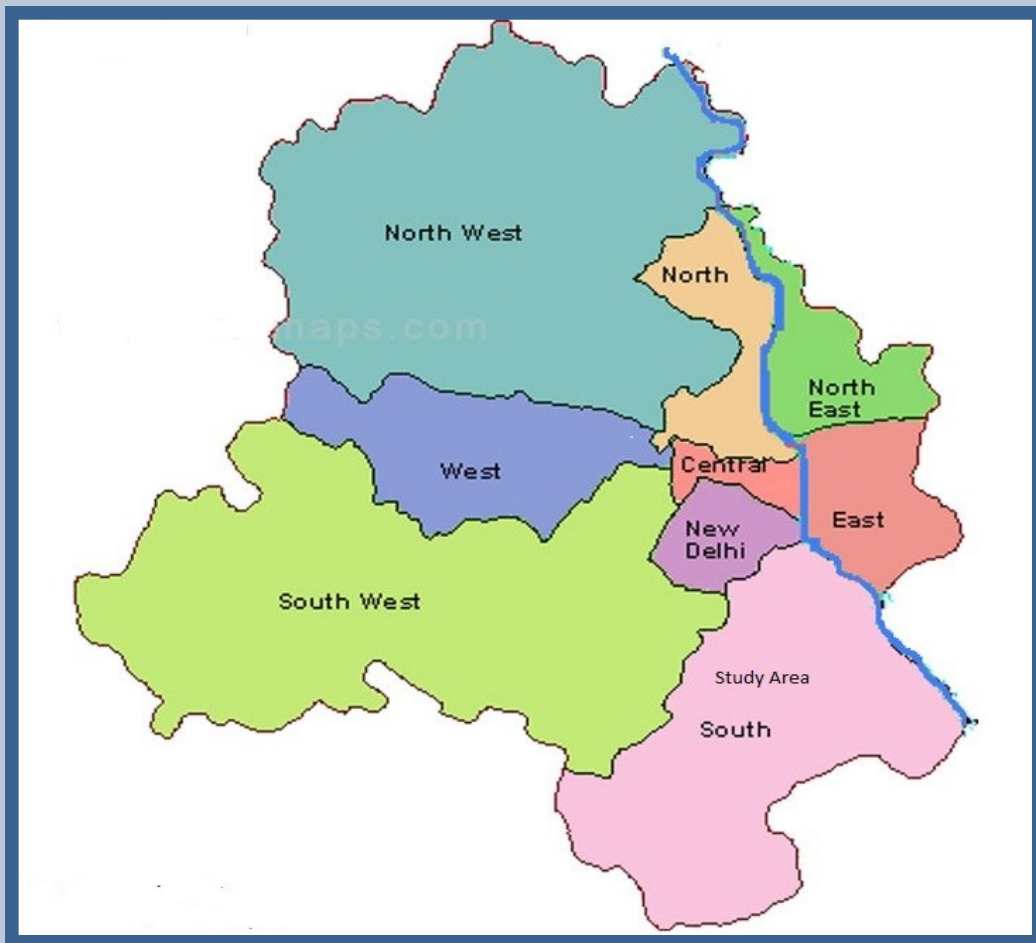# Disaster Vulnerability & Community Resilience

Participatory Neighbourhood Study of South Delhi

Phase II-Case study of Shahpur Jat Area

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Contents

Acknowledgements

1. Introduction

All over the world increasing populations and their migrations to urban areas are resulting in increased disaster threats, which are not only a reflection of the extreme events, but also the changing demographic and socio-economic characteristics of population in an area. These components are important since they may place members of a certain community at harm and make them more vulnerable to disasters.

The phenomenon of vulnerability underlines the fact that a disaster mainly manifests itself with reference to underprivileged sections of society. "Vulnerability is formally defined as the characteristics of a person or a group and their situation that influences their capacity to anticipate, cope with, resist and recover from the impact of a natural hazard"(UNISDR).
Vulnerability is reflected through four kinds of factors

- **Physical factors** like population density, site, design and the material used for construction.
- **Social factors** like inability of people, organisations and societies to withstand impacts of hazards due to specific socio-cultural characteristics. This also includes level of literacy and education, existence of social security and traditional values.
- **Economic factors** like economic status of individuals and communities, with the poorer sections of society being more vulnerable due to lack of resources.
- **Environmental Factors** like low lying areas being more susceptible to water logging.

With reference to the above mentioned factors, zones of vulnerability were identified and efforts were made to underline community resilience in the face of an impending disaster.

Objectives of the study

Within the context of vulnerability to disasters and community resilience, we have taken the following objectives in our study

- To identify disaster prone areas within a locality-(by a thematic sketch and google maps)
- Identify areas transformed due to land use changes resulting in more vulnerability for residents.
- Compliance of constructions, to building codes.
- Community resilience factors to be underlined.

Study Area

Delhi, the capital of India, is located at 28.61˚ North and 77.20˚ East. It is bounded by the Indo-Gangetic alluvial plains in the North and East, by the Thar desert in the West and by Aravalli hill ranges in the South. The terrain of Delhi is flat in general except for a low NNE-SSW trending ridge which is considered an extension of the Aravalli hills of Rajasthan.

