

DRAFT

# Delhi

## District Profile

Climate and Disaster Resilience

Central North South East North East  
South West New Delhi North West West

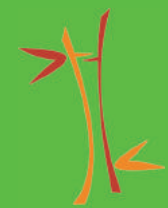


International Environment and  
Disaster Management Laboratory  
Graduate School of Global Environmental  
Studies  
KYOTO UNIVERSITY  
Yoshida Honmachi, Sakyo-ku, Kyoto  
606-8501, JAPAN  
<http://www.iedm.ges.kyoto-u.ac.jp/>



SEEDS

Sustainable Environment and  
Ecological Development Society (SEEDS)  
15/A Institutional Area  
R.K. Puram, Sector IV  
New Delhi – 110-022  
India  
<http://www.seedsindia.org>



SEEDS





# About the Initiative

The Climate and Disaster Resilience Initiative (CDRI) is an umbrella initiative of Kyoto University, funded by the Global Center of Excellence (GCOE) Program “Human Security Engineering for Asian Megacities,” which has research, education, training, and implementation components. This program was well supported by SEEDS, India; and Disaster Management Authority, Delhi. The support and contribution from all nine districts of Delhi is well appreciated.

# Team Members

## Kyoto University

Rajib Shaw  
Yukiko Takeuchi  
Sunil Kumar Prashar

## Seeds

Manu Gupta  
Anshu Sharma  
Shivangi Chavada

# Contact Details

Rajib Shaw  
Associate Professor  
International Environment and  
Disaster Management Laboratory  
Graduate School of Global Environmental Studies  
KYOTO UNIVERSITY  
Yoshida Honmachi, Sakyo-ku, Kyoto 606-8501,  
JAPAN  
Telefax: +81-75-753-5708  
shaw@global.mbox.media.kyoto-u.ac.jp  
http://www.iedm.ges.kyoto-u.ac.jp/

Manu Gupta  
Executive Director  
Sustainable Environment and Ecological  
Development Society (SEEDS)  
15/A Institutional Area R.K. Puram,  
Sector IV, New Delhi – 110-022 (India)  
Tel: +91-11-2617-4272  
Fax: + 91-11-2617-4572  
Email: manu@seedsindia.org  
Web: www.seedsindia.org

## Design and Layout

Takayuki Moriyama  
Kanae Aoki

# About the Organization

## Kyoto University

IEDM Laboratory of Kyoto University Graduate School of Global Environmental Studies targets to reduce the gap between knowledge and practice through pro-active field level, community based project implementation in the field of environment and disaster risk management. Key research areas are: climate change adaptation, urban risk reduction, environment and disaster education. GCOE program of Kyoto University targets education and research excellence on Human Security Engineering in Asian Megacities, with focus to city governance, infrastructure management, health risk management and disaster risk management.

## Sustainable Environment and Ecological Development Society (SEEDS), India

SEEDS is a non profit voluntary organization founded in 1994. It aims to build resilient communities. The organization uses multi hazard, locally based approach to empower the community through awareness, training and education. It works on six thematic areas: community based disaster management, school safety, climate change, safety construction practices, open learning, and international co-operation.



# Introduction

Urban areas are experiencing higher risks due to climate change. The risk is expected to increase not only due to the frequency and intensity of climate related hazards but also due to rapid urbanization. Currently, the growth of urban areas is very fast. It is predicted that in 2030, two out of three people will live in urban areas. The share of the world's population living in urban centers has increased from 39% in 1980 to 48% in 2000. The urbanization level has almost stabilized in developed countries. African and Asian countries are in the process of urbanization. Past disaster trends show that Asian cities with higher population density experience high mortality and economic loss in disaster events.

The impacts of climate change bring change in the intensity and frequency of climate related hazards which result to loss of urban infrastructure and life and further decreases the coping capacity of the urban community. The urban poor are among the most vulnerable groups when disaster strikes.

In Delhi, urbanization is creating enormous pressure on the infrastructure facilities and services leading to environment degradation. It is among the world's cities with more than a million population. The urban population of Delhi in 1951 was about 1.8 million which increased to over 12 million in 2001. According to the 2001 Census, 93 % of Delhi's population lives in urban areas. The city has seen a massive growth of slums due to extensive urbanization which is often followed by misery, poverty, unemployment, exploitation, and poor quality of life. The increased urbanization also contributed to the depletion of the city's land and water resources. The city ground water level is decreasing by 2 meters every year. Furthermore, the city is vulnerable to climate related hazards. In the past few decades, the city has to deal with climate related disasters like floods, heat waves and water scarcity. The impact of climate related disasters has created huge loss to life and infrastructure.



# Concept of Resilience

The concept of resilience is applied to urban areas. The concept comprises the capacity of the community to absorb the stress, to manage it, and to recover from it. In this study stress means climate change and associated disasters which are hydro-metrological in nature and community implies urban poor communities. Building cities' resilience to climate related disasters demand assessment of their disaster risk. The study aims at evaluating disaster risk through Climate Disaster Resilience Index (CDRI) approach. The CDRI assesses disaster risk through five different dimensions. They are: physical, social, economic, institutional, and natural. In this study, the focus is on micro level. The assessment is done in all nine districts of Delhi. They are: Central Delhi, North Delhi, South Delhi, East Delhi, North East Delhi, South West Delhi, New Delhi, North West Delhi, and West Delhi.





