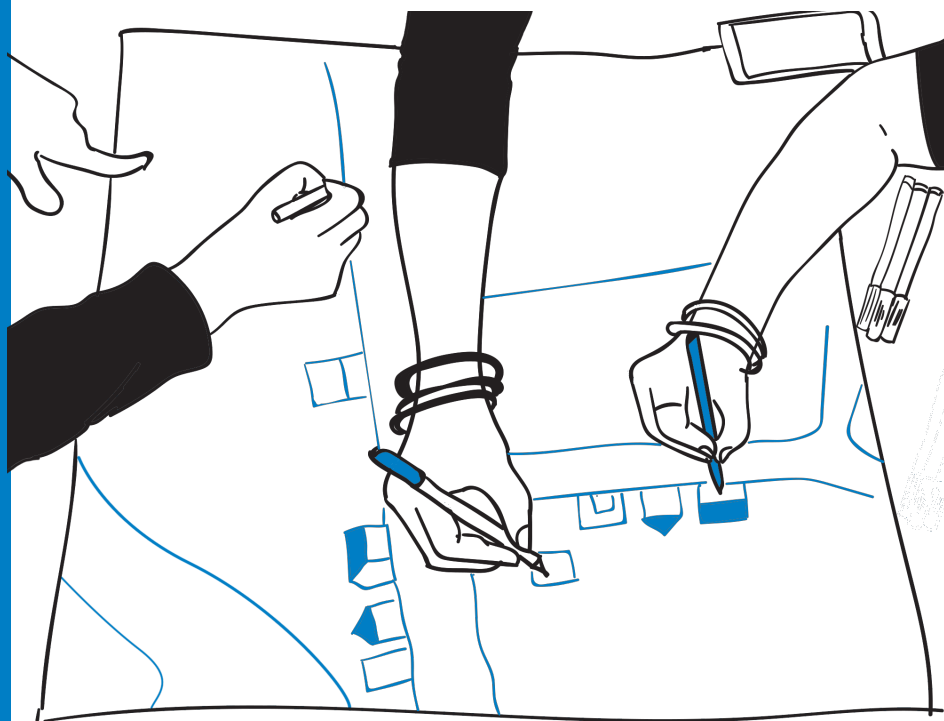


VULNERABILITY MAPPING MODULE

A Module on

How to Conduct a Participatory Vulnerability Mapping
& Priority Planning Exercise in Urban Settlement



Credits

Author:
Adrian Dcruz & Proshin Ghosh

Concept:
Aravind Unni

Illustration and Design:
Kabeer Arora

Field Inputs:
Sukanya Chatterjee
Sarmila Patnayek
Mahavir Mahato
Premanand Baa

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**Indo-Global
Social Service Society**
Celebrating the Spirit of Humanity

Indo Global Social Service Society

28, Lodhi Institutional Area, Lodhi Road

New Delhi 110003 Email - info@igss.net

Website - www.igss.org

Facebook - www.facebook.com/igss

Twitter - www.twitter.com/@igss Tel. 011-45705000

VULNERABILITY MAPPING TOOLKIT

A Module on
How to Conduct a Participatory Vulnerability Mapping
and Priority Planning Exercise in Urban Settlement