Seismicity around Delhi appears to be associated with a major geological structure, which is known as the Delhi-Hardwar Ridge. It coincides with the extension of the Aravalli Mountain belt beneath the alluvial plains of the Ganga basin to the northeast of Delhi towards the Himalayan Mountain. Delhi is located in zone IV which has fairly high seismicity. Delhi lies among the high-risk areas in terms of the occurrence of earthquakes and hence a prevention-cum-preparedness plan should be prepared for the state. A lack of planning in construction and designing is evident with high rise buildings built in the high risk areas and the development of unplanned settlements. The vulnerability analysis in case of housing has never been carried out with no available estimate of potential damages.

Added to seismicity, floods are also a major disaster in some parts of Delhi. It is during heavy rains in the catchment areas that the water level rises, creating floods in the low lying areas along the river and causing back-flow effect on the 18 major drains of the city. The city has been vulnerable to floods causing loss of life and property and since the late 1970s, this problem has become acute. The major flood affected areas lie in North Delhi and trans-Yamuna. Local flooding and water logging has been a significant phenomenon in the recent decades which has been a result of large proportions of area under impervious surfaces, for e.g., roads, pavement and constructed areas.

Along with natural hazards, there are various kinds of man-made disasters which have been playing havoc with people's lives in Delhi. One of the major disasters within this context has been the case of fire. Fire incidences have been steadily increasing and one of the major causes has been electric short circuiting, both in residential and industrial areas. Not only this, industries using chemicals and inflammable material have also had tragic instances of losses by fire. The losses are not by fire alone but because of the delay in the fire response time. This delay is caused by crowded streets, encroachments on the pavements and inadequate water supply to the fire station areas.

Methodology

The methodology revolves around creating an open ended questionnaire to enquire about perceptions and occurrence of disasters and resilience to vulnerability created by them. The second step involved selecting the localities for in-depth survey. These localities were selected in the neighbourhood of the college based on the parameters of physical and social vulnerability. Parameters of vulnerability index

1. **Physical vulnerability**
    a. Overcrowded locality
    b. Dense infrastructure
    c. Limited escape routes
    d. Violation of building codes to support more population
    e. Use of heavy construction material
    f. Poor design and construction of buildings

2. **Social vulnerability**
    a. Levels of literacy and education
    b. Social equity
    c. Economic status
    d. Nature of livelihoods, formal/informal

It is on the basis of these factors that the urban village of Shahpur Jat was selected as a study area and community resilience levels wered erived on the basis of above mentioned parameters of vulnerability. This village is surrounded by Upper-end localities of Panchsheel, Siri Fort Complex, Hauz Khas Institutional area and ASIAD Village Complex.

The third step involved selection of samples through random sampling method, based on every third unit along a lane. From this locality, 60 sample respondents were selected from different strata of society. This included the richer category of Fashion Couture owners, the workers and, on the other hand, the residents of the village. This was supported by participatory appraisal which involved interviewing community members and involving them in data collection and perception gathering process. Their involvement gave us a more reliable understanding of the communities' vulnerabilities and capacities. Also, this has helped us in incorporating their ideas in the disaster preparedness and response plans. Our goal is using this

method is to reduce vulnerability of communities to disasters through the preparedness guidelines given by community members.

After gathering data it was tabulated and diagrammatically represented through pie-charts and bar diagrams. Consequently, the data was interpreted and analyzed to arrive at meaningful conclusions and the information was supported with the help of photographs wherever possible.

Organization of the Study

The study conducted is organized in the following manner.

1. Introduction to the area.
2. Disasters and community perceptions..
3. Disaster preparedness and mitigation.
4. Assessment of community resilience.
5. Surveyor's observations.

2. Shahpur Jat– A Rural entity within an urban context

Urban Village – The evolution of the concept

The Indian village has occupied a prominent place within the discourse of colonial administrators, anthropologists and nationalist leaders in India. These different groups have constructed their own models of what constitutes an 'ideal village'. In the colonial discourse 'village' was often seen as a relatively stable entity independent of the eco-political sphere of the larger society. The nationalist leaders on the contrary located village as the centre of social, economic and political life of the nation. Gandhi eventually advocated a policy of total de-centralisation, and the recreation of a craft-based society composed of self-sufficient village republics (Tarlo, Emman: 1996). The Gandhian idea mainly involved a rejection of euro-centric values while establishing a new basis for the regeneration of the notion of Indian village. Traditional anthropological construction of village focused on the concept of 'self-sufficiency' (Mckim Marriot, 1955) of village units. Others, like A.M. Shah (1988), demonstrated the same point with reference to the trade links which had always connected villages to other villages and towns.

In the globalization era, the traditional image of 'Indian village' has undergone a transformation with the reconstitution of the notion of 'village' in urban and rural context. However, the critical turning point for the study of the Indian village was the last decade of the 20th century. The shifts in Indian economic policy during the early 1990s had important implications for understanding Indian village. The village society witnessed a radical transformation by altering its traditional character of being a self-sufficient unit. It is seen today as an integral part of the global society. "Post-1990s India began to be imagined through the social and economic dynamics of its metropolitan centres with its urban middle class occupying centre stage" (Jodhka 2016). But, the village has not simply gone away, rather re-inventing itself in the form of 'urban village'.