# Methodology

The study is based on a questionnaire covering five dimensions (See below) in which every dimension consists of another five parameters defining in more detail. Each of the five parameters is then again represented by another five variables. Accordingly, 125 variables define the overall resilience of a city (see table 1 for content of questionnaire). Using a simple arithmetic function named weighted mean scores for variables, parameters, and dimensions are calculated.

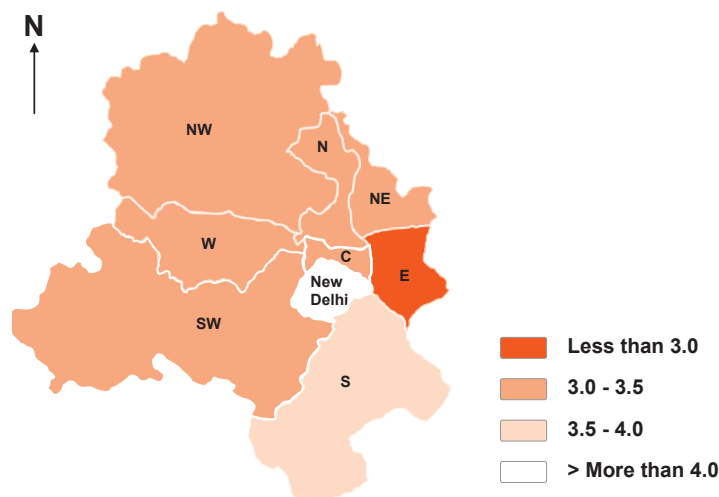
**Results:** The following pages show the results for each of the 9 districts in the form of a detailed report and maps (spiders) providing a visual idea about the current condition of a particular district. A graphic line crossing the line of dimension/parameter closer to 1 means the city has low resilience in this aspect. A result approaching the score of 5 is showing high resilience.

DIMENSIONS	PARAMETERS AND VARIABLES
Physical	<b>Electricity</b> (access, availability, supply capacity, alternative capacity) <b>Water</b> (access, availability, supply capacity, alternative capacity) <b>Sanitation and solid waste disposal</b> (access to sanitation, collection of waste: treated, recycled, collection of solid waste after a disaster) <b>Accessibility of roads</b> (% of land transportation network, paved roads, accessibility during flooding, status of interruption after intense rainfall, roadside covered drain) <b>Housing and land-use</b> (building codes, building with non-permanent structures, building above water logging, ownership, population living in proximity to polluted industries)
Social	<b>Population</b> (annual growth rate, population under 14 and above 65, population of informal settlers, population density) <b>Health</b> (population suffering from waterborne/vector-borne diseases, access to health facilities, functionality and capacity of health facilities, capacity of health facility during a disaster) <b>Education and awareness</b> (literacy rate, awareness of disasters, availability of public awareness programs/disaster drills, access to the Internet, functionality of schools after disasters) <b>Social Capital</b> (participation in community activities and clubs, acceptance level of community leader (in district), ability of communities to build consensus and to participate in city's decision-making process, mixing and interlinking of social classes) <b>Community preparedness during a disaster</b> (preparedness in terms of logistics, materials, and management; participation in relief works; provision of shelter for affected people; support from NGOs/CBOs; population evacuating voluntarily)
Economic	<b>Income</b> (population below poverty line, number of income sources per household, income derived in informal sector, % of households have reduced income due to a disaster) <b>Employment</b> (unemployment in formal sector, youth unemployment, women employment, workers coming from outside the city; child labour in district) <b>Household assets</b> (households with television or radio, phone, motorized vehicle, non-motorized vehicle, basic furniture) <b>Finance and savings</b> (availability of credit facility to prevent disasters, accessibility to credits, accessibility of credit facility to urban poor, savings of households, household's insured properties) <b>Budget and subsidy</b> (funding of DRM, budget for DRR sufficient, availability of subsidies/incentives for residents to rebuild houses, alternative livelihood, health care after a disaster)
Institutional	<b>Mainstreaming of DRR and CCA</b> (mainstreaming of CCA and DRR in: district's development plans, ability (manpower) and capacity (technical) to produce development plans, extent of community participation in development plan preparedness process, implementation of disaster management plan) <b>Effectiveness of district's crisis management framework</b> (existence and effectiveness of an emergency team during a disaster: leadership, availability of evacuation centres, efficiency of trained emergency workers during a disaster, existence of alternative decision making personnel) <b>Knowledge dissemination and Management</b> (effectiveness to learn from previous disasters, availability of disaster training programmes for emergency workers, existence of disaster awareness programmes for community, capacity (books, leaflets, etc) to disseminate disaster awareness programmes (disaster education), extent of community satisfaction from disaster awareness programmes) <b>Institutional collaboration with other organisations and stakeholders, during a disaster</b> (district dependence on external institutions, collaboration and interconnectedness with neighbor districts, district's cooperation (support) with central cooperation department for emergency management, cooperation district officials for emergency management, district's institutional collaboration with NGOs and private organisations) <b>Good governance</b> (effectiveness of early warning systems, existence of disaster drills, promptness of district body to disseminate emergency information during disaster to community and transparency of district body to disseminate accurate emergency, capability of district body to lead recovery process)
Natural	<b>Intensity/severity of natural hazards</b> (floods, cyclones, heat waves, drought (water scarcity), tornados) <b>Frequency of natural hazards</b> (floods, cyclones, heat waves, drought (water scarcity), tornados) <b>Ecosystem services</b> (quality of city's: biodiversity, soils, air, water bodies, urban salinity) <b>Land-use in natural terms</b> (area vulnerable to climate-related hazards, urban morphology, settlements in hazard-prone areas, amount of urban green space, loss of urban green space in last 50 years) <b>Environmental policies and security</b> ( use of district level hazard maps in development activities, extent of environmental conservation regulations reflected in development plans, extent of implementation of environmental conservation policies, implementation of efficient waste management system (RRR), implementation of mitigation policies to reduce air pollution)