Prepared by:
IGSSS

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In solidarity



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ABBREVIATIONS

HH - Households

MC - Municipal Corporation

SBM - Swachh Bharat Mission

CBO - Community Based Organisation

CSO - Civil Society Organisation

NGO - Non-Governmental Organisation

GOI - Government of India

TOD - Transit Oriented Development

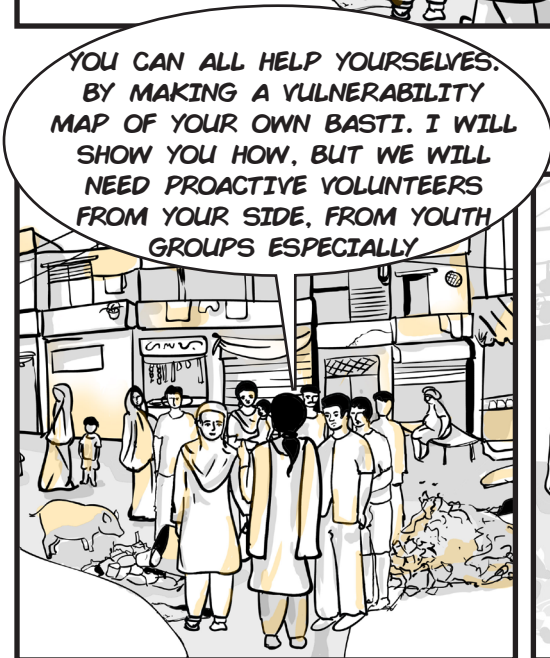
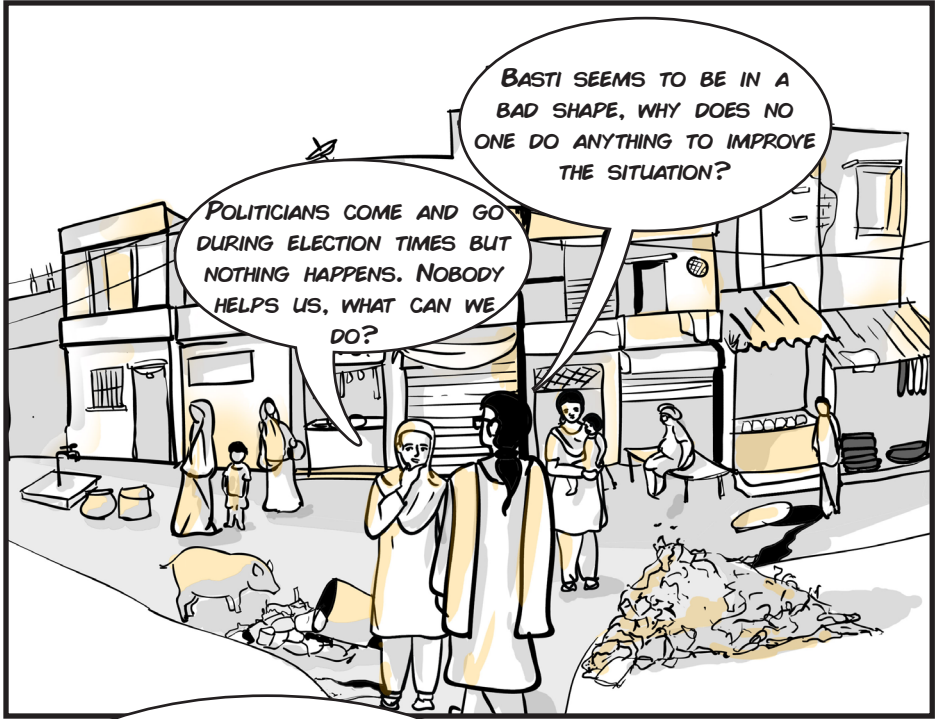
ULB - Urban Local Bodies

Vulnerability Mapping

A Visual Story

WOMAN FROM NGO GOES TO THE BASTI AND SEES VULNERABILITIES (BROKEN ROADS, NO STREET LIGHTS, VERY FEW PUBLIC WATER TAPS, WASTE AND SEWAGE OVERFLOWING ON THE ROADS, CRUMBLING INFRASTRUCTURE AND HOUSING UNITS)





Yes,
THIS IS A VERY IMPORTANT
STEP WE ARE TAKING, THERE
ARE MANY PROBLEMS BUT THE
BASIC PROBLEMS LIKE ACCESS
TO WATER, CLOSED DRAINAGE
AND STREETLIGHTS SHOULD BE
TAKEN CARE OF FIRST!

WE SHOULD SHOW THE
FLOOD DAMAGE WE HAD
LAST MONSOON WHEN 2
HOUSES FELL

LET US ALL COLLECTIVELY
IDENTIFY THE PROBLEMS IN OUR
BASTI AND WRITE IT DOWN IN
A MAP. WE SHALL TALK TO
ALL THE DIFFERENT GROUPS
OF PEOPLE, ESPECIALLY THE
VULNERABLE ONES



VOLUNTEERS MAPPING DIFFERENT ISSUES IN THE BASTI, MEETING AT A COMMON POINT WITH ASSISTANCE FROM THE NGO WORKER.