Despite the proliferation of developments under the urban village rubric, little academic research has been conducted assessing the impact of man-made or natural disasters on the people in such areas. This is more so since demographic growth brings with it new challenges in the form of overcrowding, encroachments, insecurity and unhygienic conditions of living leading to crisis of everyday existence. The present case study of Shahpur Jat as an 'urban village' seeks to understand community perceptions of disaster, community preparedness and community resilience, in the context of rapid socio-economic and demographic change.

Shahpur Jat: its history and growth

Shahpur Jat, an urban village is located near Siri Fort in South Delhi. Siri Fort, the third city of Delhi, was built at the beginning of the 14th century by the second sultan of the Turko-Afghan Khilji dynasty Alauddin Khilji. Nearby, Hauz Khas was built as a large water reservoir for this city. Probably when Siri Fort was abandoned later, Jats moved to the Shahpur Jat area, being attracted to the fertile lands. Therefor its name when translated means 'Royal towns of Jats'. Since then the area had been a quiet farming village till 1978, when the government purchased lands to build housing and sporting facilities during the 1982 Asian Games. Shahpur Jat is a very old village featuring traditional havelis against the backdrop of the remains of the historical capital city Siri Fort. Stretches of the thick city walls are surrounded by 20th century apartments and office buildings. Within a span of ten years, the area bloomed into a thriving town providing business to large garment workshops resulting in drastic changes of the landscape not only in terms of occupation but also the infrastructure.

In recent times, the narrow-cramped lanes are dotted with traditional havelis juxtaposed with trendy fashion boutiques, which have come up as a new commercial center of this region similar to the Haus Khas Village. Affordable rentals and proximity to number of workshops have helped in developing this region as a new fashion hub in recent times. The village practically thrives with handicrafts, weaving and embroidery which has become the home to large number of migrant skilled craftsmen. The area is one of the largest centers of the zari embroidery in North India.

On the village periphery, Dada Jungi House is one of the most famous streets which showcases some of the prominent designer brands. The place is dominated by the budding designers who have carved out their place in the fashion world by becoming successful entrepreneurs. These shops stock items at comparative affordable prices that draws consumers from India and abroad. This has resulted in increasing footfall in this area which increases during the festive and wedding seasons.

Issues of urban village-Shahpur Jat

The transformation of the rural fabric into a partial urban space has resulted in drastic changes which not only have impacted the physical vulnerability of the area but also the socio-economic composition. As regards the economic components, the settlement has benefitted through the parameters of development getting strengthened over here. But as we look at the physical parameters of vulnerability, there have been deteriorative impacts manifesting in congestion, overcrowding of residential spaces, violation of building codes and unhygienic conditions of living which have increasingly posed challenge to the locals residing in the area. Though content with the money they had gained, from the rents, the villagers/locals complained of traffic congestion, loss of peace, space and even morality in the village. Apart from criticising the increasing commercialization of the area, the local women bemoaned the alcohol problems of their own husbands and sons, and their total apathy concerning education and civic awareness. Residents complained of narrow, cramped dilapidated lanes with incessant lack of space for any development activities. Shortage of clean drinking water, power supply and the neglect of the government towards supplying the basic amenities of living are some of the other issues that the residents complained about.
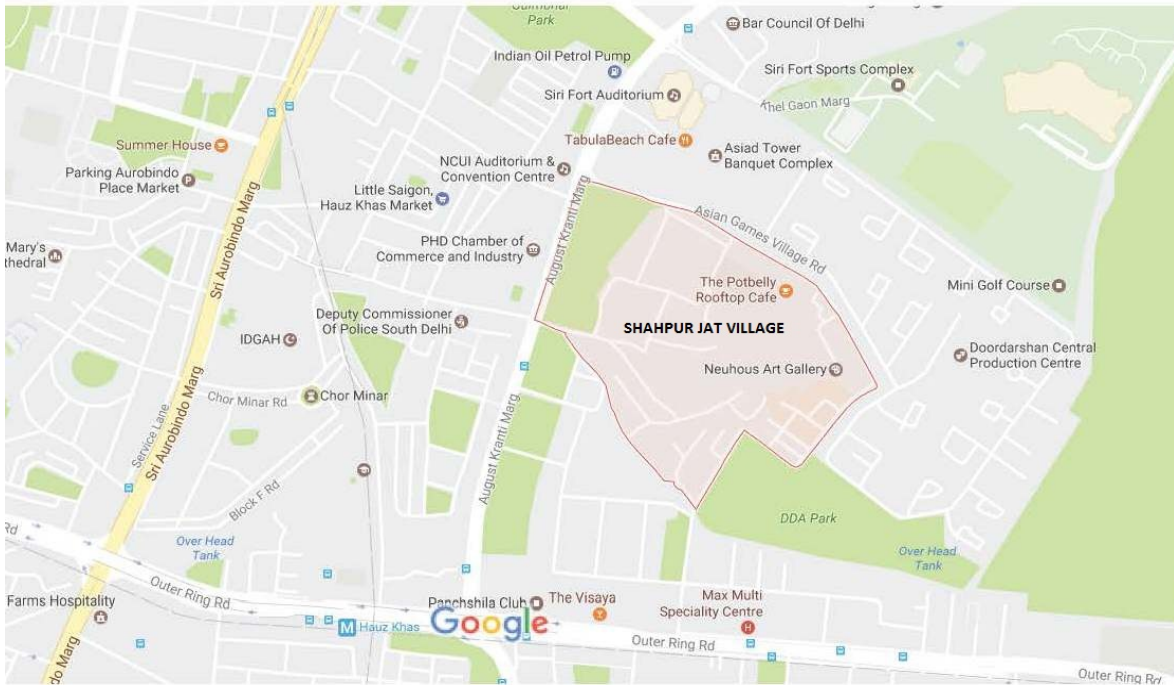

