LABOURS OR WORKERS ARE ASSOCIATED WITH THESE INDUSTRIES.

- ROUGHLY 3000 FAMILIES ARE INVOLVED IN BANGLE MAKING.

- ROUGHLY 25000 PEOPLE ARE ENGAGED IN THE PROCESSING OF BANGLES.

- APPROXIMATELY 80000 WORKERS ARE INVOLVED IN THE GLASS INDUSTRY OF FIROZABAD AND THERE ARE APPROX OF 200 CUTTING UNITS IN THE GLASS AND BANGLE CUTTING .

AT PRESENT THERE ARE 165 GLASS BANGLES FACTORIES AND 81 GLASS WARE FACTORIES ARE REGISTERED UNDER THE FACTORIES ACT, 1948 IN FIROZABAD.

THE PRODUCTION CAPACITY OF A TANK FURNACE ARE QUITE HIGHER 25 TO 40 TONE PER DAY WHERE AS POT FURNACE HACVE GENERTALLY L;OW PRODUCTION CAPACITIES ( 4 TO 7 TPD).

[http://shodhganga.inflibnet.ac.in/bitstream/10603/57683/9/09\\_chapter%203.pdf](http://shodhganga.inflibnet.ac.in/bitstream/10603/57683/9/09_chapter%203.pdf)  
(DIC FIROZABAD)