STATIONARY



DIFFERENT PARTICIPANTS



LEGEND OF MAP



MEASURING AND RECORDING DEVICES



THIS IS REALLY HELPFUL. WE NOW HAVE CLEAR IDEA OF THE THINGS NEEDED, WE CAN MANAGE RESOURCES FOR THESE ISSUES

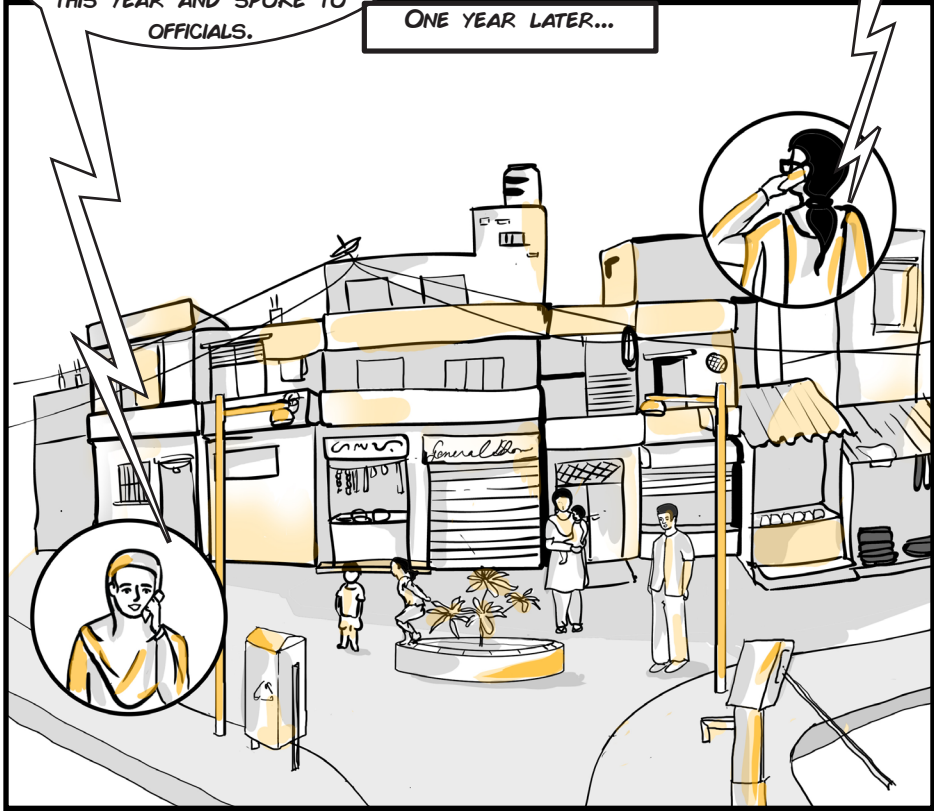
MEETING WITH THE OFFICIALS



HELLO DIDI,
THINGS ARE MUCH BETTER
NOW, YOU SHOULD SEE.
WE DID THE MAPPING AGAIN
THIS YEAR AND SPOKE TO
OFFICIALS.

THAT IS GREAT!
MAKE SURE TO BRING IN
AND GUIDE NEW AND YOUNGER
VOLUNTEERS. ALL THE BEST!

ONE YEAR LATER...



INTRODUCTION

VULNERABILITY MAPPING TOOLKIT

The vulnerability mapping toolkit is an exercise used for finding out vulnerabilities in an urban settlement through a participatory and inclusive process. This exercise leads to community led drawing of maps with the various infrastructural vulnerabilities in the urban settlement. This map is then used to advocate for planned urban development within the settlement.

In this document, the Vulnerability Mapping shall be explained in detail with some examples so that it can be used as a toolkit for CSOs, communities and other relevant stakeholders to carry out self-assessments of their own settlements in urban areas, to present such community bred documents and data to the local officials and to then monitor the progress of the developmental projects over the years. These vulnerability mapping exercises have been a powerful tool for motivating, mobilising the community and collectives to review, prioritise and plan for the infrastructural development of their settlement . This exercise can have a significant impact in creating a vision among urban poor community for a more inclusive city with equitable space for all.

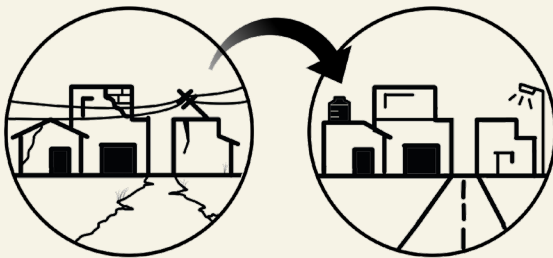
FREQUENTLY USED TERMS:

- **VULNERABILITY:** Vulnerability refers to the inability (of a system or a unit) to withstand the effects of a hostile environment.
- **MAP:** It is a pictorial representation of an area and its features
- **MAPPING:** The process of drawing a map of an area and its features is called mapping
- **COMMUNITY:** The community which is being surveyed or engaged with the initiative. In this case the community refers to the community living in

the target bastis

- **BASIC INFRASTRUCTURAL SERVICES:** These refer to the basic amenities that should be provided in an urban settlement or basti such as street lights, drinking water connections or waste disposal facilities. These services ameliorate the quality of life in the urban settlement.
- **HH:** Households refer to one unit of measure in the survey. The household include all members of a family who are living in 1 dwelling unit within the basti community

IMPORTANCE OF VULNERABILITY MAPPING AND PARTICIPATORY PLANNING EXERCISE



The participatory vulnerability mapping & priority planning method is the most inclusive method to ensure sustainable development and increased prosperity of the informal settlements. Listed below are the other factors that show how important and effective this method is for urban settlement planning and improvement:

- Ensures inclusivity
- Ensures community ownership
- Results in emergence of community-based leadership

- Facilitates growth of Community Based Organisations
- Educates community about their basic needs
- Provides platform for community dialogue
- Facilitates dignified living conditions
- Builds connections and visibility of local leaders with government officials
- Housing and inclusiveness - expand housing opportunities for all

METHODOLOGY

The participatory vulnerability mapping & priority planning method is a survey-based analysis of the urban settlements and its infrastructure. The methodology has 5 stages.

1. Mapping Process: The first stage includes survey of the community and the infrastructural vulnerabilities in the basti. The vulnerability indicators have been listed below.

2. Drawing of Map: The mapping process results in data collection and the drawing of a map, a map of the urban settlements with all the vulnerabilities and household mapped based on decided symbols or legends.

3. Analysis of Map: The data collected in the mapping process is then analysed to see where most work is required, how many households are vulnerable and what services are lacking.

4. Development Plan: This data is then used to create a participatory developmental plan that is aimed at reducing the infrastructural vulnerabilities and access to basic services such as waste disposal system, street lights and water connections.

5. Sharing of Development Plan: The development plan is then discussed with the community and presented to the ULB to be implemented. The process is then repeated every year to analyse the progress made annually. This entire process has been detailed in the following sections.