Students conducting survey in ShahpurJat
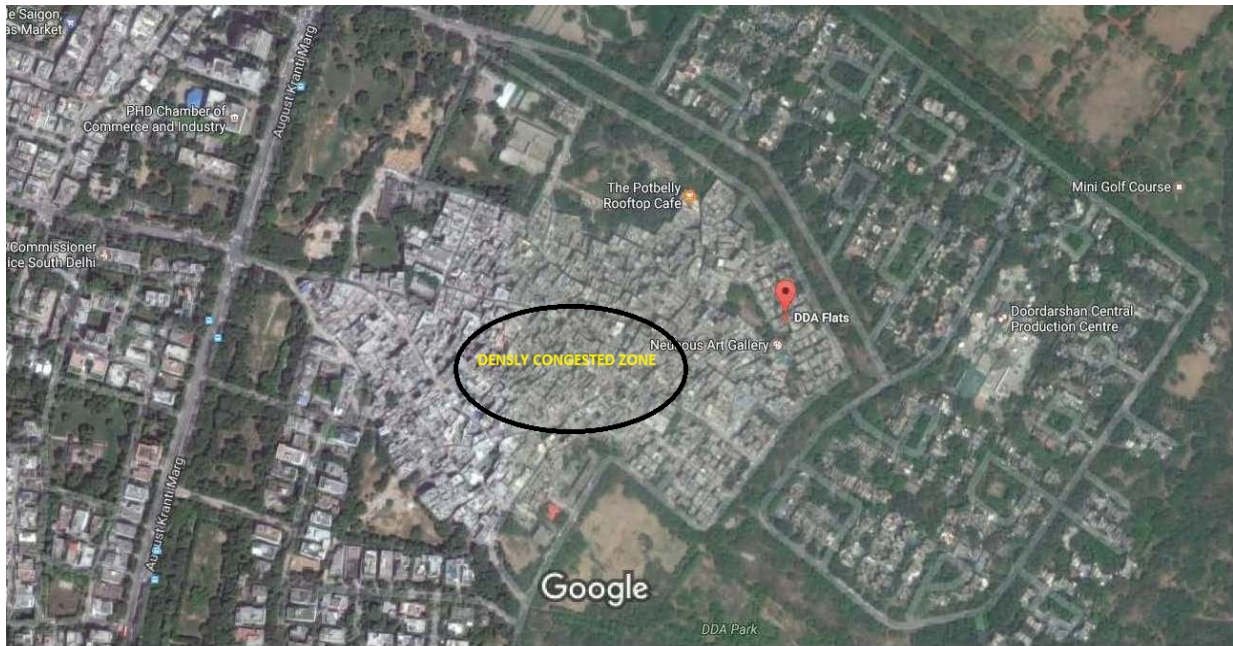
Google Earth Image of Shahpur Jat Village highlighting congested zone.


Google Map of Shahpur Jat village, New Delhi.