Table 1: Parameters (bold) and variables of CDRI

# Overall District Profile

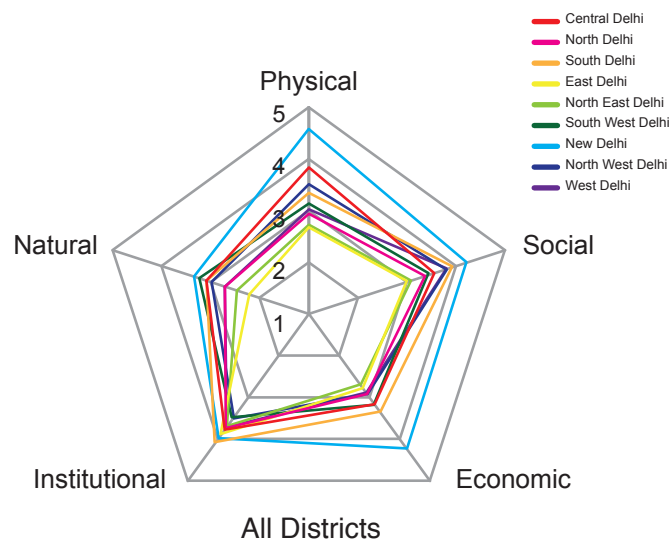
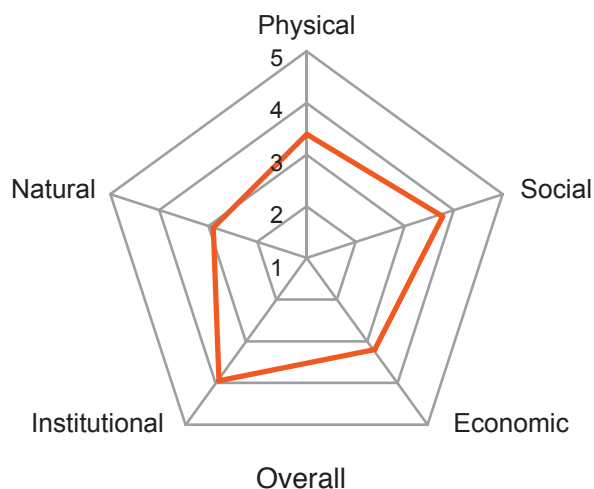
## Overall Resilience



The overall resilience of nine districts is assessed using the overall resilience score of each district. New Delhi is the most resilient district in Delhi. The factors responsible for high resilience score are physical, social and economic. The physical resilience is high due mainly to better electricity, water and sanitation services. The district has its own Municipal body (i.e. NDMC) that manages civic services in the district. The main factors responsible for high social resilience are population, health and social capital. The district population is least among all nine districts and density is below 5000 person per. sq. km. The health condition is better due to better hygienic environment conditions and health facilities. The social capital is very high due mainly to existing Residential and Welfare Associations (RWAs). The main economic factors responsible for high resilience are: income, employment and household assets. The residential area in this district include large bungalows, foreign mission/ state guest houses, government colonies and private colonies. The income level is high due to type of jobs.

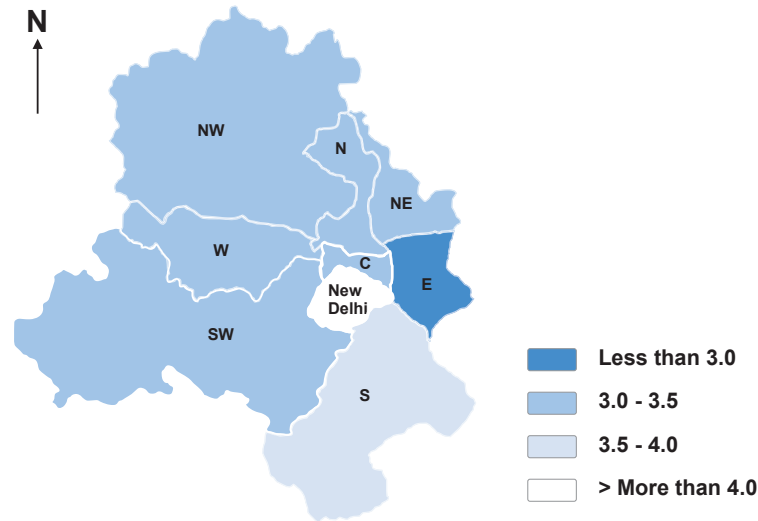
East district is the least resilient among all nine districts. The most prominent factors responsible for low resilience are: physical and natural factors.