COMPONENTS OF TOOLKIT

What are the Basic Guidelines?

- The vulnerability mapping exercise should always be facilitated by community leaders on the ground with active participation of the communities.
- The community members that participated should be of diverse groups from all categories of ages, castes, religion, gender and should be inclusive of people with disabilities, elderly, single woman, widow etc as well.
- Personal bias of the surveyor should be avoided to the most extent possible.
- The data from the mapping exercise should be the basis for prioritisation of plans for coming years.
- All prioritisation of plan must be done by the community itself, not by the external surveyors or government officials
- The primary data generated from the field should always be cross checked with secondary sources (such as Ward Offices or Municipal records)
- The role of the person(s) selected to draw the maps is extremely significant in that s/he must follow the common consensus and draw up the maps as reported, directed and prioritised by the community.
- Easy participatory method undertaken must involve the full cooperation and supervision of the community itself to identify and prioritise their needs for basic infrastructural services in the slums
- Annual mapping must also be followed to record the progress of infrastructural developments in the period of one year
- The process and the data, maps and figures must be properly maintained well with the community leaders, surveyors, and the community leaders themselves for future reference and planning.

What is needed?



- Chart Paper
- Different coloured writing material-crayons, pencils, pens, sketch pens, markers
- Basic measuring equipment-inch tape, jute rope
- Data recording equipment-phones with recording devices
- Basic knowledge of maps and legends
- Basic drawing skills
- Stationery items
- Camera and recording device
- Consent and cooperation of the community

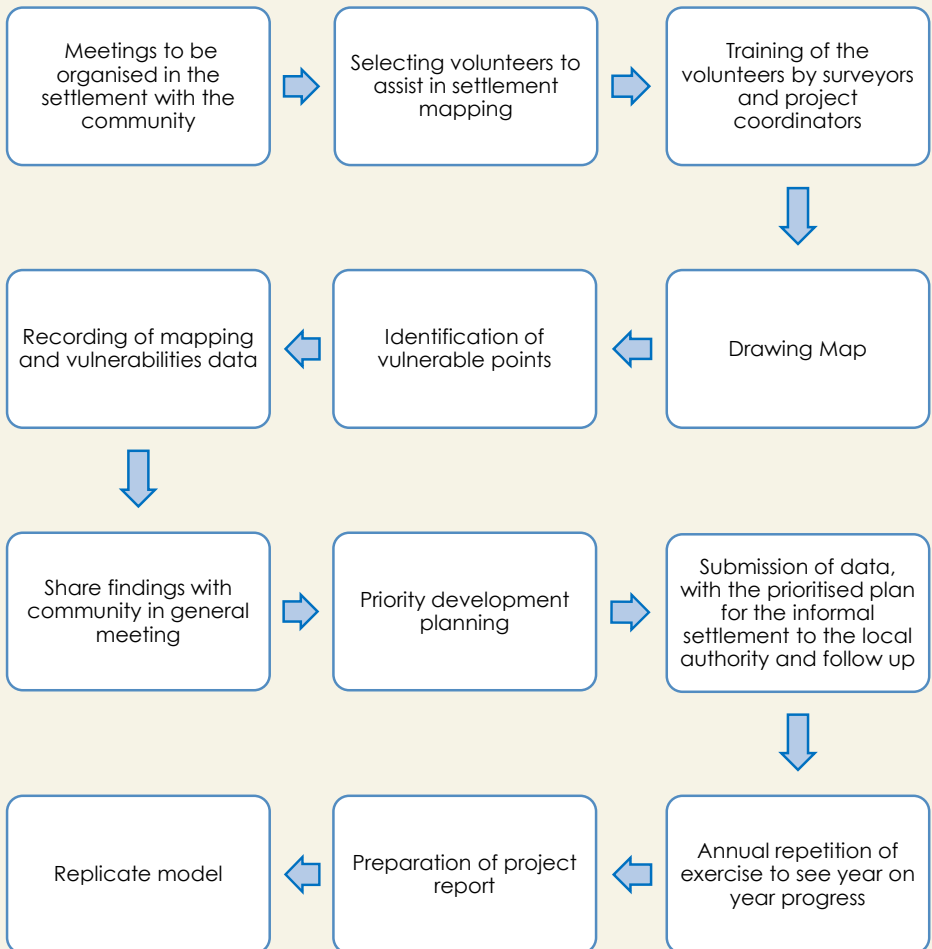
Who is needed?

- Project coordinators (Urban planners)
- Individual surveyors (Trainers)
- Voluntary community leaders
- Officials of the local Ward or Municipal Office
- Data entry professionals

What is being mapped?

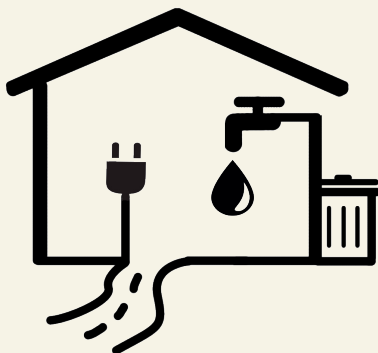
- Informal settlement (basti)
- Infrastructural vulnerabilities (Unsustainable or dangerous infrastructure)
- Provision of basic services to settlement residents
- Collective community knowledge of the settlement
- Annual progress of planned and prioritised community projects
- Local Government responsiveness to grassroots level plans

What is the required process?