3. Disaster Vulnerability and Community Resilience

Community Perceptions

The general perception on disasters is clear, but there is only a hazy conception about the term itself and the boundary between natural hazards and man-made disasters seems to be missing. The community responded in negative about the disasters occurring in their neighbourhoods, with reference to flooding and water logging. But occurrence of fires has been quoted as the most significant disastrous event in their surroundings.
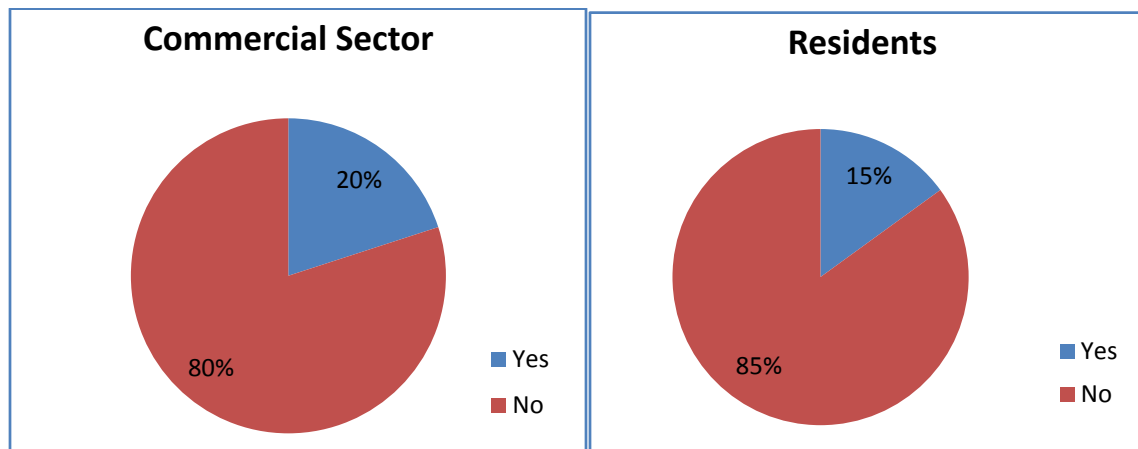
As regards proportion of respondents, the residents were more vocal and 85% of them supported the view about occurrence of disasters in neighbourhood areas, whereas commercial sector respondents did not have much idea. With reference to nature of disasters, both the sectors supported the view that the earthquakes could be most destructive, but only tremors were felt. As regards largest proportion of disasters, 50% of the respondents felt the risk from fire was the strongest, attributed to electrical short circuits or CNG cylinder blasts. Flooding and water logging were not important with reference to disaster occurrence.

Disaster Preparedness

This is the basic framework available for risk reduction and readiness in the face of disasters. As regards the resilience of structural units, residents responded that the houses were strong enough to withstand disasters, but about one-third of the residents felt that the foundations were too old to support multi-layered structures and they may collapse.

Commerical-Disaster Resilient Structure

- 0%
- 100%
- Yes
- No

Residents- Disaster Resilient Structures

- 35%
- 65%
- Yes
- No
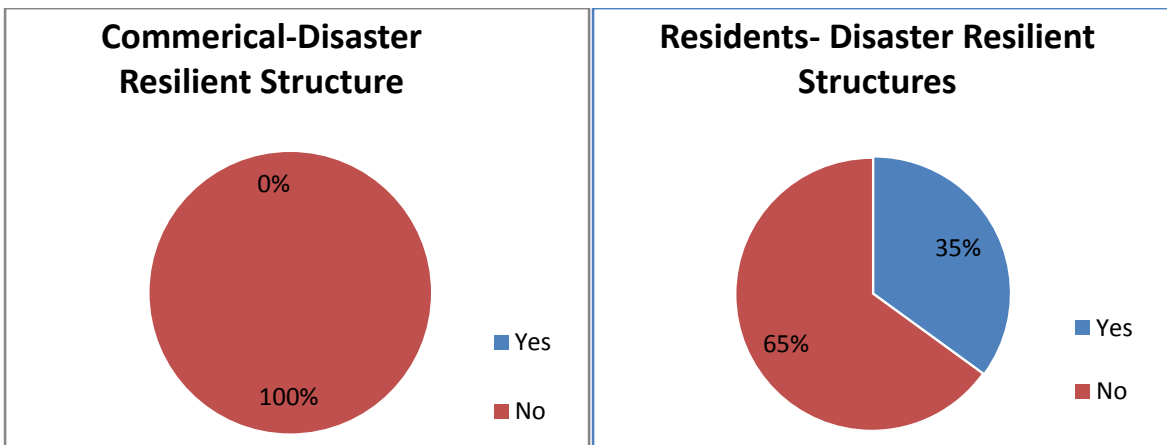
Responses about accessibility to fire stations, ambulances, Police stations and health care also depicted variations and this was a result of their education levels and the time of their stay in the area. As regards helpline numbers Residents had clear idea about the Police and fire station numbers. They felt they had proper access to Fire and Police stations which are located in Panchsheel and Hauz Khas. As regards emergency helpline number sabout 80-90% were aware of one of the numbers i.e. Police-100, but very few knew about women and child helpline numbers, or fire service or ambulance service access numbers