The district has low physical resilience mainly due to poor solid waste management, housing and land use, and water. Due to high population density, the district produces a large amount of solid waste, which is not often properly disposed of regularly. The housing condition is very poor mainly because a large number of the population lives in the proximity of polluted industries and dumping grounds. Moreover, housing with ownership is not much. The plinth level of houses is low. A large residential area situated along the Yamuna river bank is below normal flooding level. The condition of water is also very poor. More than 60% of the district is affected by interruptions in water supply. The other reason for low resilience is natural factor. Due to proximity to the Yamuna River, the district is vulnerable to flooding. In the recent past, the district was affected by heavy flood. The ecosystem services are very poor. More than 90% of the district area is densely populated. A large number of small scale industries related to service and industrial sectors is located inside the district. There is no open space left. The land use in natural terms is very poor. The built area is more than 90% of the total area of the district mainly characterized by a dense populated area.





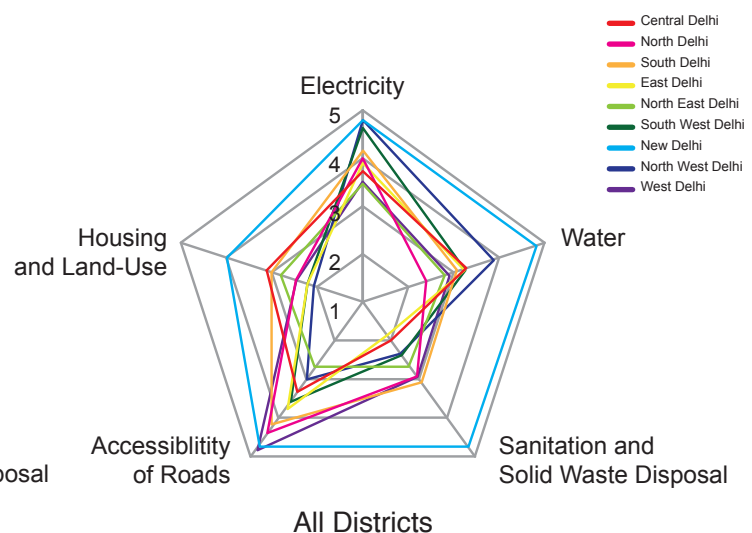
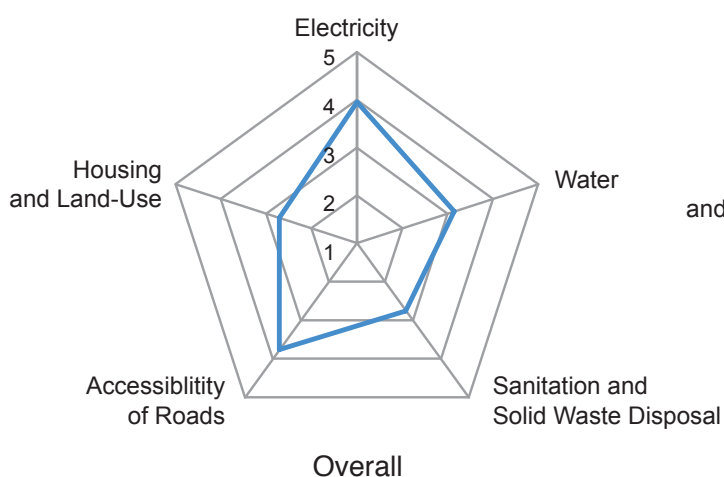
# Physical Resilience



The physical resilience of nine districts is assessed on the basis of five variables including electricity; water; sanitation and solid waste disposal; and housing and land use. The physical resilience shows that New Delhi district is the most resilient among all nine districts, whereas East Delhi district is the least resilience district. The main reasons for very low resilience are poor sanitation and solid waste disposal, low level of housing and land use, and water. The district produces a huge amount of solid waste every day. Approximately 463 tons of solid waste is produced every day out of which 299.36 is disposed of properly. Moreover, the district has many small-scale to large industries which regularly produce a huge amount of solid waste. The high population of the district is also a major factor for huge solid waste generation which is not collected completely and recycled. The district is also characterized by poor housing and land use. A large number of informal settlements are located within the marginal embankments of the river bed. Most of the houses are without ownership. The district is also affected by water scarcity. Almost 80

% of district area suffers from interruption in water supply. Therefore, all the above mentioned factors make this district less resilient in the physical dimension.