What are Vulnerabilities in a Urban Settlement?

Listed below are the various vulnerabilities that can be found in a settlement.



Infrastructural services	Vulnerability Indicators
Housing	Kuccha Makan (not constructed using brick and cement)
Drinking Water Points	HH without water source HH contaminated / defunct water source
Sanitation	HH without sanitation HH with pit sanitation (without septic tank)
Road Accessibility	HH with mud road HH using road in bad condition
Electricity	HH without electricity
Anganwadi or Health Centres	HH without service of Anganwadi/ health center
Street Lights	HH with no street light HH with defunct street light
Drainage Systems	HH without drainage system HH with faulty drainage system HH located in water logged area
Waste Disposal System	HH affected by absence of solid waste disposal system

Exercise 1

Tick the right images showing basic services in bastis?

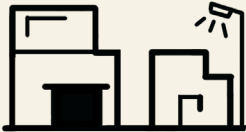
a)



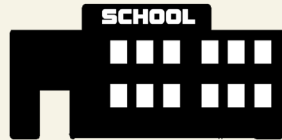
b)



c)



d)



e)



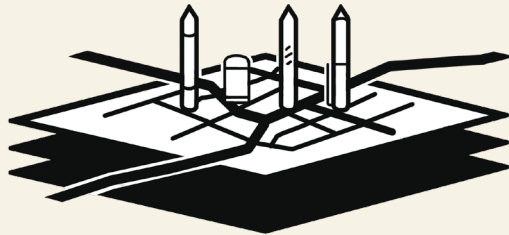
f)



MAP

The map is a rough but detailed drawing of the settlement on a simple chart paper with different components of the settlement marked, coloured and represented in different and distinct ways. The point of the map is to ascertain the overall structure of the settlement through a bird's eye view. This will then help understand and plan for the sustainable infrastructural development of the same. Priority planning requires precise data and drawings to represent all the components of an area before a plan is designed to develop the designated area.

While the map itself is important, the process undertaken in preparation of the map is equally important. The sources used to draw the map can also determine the quality of the map itself. Who is included and who is excluded from the mapping process is a particularly important aspect and therefore the community leaders should follow the following steps while conducting the mapping exercise. This will lead to the designing of an inclusive, prioritised, sustainable, people driven and innovative map.



a) Identify youth volunteers for mapping: Youth volunteers are identified to conduct the mapping exercise. Those youths who have deep connections to the community, and who know the geography of the settlement well and who are motivated to make their living conditions better for themselves and their community should be chosen and trained to carry out the mapping exercise.

b) Organise the mapping event in the central pointing the basti: The entire exercise then must be explained to the community leader and volunteers. The mapping event with the materials needed for the map, the volunteers and the establishment of the common symbols or legends must be organised at the central meeting point in the basti.

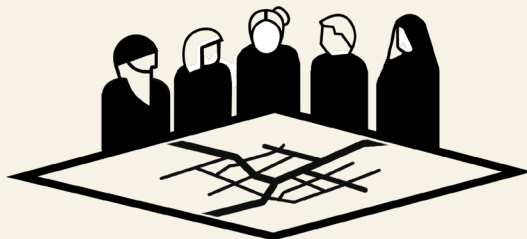
c) Arrange for materials needed: All the material needed to make a

comprehensive map/chart should be gathered beforehand so that the mapping exercise can proceed smoothly. Needs such as chart paper, stationery, colours and training for surveyors are all necessary tools.

d) Prepare and use legends simultaneously: Legends or symbols that are used to denote a particular thing in a map must be decided before the mapping process begins. These symbols must be kept colour coded and must be clear to everyone so that no overlaps or mistakes are committed in the recording of the data in the basti.

e) Start the mapping process from the central point in the settlement: The beginning of the mapping process must be done from the central point in the settlement. This is done so that all the community leaders have the same starting point as they head off in different directions to complete the map. The result should be a bird's eye view of the basti as a whole and that will only happen if all the different volunteers are using the same symbols, same measurements, and the same starting point.

f) Engagement of all participants in making map: Inclusivity in the mapping process should be an utmost priority. The community leaders and the volunteers should ensure that maximum households should be included in the mapping process either by talking to them, recording their testimonies, mapping their dwellings and their surroundings and most importantly their suggestions for improving the basti.











Legend or Key

A map legend or key is a visual explanation of the symbols used on the map. It typically includes a point, line or symbol and a brief description of what the symbol means.

In the context of the participatory vulnerability mapping & priority planning exercise, the legend is very important to understand and record the various components the urban settlement correctly.

CONSISTENCY OF SYMBOLS: The legend or key must always be constant throughout the map and therefore needs to be discussed and agreed on in the initial mapping training exercise with the members of the community before selecting the volunteer and community leaders. The legend or key must also be drawn up mostly by the community itself.