Commerical -Helpline Numbers Known

- 14%
- 48%
- 38%
- Police Station
- Fire Station
- Health Care

Residents-Helpline Numbers Known

- 18%
- 40%
- 42%
- Police Station
- Fire Station
- Health Care
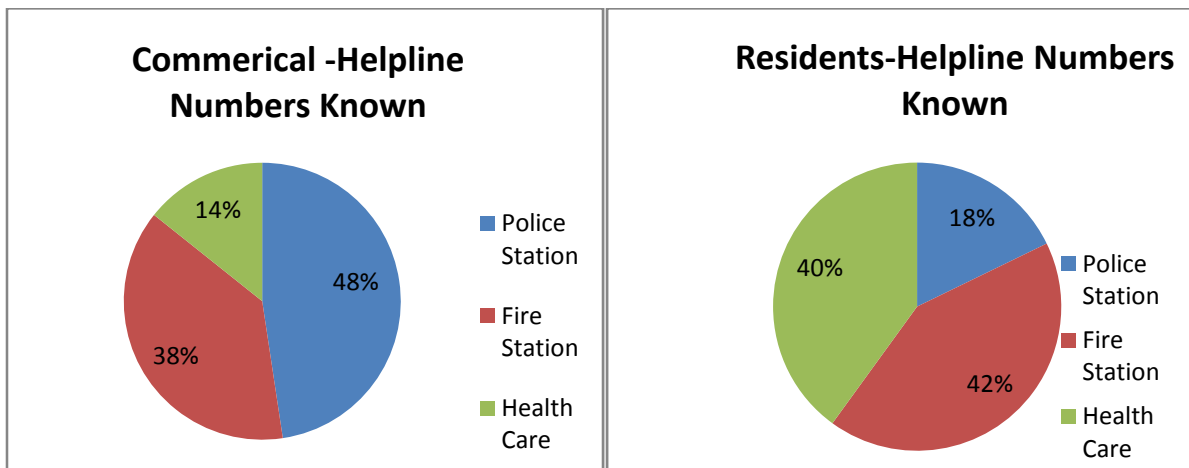
Awareness about disaster management: through school mock drills, through media, but no formal training. They were keen to have disaster drills in the locality.

Community Resilience

Respondents were inquired about skills that they possessed which could help during disasters. They were aware about the first-aid skills and evacuation mechanism through providing their vehicles and drivers to transport the victims to hospitals, but they lacked the knowledge of skills like nursing, swimming and others.
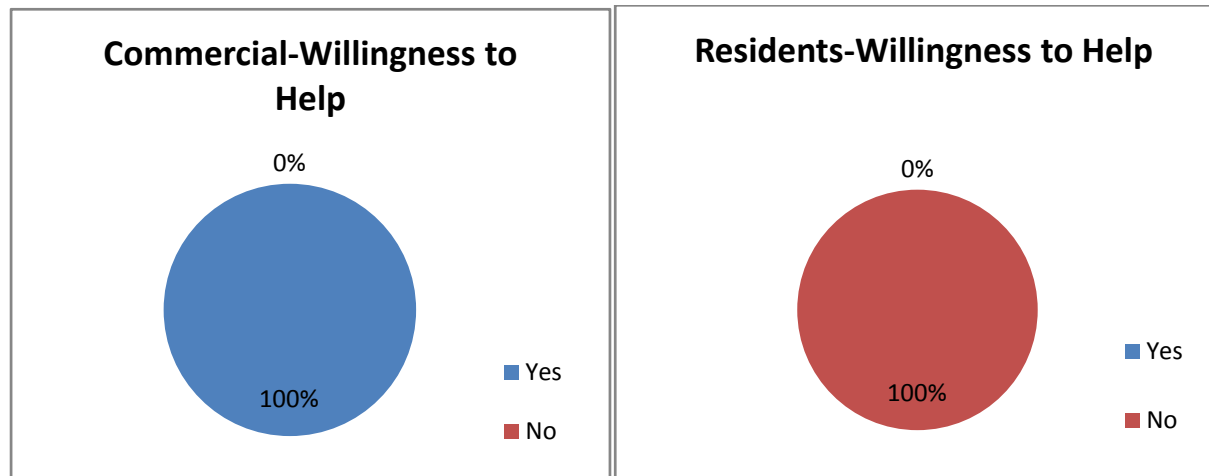
/But they all supported the view that they could provide shelter, food and clothing and other medical help to their neighbours, in case of a disaster. They were also very highly interested in having mock drills and disaster management workshops in their locality. All said and done, people were than willing to volunteer for help. And this manifests the strong community bonds which cut across all strata, when disaster strikes. What the authorities could do is to create a local task force which create awareness and helps in disaster mitigation. Also it could mark the zones of assemblage in case of a disaster. Emergency numbers too could be put up on notice boards.

Surveyors' Observations

This urban village has grown very fast and population density is very high. Not only it house the migrants from other states who have come to Delhi for jobs, but it has its own residents who have built four storeyed houses on foundations which were meant for two storeyed structures. Not only this the up-scale fashion brands have also converged here and about 60 -70 shops have cluttered the village periphery. Cafes and restaurants have also come up, congesting the area further.

As the shops proliferate and houses become multi-storeyed, the basic services like electricity and water supply have become over-burdened. Wires taken from the Mains often hang very low and pose fire and electrocution threats. Along with these problems, the streets within the village are narrow and also encroached upon by vendors. Rather the streets are so narrow at some places that even a small car can barely pass through them. Vendors have encroached upon both streets and open spaces and the whole area appears congested all the times. Commuters have difficulties in moving through such zone since even the pavements are encroached upon.

In such a scenario, the occurrence of a disaster would escalate destruction in the area since there would mean lack of access to evacuation vehicles and fire engines and hence delays in rescue efforts. Also as people try to escape from the disaster affected area, this could result in a stampede.

Disasters, in the waiting- a narrow street in ShahpurJat.