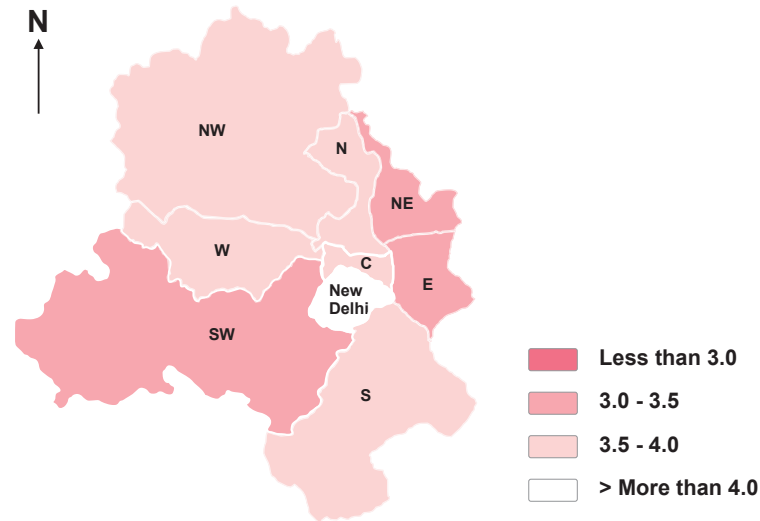
On the other hand, electricity, water and accessibility to roads are the three important factors that make New Delhi the most resilient district. The district has a separate municipal body, which manages civic services. The interruption in water and electricity is very less in comparison to other districts. The condition of roads is better than other districts. The district roads are broad and accessible during normal flooding. All roads have roadside covered drain. Entire district has pave roads. The district is where the parliament house, Supreme Court, central government ministries, Delhi high court, and union service public commission are located. Therefore, the roads are very broad in this district. The other factors that make this district most resilient are better solid waste disposal facility and proper housing and land use.





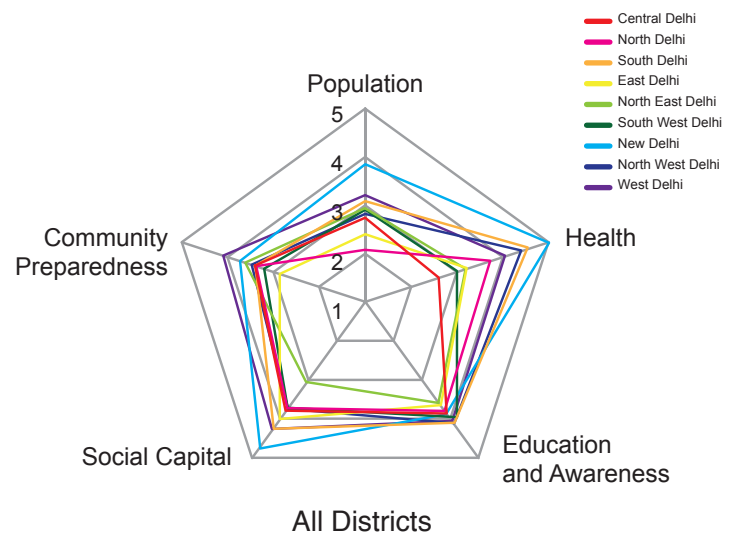
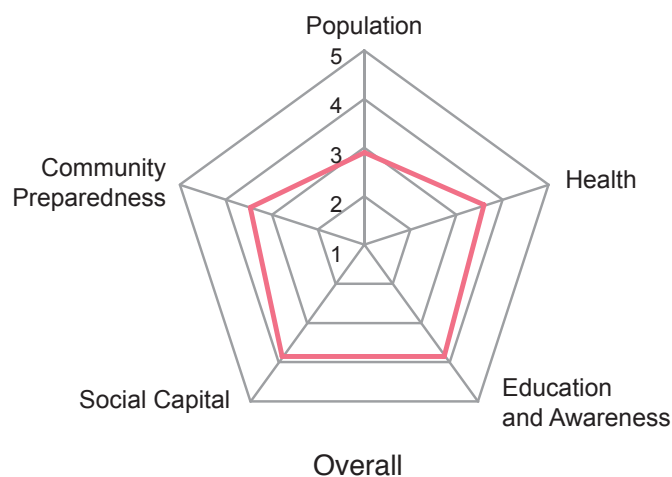