One of the most important parts of this exercise is the consistency with which these symbols are adopted annually. All the basic objects that are present in the informal settlement must have its own symbol and be recorded. The legend always provides a comprehensive picture of the entire settlement and is therefore extremely important. A few examples have been shown below.

	Mud House		Pucca Toilet
	Half Concrete House		Grocery Store
	Serious Illness		Temple
	0-12 year old children		Risk (Addiction Prone) Zone

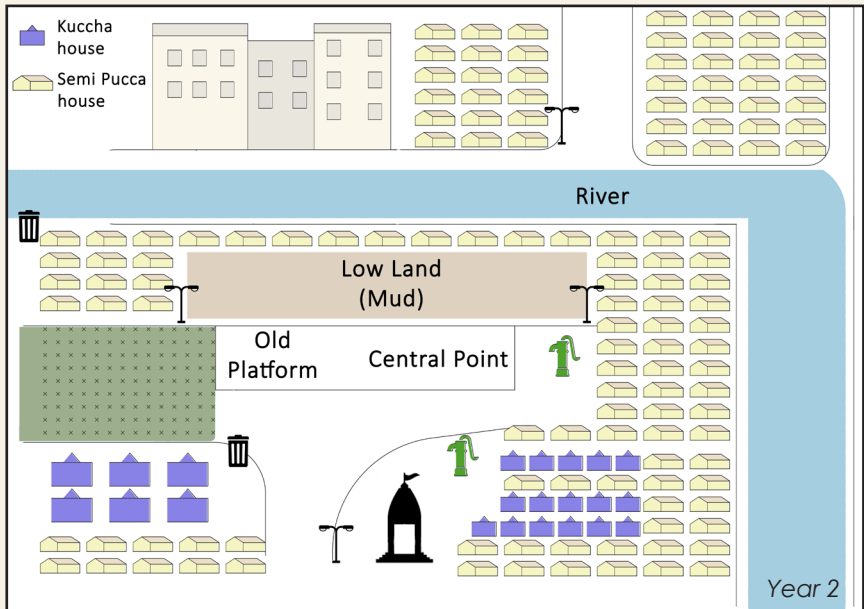
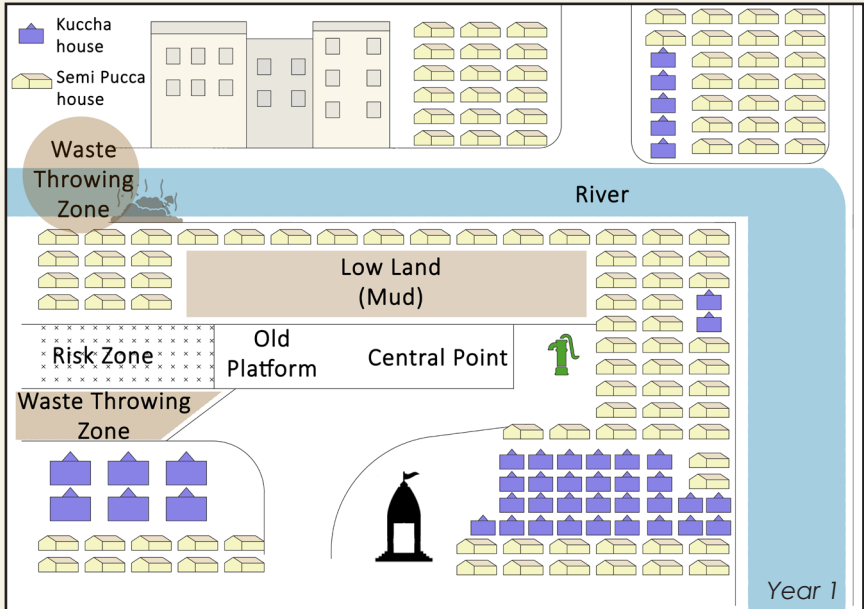
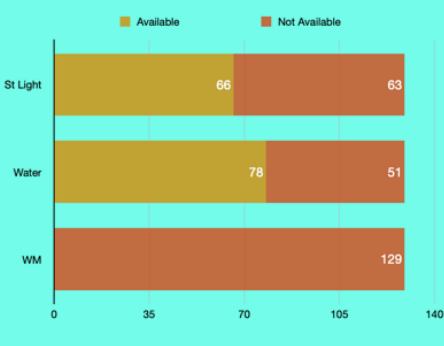
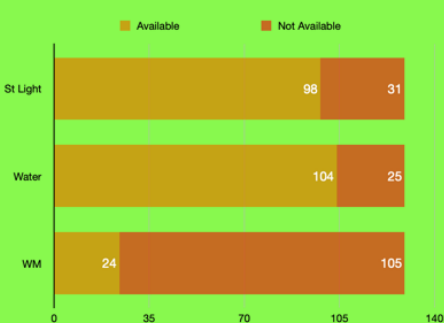


Fig. - Images above show maps of the same settlement across 2 years. It shows how the river edge was cleaned of garbage, more HHs could move towards semi pucca houses, access to water and street light was achieved as a result of participatory planning and mapping exercise.