4. Conclusions

Shahpur Jat, village, owing to its rural nature which is being rapidly transformed, stands at cross-roads with reference to the components of physical and social vulnerability which impact both disaster and resilience. The physical vulnerability criteria have created high levels of risk resulting from dense infrastructure, overcrowded residential spaces and encroachments on pavements, these components could result in colossal loss of life and property as disaster strikes. The construction of multi-storeyed structures on weak foundations may ultimately result in building collapses and threat to human life.

Disaster vulnerability was observed to be closely related to the criteria of social vulnerability, livelihood security and levels of literacy. Here one found higher levels of socio-economic vulnerability in the residential community rather than the commercial sector respondents. The low income of the residential community are also a big deterrent to compliance of the building codes in the area.

Despite these vulnerabilities, both the communities showed high levels of disaster preparedness, although emergency helpline numbers were not presented on the bill-boards in the village. Community members knew only about the Police and fire station numbers and not about the women and child helpline and ambulance services. Last but not the least, the respondents showed high levels of willingness to volunteer in any kind of a disaster situation. This shows, despite the urbanising fabric of the village, the social bonds within the community are very strong. Also they were open to participation disaster drills and learning more about disaster management.

Narrow, cramped lanes of Shahpur Jat

The lack of parking spaces-cars parked on the lane.
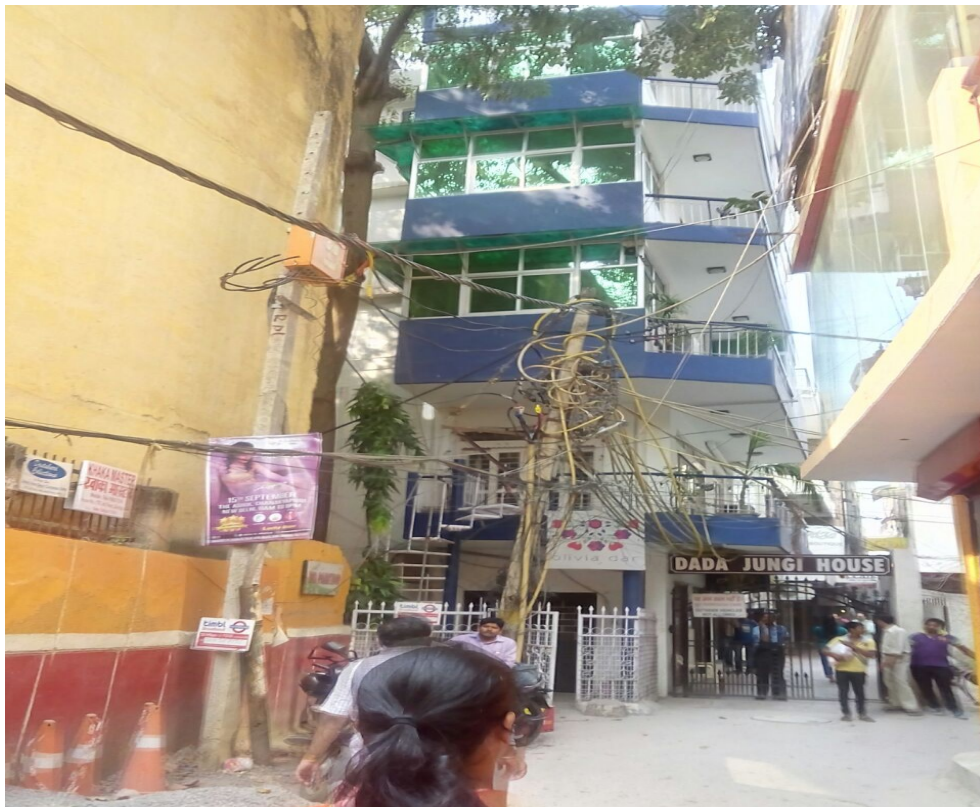
Illegal construction going on and high voltage wires hanging low.

Narrow lanes that make the escape difficult

School and a private clinic.

Historical remnants near the village.

Occupational contrasts

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6. Annexure I: Questionnaire (Residents)

College Cluster Initiative: Participatory Neighborhood mapping-Kamala Nehru College

Area:…………………………… Date:…………..

1. Name:

2. Address:

3. Age:

4. Education:

5. How many family members do you have?

6. Are you the owner of this building or on rent?

7. What do u do to earn your living ?

8. How long have you been residing here? Are there any changes you have seen in last 10/5 yrs? How?

    a. What are the main problems of your street/colony?

    b. Do you want to make the region more spacious and developed?

    c. If yes, how do they visualise their idea of a better space/developed residential areas?

9. What according to you is 'disaster' or 'Apada'? Can you give us some examples?

    a. Why do these things happen?(Check whether they are referring to natural/religious/man made?)

    b. Probe for each cases(record the narratives if they tell you a real story of their own life or their neighbours) try to record(if they are comfortable record it using a recorder if not...just listen to and reproduce the story in the field diary) narratives at least four or five during the course of study

10. Do you remember any disaster in your neighbourhood?(related to 8b)

a. Examples? What happened? Type of disaster building collapse /earthquake related damage/ short circuits /fire....any other (note)

b. Was it led to some casualties ? Death/ injuries/ destruction of wealth/any other

c. Was the problem solved? How? Who helped the victims? Police/ NGOs workers/neighbours/family members/ any other

11. Is there any access for fire engine or ambulance to your house/locality?

12. Do you know first aid/swimming or any other skill that can be used in disaster response?

13. Give an imaginary situation related to disaster to see how they coming up with solutions. If this happens....what would be your strategies to help yourself/your belongings.