**STUDY OF ECONOMIC ACTIVITY :**

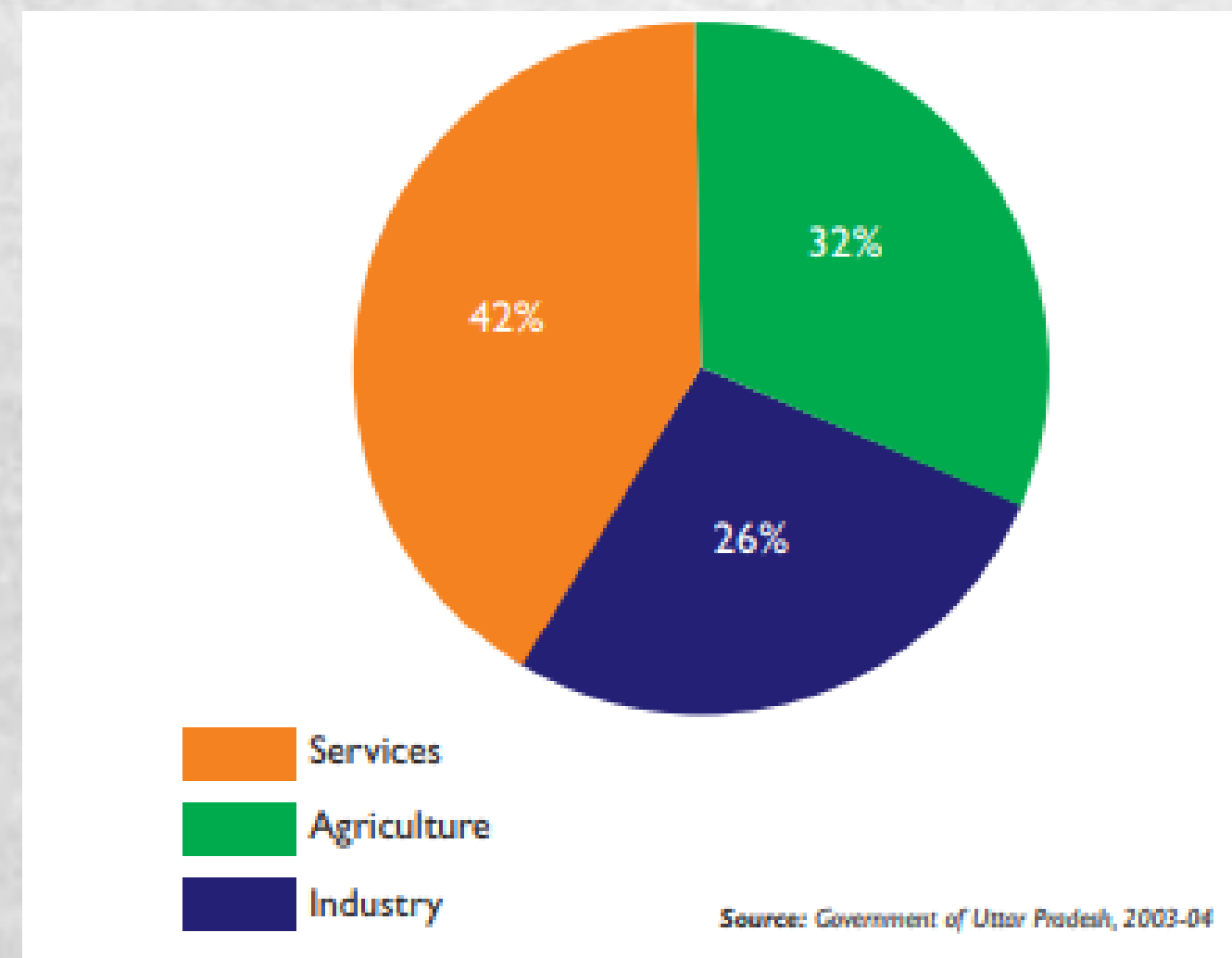
**FIROZABAD**



## INDUSTRIAL POLICIES

### INDUSTRIAL PROFILE

- Uttar pradesh is the second biggest state economy in the country, with a share of 10.7 per Cent in aggregate domestic product.Area-wise it is the fourth largest state in the country.The State recorded a growth of 4.5 per cent during 1993-94 to 2003-04. N.The western region is more Urbanised than the rest of the state and has 622 industrial workers per thousand in registered factories, Against 443 in the state. The density of population in the western region is 762 per thousand against 689 in the state.



### INCENTIVES FOR INVESTMENT:

- Subsidy of 20% of fixed capital investment for new units in most backward areas.
- Subsidy of 15% of fixed capital investment for new units in less backward areas.
- Subsidy of 10% of fixed capital investment for new units in least backward areas.
- Deferment of luxury tax in thrust areas for 5 years.
- Exemption of minimum power demand charges for sick units during the clousure period.
- Land at 20% of market prices for standard hotels.

### GOVERNMENT POLICIES

The government has upto late 1980s' followed a favourable policy towards the glass industry.

The emphasis was on the industrialisation of backward areas and to regional development. A major part of the industry inputs could come from the recycling of waste. The government of india has reserved a list of items to be produced in the small-scale sector:

1. Glass beads except industrial beads.
2. Simple glass mirrors excluding special glass mirrors such as those meant for optical instruments.
3. Scientific laboratory glassware excluding borosilicate type.
4. Micro cover glasses and slides for microscopes.
5. Glass bangles.
6. Glass halloware by month blown or semi automatic process.
7. Glass tumbler, soda line silica pressed.
8. Glass plates.
9. Glass bowls.
10. Glass ashtrays.
11. Glass vases.
12. Glass marbles.
13. Glass roofing tubes.

The glass industry in firozabad which dates back mughal period has gained prominence due to unique craftsman ship of products.

### VISION & MISSION

The state government of UP has laid thrust on the following key areas:

- Create facilitative administrative systems
- Reduce lead time in setting up of industries
- Remove bureaucratic hindrances
- Provide internationally competitive infrastructure
- Unfetter industries in the conduct of their business



# GLASS RECYCLING PROCESS

Glass recycling process has the following steps

## 1.COLLECTION

Different types of glass items end up in waste piles and recycle bins after serving the purpose or breaking.

These are collected using a country wide networks which includes

- RAG PICKERS
- WASTE COLLECTORS
- WASTE DEALERS
- RECYCLING ENTERPRISES

Upon collecting glass waste it is transported to the nearest sorting facilities for further processing.

## 2.SORTING

Different types of glasses are prepared by the addition of different chemicals in slight variation of different manufacturing process. Glass waste is sorted based on its colour to increase recycling efficiency.

## 3.CULLET PRODUCTION

Once the waste glass is sorted, its is then turned into tiny pieces called cullet by means of crushing and grinding. Cullet can form different sizes depending on the requirements.

## 4.DE-CONTAMINATION PROCESS

All types of wastes including glass waste are riddled with different types of contaminants. If contaminants are allowed to remain in the glass cullet, the quality of recycled glass can be effected

Source: [www.greensutra.in](http://www.greensutra.in)



Different contaminants can be processed in the following manner:

- Metallic contaminants are passed through magnets.
- Paper and plastic contaminants are picked up manually or through an automated process.
- Ceramic contaminants are removed by sieving where finely ground glass cullet is made to pass through various screens.

## 5. DECOLOURISING AND DYEING

Glass cullet needs to undergo glass decolourising in the glass recycle process, followed by dyeing. The decolourising process involves oxidising the melted glass cullet.