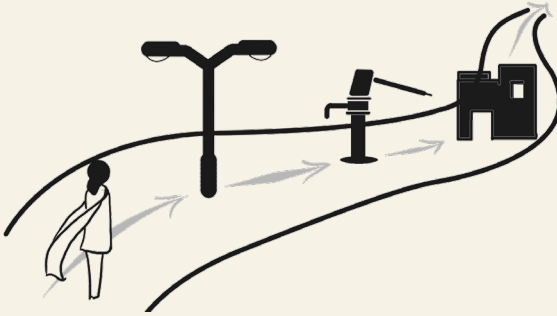
HOW TO DEVELOP PRIORITY BASED PLAN WITH THE COMMUNITY?

YEAR 1	Community Assessment through Map (Year 1)	Priority Plan (Year 1)												
 <table border="1"> <caption>Year 1 Service Availability Data</caption> <thead> <tr> <th>Service</th> <th>Available</th> <th>Not Available</th> </tr> </thead> <tbody> <tr> <td>St Light</td> <td>66</td> <td>63</td> </tr> <tr> <td>Water</td> <td>78</td> <td>51</td> </tr> <tr> <td>WM</td> <td>0</td> <td>129</td> </tr> </tbody> </table>	Service	Available	Not Available	St Light	66	63	Water	78	51	WM	0	129	<p>Total Households - 129</p> <ul style="list-style-type: none"> 63 out of 129 households had access to defunct street lights 51 households were without water source All 129 households did not have proper waste management services. Waste was dumped in unplanned manner 	<ul style="list-style-type: none"> Defunct street lights to be fixed to benefit 63 households 51 households need to be provided with water sources 129 households need to be provided with proper waste disposal systems Installation of dustbin
Service	Available	Not Available												
St Light	66	63												
Water	78	51												
WM	0	129												
YEAR 2	Community Assessment through Map (Year 2)	Priority Plan (Year 2)												
 <table border="1"> <caption>Year 2 Service Availability Data</caption> <thead> <tr> <th>Service</th> <th>Available</th> <th>Not Available</th> </tr> </thead> <tbody> <tr> <td>St Light</td> <td>98</td> <td>31</td> </tr> <tr> <td>Water</td> <td>104</td> <td>25</td> </tr> <tr> <td>WM</td> <td>24</td> <td>105</td> </tr> </tbody> </table>	Service	Available	Not Available	St Light	98	31	Water	104	25	WM	24	105	<p>Total Households - 129</p> <ul style="list-style-type: none"> Only 31 out of 129 households had access to defunct street lights 25 households were without water source 105 households did not have proper waste management services. 	<ul style="list-style-type: none"> Defunct street lights to be fixed to benefit only 31 households Only 25 households need to be provided with water sources 105 households need to be provided with proper waste disposal systems
Service	Available	Not Available												
St Light	98	31												
Water	104	25												
WM	24	105												

The priority plan will be developed after all the required data from the Households is collected and analysed. The basic principle to be followed while making the prioritised plan is that access to basic services such as water, waste disposal services, street lights. The priority plan must also be made after consultations with the community members and their acceptance of the plan. The community should take the lead in demanding the implementation of the priority plan. They shall only do that if the priority plan comes from them.

PRINCIPLES TO MAKE PRIORITY PLAN

▪ **PRIORITISATION OF BASIC SERVICES:** Access to basic services should be prioritized first in the initiative. Therefore, access to basic amenities must act as the primary indicators of vulnerabilities, should be mapped and prioritised as it affects the entire community equally. The mapping includes only those prioritised issues which have been common across all residents in a slum. Private household related issues are not considered or prioritised.

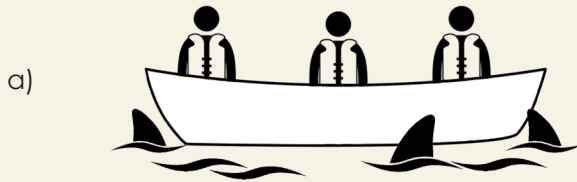


▪ **INCLUSION OF ALL THE DIFFERENT RESIDENTS:** Participatory mapping is an inclusive process, which considers all types of urban poor. Different groups may perceive the various vulnerabilities in a separate way and prioritise them differently. It is the job of the community leaders to help the urban poor find common ground and to prioritise need-based solutions. The basic principle of 'for the many not the few and for the most vulnerable first should' be followed.



Exercise 2

Organize the images as per the Priority? Which of these is in the most danger?



INDICATORS OF SUCCESS

Indicators of success can be categorised into two categories - Tangible and Intangible. Tangible indicators are those indicators which have verifiably improved. Intangible indicators cannot be seen but can be felt in the community and its future interactions with authorities and within themselves.

Tangible

Tangible indicators of success follow directly from the vulnerability indicators which are

- Housing
- Drinking water points
- Sanitation
- Accessibility to road
- Electricity
- Health centres and anganwadis
- Street lights
- Proper drainage systems
- Waste disposal systems

Each of these factors must be addressed during the mapping process, with the community leaders and volunteers, asking questions to each household regarding access to basic amenities. Their responses after being noted in a simple Y/N format will give a clear picture of the vulnerabilities in terms of access to basic resources in the entire settlement. The total households with access to all the above-mentioned services should be recorded and stored digitally in an easy-to-understand format so that the same exercise can be redone the next year to see progress or decline of access to basic resources.