14. Where is the nearest

   a. Police Station

   b. Fire station

   c. Health Centre

15. Are you aware of any emergency number of police/fire/corporation office/disaster helpline/women helpline/ child helpline?

16. Have you heard about disaster management? Yes/no

   a. If yes:

      i. Where? school/college/NGO/ Govt. Training centres./any other ..(probe:) Where you taught/heard anything on disaster management .

      ii. What you think...does it help...Will it help?

   b. If no ask what would help to meet disaster related problems?

   c. Do you think human beings have invited these problems for themselves? If yes how can we manage it better?

17. Do you have any idea about disaster resilient? What do you feel about it?

18. How old are the buildings...when was the last floor constructed?

    a. Do they need permission to build...if yes whom do they approach?

    b. In case permission is not granted at initial phase then to whom they approach? (To understand role of state whether positive/negative)

19. Is your house disaster resilient..from Earthquake/Water logging/ Lightning?

A. Is water logging a problem in your area?...what should be done ?

B. Do you fear much when frequent earthquakes jolt your house? What can be done?

C. What kind of problems you face during rainy seasons...or during summer...winters

20. Does your community have any associations like RWA? Yes/no

    a. If yes, ask what are their functions? Check their role in disaster management. (who are the members, how frequently they meet, have they ever discussed about disaster?)

21. Have you anytime been involved in disaster management?

    If yes: then ask:

    a. How? Explain.

    b. What are the problems you faced?

22. If no: then ask:

    a. What can you do get involved in emergency planning in your community?

    b. How can you help yourself and others around you in case of an emergency?

    c. If you have a Disaster Management Task force would you like to volunteer? In what ways?

Annexure II: Questionnaire (Shop owners)

College Cluster Initiative: Participatory Neighborhood mapping-Kamala Nehru College

Area:………………………………   Date:…………..

1. Name:

2. Address:

3. Age:

4. Education:

5. Are you the owner of this shop?

6. If yes then ...

    a. Probe on the duration, nature of organisation(inherited or newly started)

    b. Whether they are the supplier/owner of the brand

    c. Any changes they have seen in their business/work since last 10 years (if their business in more than 10 yrs old) in terms of increasing demands/ increase in workers

7. In these years…

    a. What are the main problems of your street/colony?

    b. Does these impacts your shop/business? How?

    c. Did you do anything to change them? Explain

8. What according to you is 'disaster' or 'Apada'? Can you give us some examples?

    a. Why do these things happen?(Check whether they are referring to natural/religious/man made?)

    b. Probe for each cases(record the narratives if they tell you a real story of their own life or their neighbours) try to record(if they are comfortable record it using a recorder if not...just listen to and reproduce the story in the field diary) narratives at least four or five during the course of study

9. Do you remember any disaster in this neighbourhood?(related to 6b)

   a. Examples? What happened? Type of disaster building collapse /earthquake related damage/ short circuits /fire....any other (note)

   b. Was it led to some casualties ? Death/ injuries/ destruction of wealth/any other

   c. Was the problem solved? How? Who helped the victims? Police/ NGOs workers/neighbours/family members/ any other

10. Is there any access for fire engine or ambulance to your locality/shop?

11. Do you know first aid or any other skill that can be used in disaster response?

12. Give an imaginary situation related to disaster to see how they coming up with solutions. If this happens....what would be your strategies to help yourself n your ur shop and belongings.

13. Where is the nearest

   a. Police Station

   b. Fire station

   c. Health Centre

14. Are you aware of any emergency number of police/fire/corporation office/disaster helpline/women helpline/ child helpline?

15. Have you heard about disaster management? Yes/no

   a. If yes:

      i. Where? school/college/NGO/ Govt. Training centres./any other ..(probe:) Where you taught/heard anything on disaster management .

      ii. What you think...does it help...Wl it help?

   b. If no ask what would help to meet disaster related problems?

c. Do you think human beings have invited these problems for themselves? If yes how can we manage it better?

16. What about your shop? If you were to make it disaster proof..what would you do?

    a. List down the items. Ask are any of them implemented at your end?

    b. If yes ask which? Any problems in implementation?

    c. If no..ask why? What were the problems in implementation?

17. Do you have any idea about disaster resilient? What do you feel about it?

18. Is your shop disaster resilient..from Earthquake/Water logging/ Lightning?

    a. Is water logging a problem in your area?...what should be done ?

    b. Do you fear much when frequent earthquakes jolt your house? What can be done?

    c. What kind of problems you face during rainy seasons...or during summer...winters

19. Have you anytime been involved in disaster management?

    If yes: then ask:

    a. How? Explain.

    b. What are the problems you faced?

20. If no: then ask:

    a. What can you do get involved in emergency planning in your community?

    b. How can you help yourself and others around you in case of an emergency?