# Social Resilience



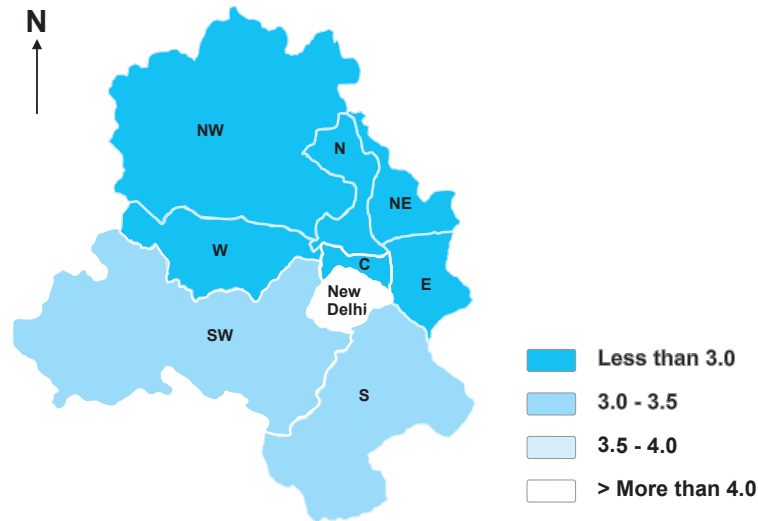
The social resilience of nine districts is assessed from five variables including population; health; education and awareness; and social capital. Over all, the resilience level of all nine districts is between medium to good. However, New Delhi is the most resilient district among all nine districts. One aspect which makes this district most resilient is population. The population density of this district is second lowest among all districts which is 5117 per. sq. km in 2001. Similarly, the total population is also lower than other districts, which is 171806 in 2001. The annual population growth rate is less than 1% which also makes this district highly resilient. Moreover, there are other factors that account for high resilience including health, community preparedness, social capital, and education and awareness. The district has well functional Residential and Welfare Associations and Market Trader Associations (MTAs). People participation is also high during meetings. Proper health services and hygienic environment make this district highly resilient. Also, the people suffering from water and vector born diseases every year are very less.

On the other hand, the North East district is the least resilient among all districts. The population density is highest among all nine districts, which is 29, 468 persons per sq. km. in 2001 (Planning Department 2009). More over, the annual population growth rate is also highest among all districts, which is more than 6% in 2001. The high density also reflects on health. As a consequence of high density of population, the health aspect is between poor to medium. The other factor which makes this district least resilient is social capital. There are many existing Residential and Welfare Association. However, the participation of the people is not the same as in New Delhi district. Therefore, population, health, and social capital are the three most prominent factors responsible for low resilience of the North East district.





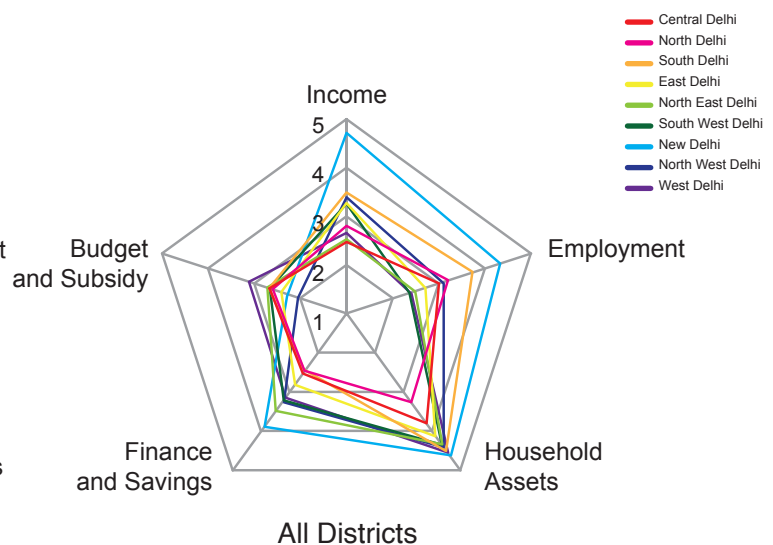
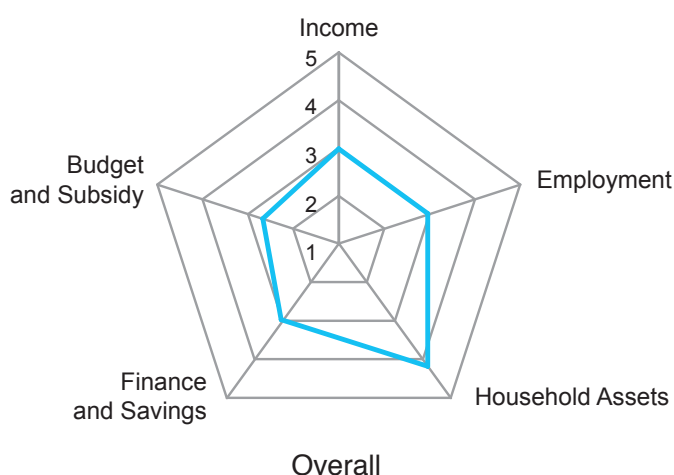
# Economic Resilience



The economic resilience of nine districts is evaluated from five variable factors namely income; employment; household assets; finance and savings; and budget and subsidies. The most resilient district is New Delhi. The main factors responsible for high resilience level are: income, employment and household assets. The district is a mix of commercial as well as institutional areas where government offices are situated. Most of those living in this district are engaged in formal jobs. The income level is high. There is very minimal or no one living below poverty line. The child labor is low. However, in certain commercial areas, child labor can be seen. Due to better income, people are well equipped with household assets. Apart from the above factors, the residents in this district are better off in finance and savings.