It is important to record these services as they act as tangible indicators of success and point to the incomplete work to be completed. It is also important to record the number of households every year as they

may increase or decrease thereby affecting the need of basic resources in the settlement overall. This is simply collected and should be repeated annually without any replication of the previous years' data.

Examples of how to record the tangible indicators of success

Drinking Water Points

In this example from the city of Raipur, HHs with indoor drinking water points were counted. Water is such a basic service and demand of residents of urban settlements in Raipur city. 507 houses out of the total 1234 HH in the slums, (41%) were without individual water point in their houses in year I; in year II only 170 out of total 1234 houses (14%) are without individual water points in their houses; in year III, no households reported without individual water points (0%) in their houses; The vulnerability without water point in individual houses has been reduced by 27% (41-14) from year I to year II and 14% (14-0) from year II to year III (Marked in yellow). Strong advocacy and lobbying by the slum CSOs with the Raipur Municipal officials have resulted in these changes.

Table: Water and Sanitation

	Year 1 (2015-16)			Year 2 (2016-17)			Year 3 (2017-18)		
	Total HH	Total HH affected	% of HH suffered	Total HH	Total HH affected	% of HH suffered	Total HH	Total HH affected	% of HH suffered
HH without water source	1234	507	41	1234	170	14	1234	0	0

*Source: Findings from Raipur, Participatory Planning and Vulnerability Mapping, East Region, IGSSS

Defunct Street Lights

In this example from the city of Jamshedpur, defunct street lights affected 26 out of 547 HHs (5%) in year I whereas in year II only 2% that is 14 out of 695 reported being affected by defunct street lights. In year III, no households are affected by defunct street light. Regular follow-up of collective members with electricity department & JNAC (Jamshedpur Notified Area Committee), Jamshedpur has resulted in this change. HHs being affected by defunct street lights means that the members of that household are not able to access well-lit streets in the night due to their part of the street not having any street lights or having ones that are not working. This sort of vulnerability can lead to many accidents, blind spots, and can limit access to the HH for many people in the evenings and nights.

Table: Street lights

	Year 1 (2015-16)			Year 2 (2016-17)			Year 3 (2017-18)		
	Total HH	Total HH affected	% of HH	Total HH	Total HH affected	% of HH	Total HH	Total HH affected	% of HH
HH with defunct street light	547	26	5	695	14	2	681	0	0

*Source: Findings from Jamshedpur, Participatory vulnerability mapping & priority planning

Intangible:

Practice: The mapping exercise can help train the members of the community to practise democratic ways of engaging with the local authorities collectively. To voice their opinions and desires in a collective and organised manner which will lead to accountability from the local authorities is an effective way of engaging with the priority planning of urban settlement.

Ownership: The mapping exercise will be undertaken under the leadership of community leaders & volunteers. The bulk of the work and the decisions are all made by the community itself. This sort of decision-making power hands the community their own fates with regard to their existence in the urban settlement. This gives the community the dignity that they deserve which will also enable them to make important decisions responsibly.

Collective Leadership: The mapping exercise begins and ends with community meetings and public consultations within the settlement. This exercise is only complete and comprehensive when every member or every group voices their opinions and perspectives on the entire exercise, the vulnerabilities of the settlement and the prospective solutions. With such community meetings being held, invariably, there is an organic rise in community leadership, which helps steer the conversation and set common goals. This is an expected outcome of the participatory vulnerability mapping & priority planning.

Emerging Youth Leaders: The mapping exercise is a taxing and long task. It must be completed with immense planning, comprehensive surveying, and detailed recording of data. The youth of the community must always play a big part in the ideation and especially in the implementation of this exercise. The use of new and innovative technology and data collection methods that are used by the youth members is also extremely helpful in this task. Youth leadership is trained through community initiatives like these which then enable the youth leaders to engage directly with the local authorities to raise demands and provide data driven evidence of any shortcomings.

What we learned:

- Assessing infrastructural vulnerabilities in the settlement
- How to ensure inclusion vulnerability mapping and priority planning process
- How to draw map highlighting infrastructural vulnerabilities
- How to develop a priority plan for restoring basic amenities in the settlement
- How to engage ULB officials with priority plans



About IGSSS

Indo-Global Social Service Society is a non-profit organisation working with the mandate for humane social order used on truth, freedom, justice and equity. Established in 1960, IGSSS works for development, capacity building and enlightenment of vulnerable communities across the country for the effective participation in development. With its presence across India, IGSSS has set its thematic focus on promoting sustainable livelihoods, energising the youth as change makers, protecting lives, livelihood, and assets from the impact of hazards, advocating for the rights of CityMakers (urban poor residents) and developing a cadre of leaders from the community and civil society organisations. Gender and Youth are underlying themes across all its interventions.



Indo Global Social Service Society

28, Lodhi Institutional Area, Lodhi Road

New Delhi 110003 Email - info@igsss.net

Website - www.igsss.org

Facebook - www.facebook.com/igsss

Twitter - www.twitter.com/@igsss Tel. 011-45705000