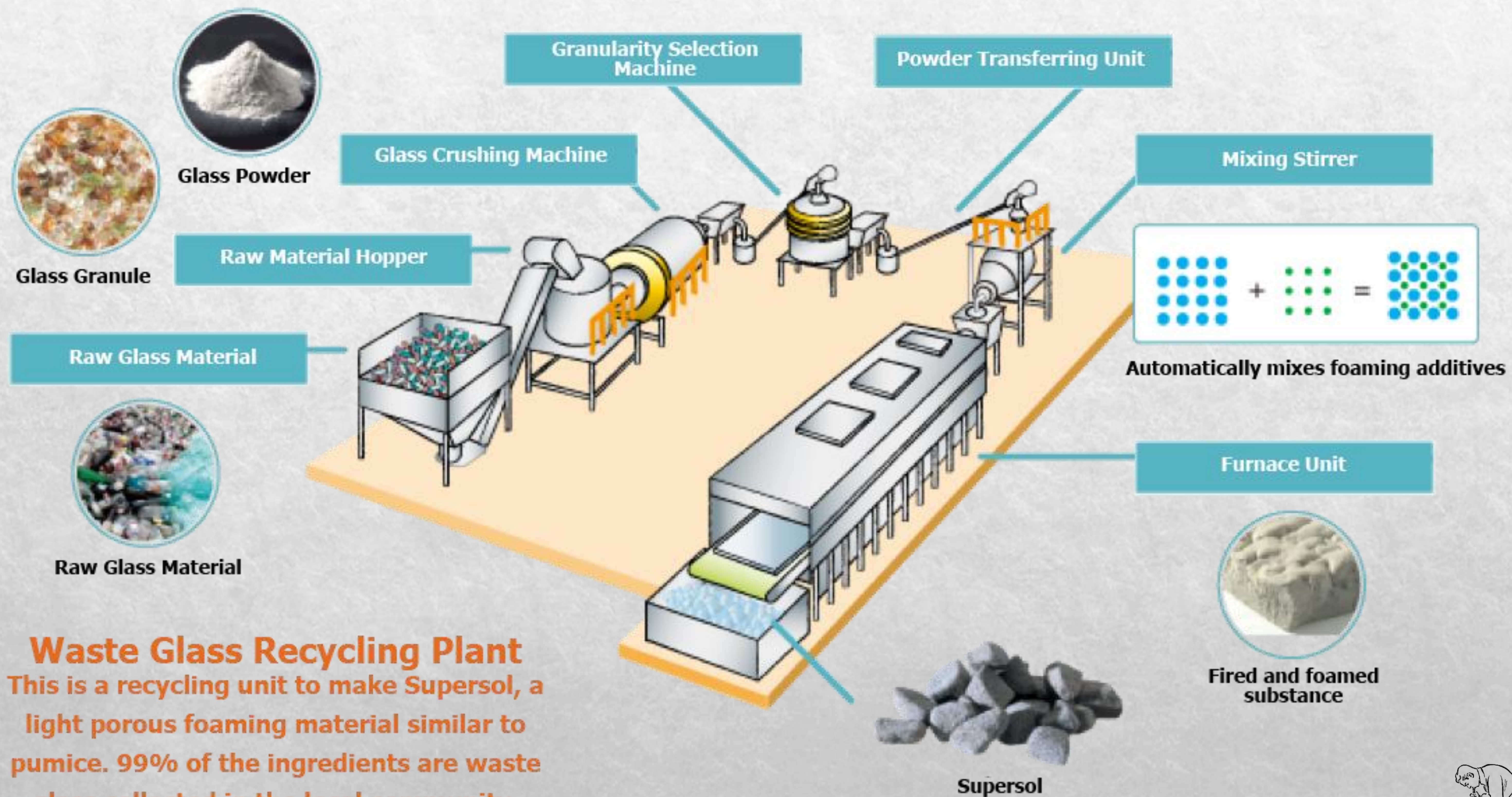
## 6. MAKING RECYCLED GLASS PROCESS:

To make recycled glass products, the glass cullet, clear or coloured, is melted and moulded into the desired glass products like, bottles, jars, containers etc.



Source: [www.greensutra.in](http://www.greensutra.in)





**Waste Glass Recycling Plant**  
This is a recycling unit to make Supersol, a light porous foaming material similar to pumice. 99% of the ingredients are waste glass collected in the local community.

Source: [www.greensutra.in](http://www.greensutra.in)