Central Delhi is the least resilient district among all nine districts. The main factors responsible for low resilience are: income, employment, and finance

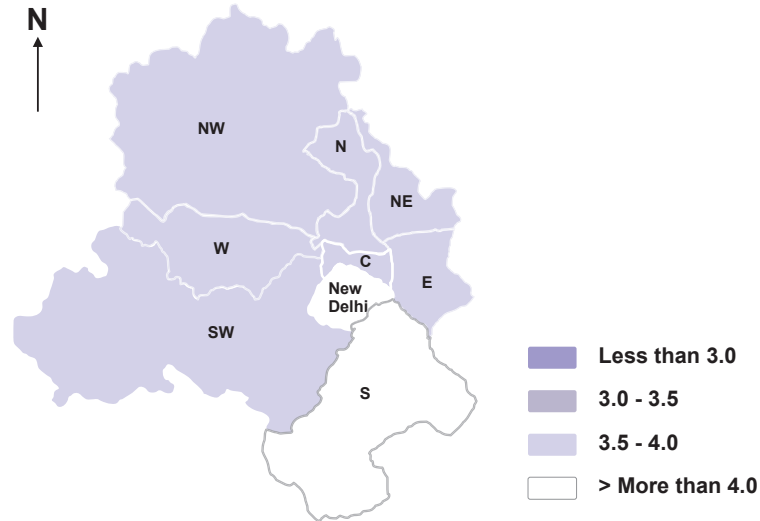
and savings. Most of the working population in this district is engaged in household industries. The working population is 35% of the total population. The dependency ratio is 1.88. There are certain areas in this district where dependency ratio is 2. Many household have only one earner. According to the 2001 Census, up to 70% of population of Central Delhi lives in slums. This also reflects their income and employment level. As mentioned earlier, most of them are engaged in household industry which also affects their earning. Child labor is also high. Unemployment in the formal sector is high. Poor finance and saving is also an important factor for low resilience. The accessibility of credit facility is poor in this district. Houses with insurance are also very less in this district. All the above factors contribute to low resilience in this district. The resilience scores for budget and subsidy is the same in all nine districts. Equal budget is distributed among all districts for disaster risk reduction related activities.







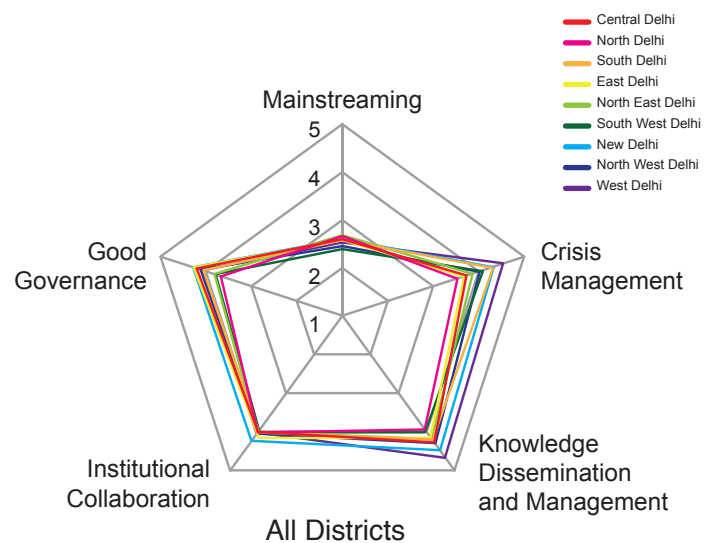
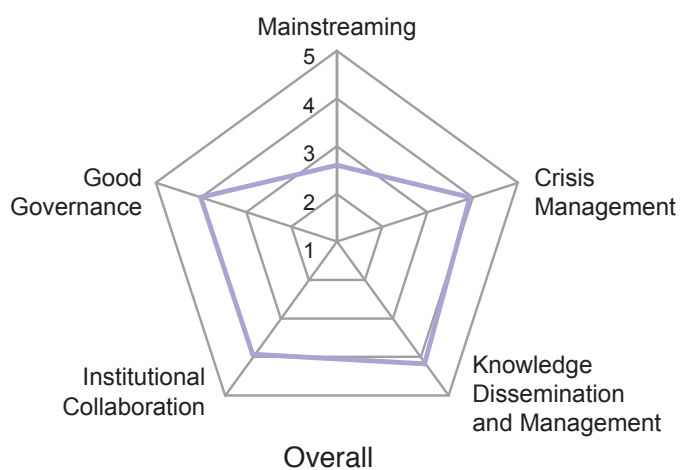
# Institutional Resilience



The institutional setup is common for all nine districts. All districts follow common guidelines laid down by the National Disaster Management Authority (NDMA) and Delhi Disaster Management Authority (DDMA). The resilience level of all districts is between medium to good. However, the mainstreaming of disaster risk reduction and climate change adaptation is not visible in all nine districts. The development plan has incorporated disaster risk reduction poorly in the Master Plan 2021. The mainstreaming part is poor in all districts. The crisis management framework is the same in all nine districts.

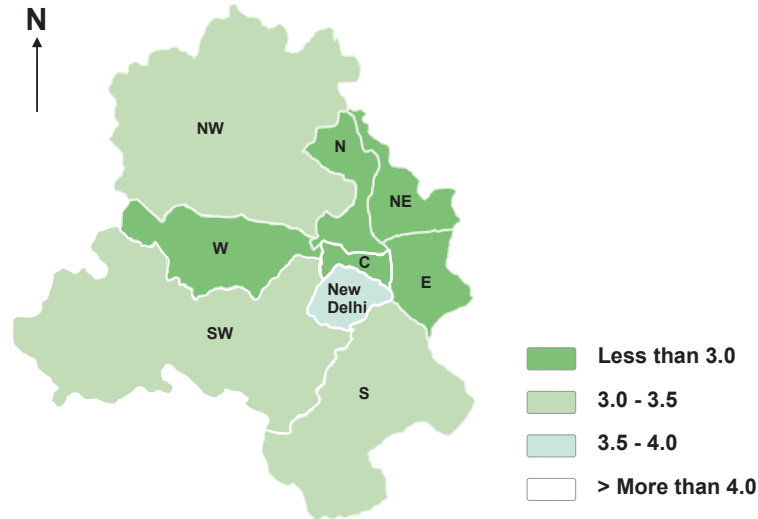
local bodies at state level. The early warning system clearly disseminates all information related to disaster to all nine districts.

All districts use some common platform and tool for disseminating information on disaster preparedness. For example, books, leaflets, manpower and campaign, among others. All districts have the same collaboration with state organizations, municipal bodies, and with other districts. The district bodies are dependent on each other as well as on urban





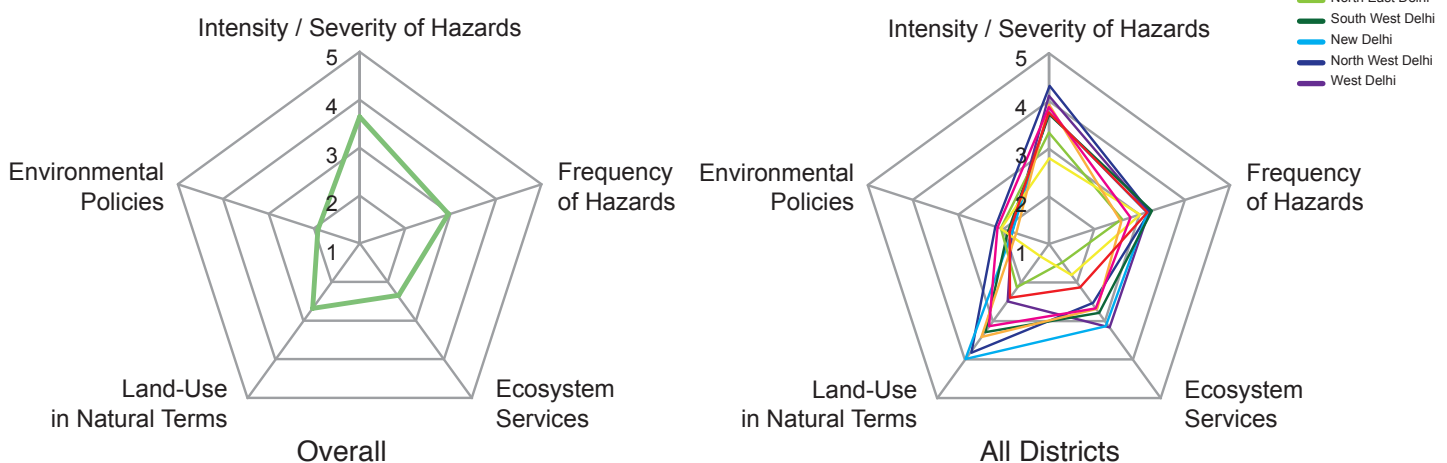
## Natural Resilience



New Delhi is the most resilient district in the natural aspect. The most prominent factors that are responsible for high resilience are: intensity, severity and frequency of climate related hazards and land use. The district is not vulnerable to flood. Moreover, it is less vulnerable to heat wave and water scarcity. The frequency of heat waves and water scarcity is once in a year. Land use is good. There are no settlements located on hazardous ground in the district. The district has well maintained gardens and trees.

left. Moreover, a large population is located on hazardous grounds; specifically more than 7000 people are located on either banks of the Yamuna River. The air and water quality in the lakes and river are very poor due to poor solid waste management.

The least resilient district is East Delhi. The main factors contributing towards low resilience are: intensity and severity of climate related hazards, ecosystem services, and land use. The district is highly vulnerable to flooding due to its location near the Yamuna River. The district experienced floods in 1980 and 2008. Land use is very poor. The land use pattern of the district shows a densely populated area. There is no green space







	Area (Sq km)	Population (2001)	Population Density	Annual Population Growth Rate (between 1991-2001)
Central	25	644,005	25,855	-0.19
North	60	779,788	13,025	1.3
South	250	2,258,367	9,068	5.0
East	64	1,448,770	22,868	4.16
North East	60	1,763,712	29,468	6.25
South West	420	1,749,492	4,179	6.13
New Delhi	35	171,806	5,117	0.25
North West	440	2,847,395	6,502	6.01
West	130	2,119,641	16,503	4.78
Total Delhi	1,484	13,782,976	9,340	3.85

Table 2. Demographics of Delhi (2001 Census)

Central.....	10
North.....	12
South .....	14
East .....	16
North East .....	18
South West .....	20
New Delhi .....	22
North West .....	24
West.....	26



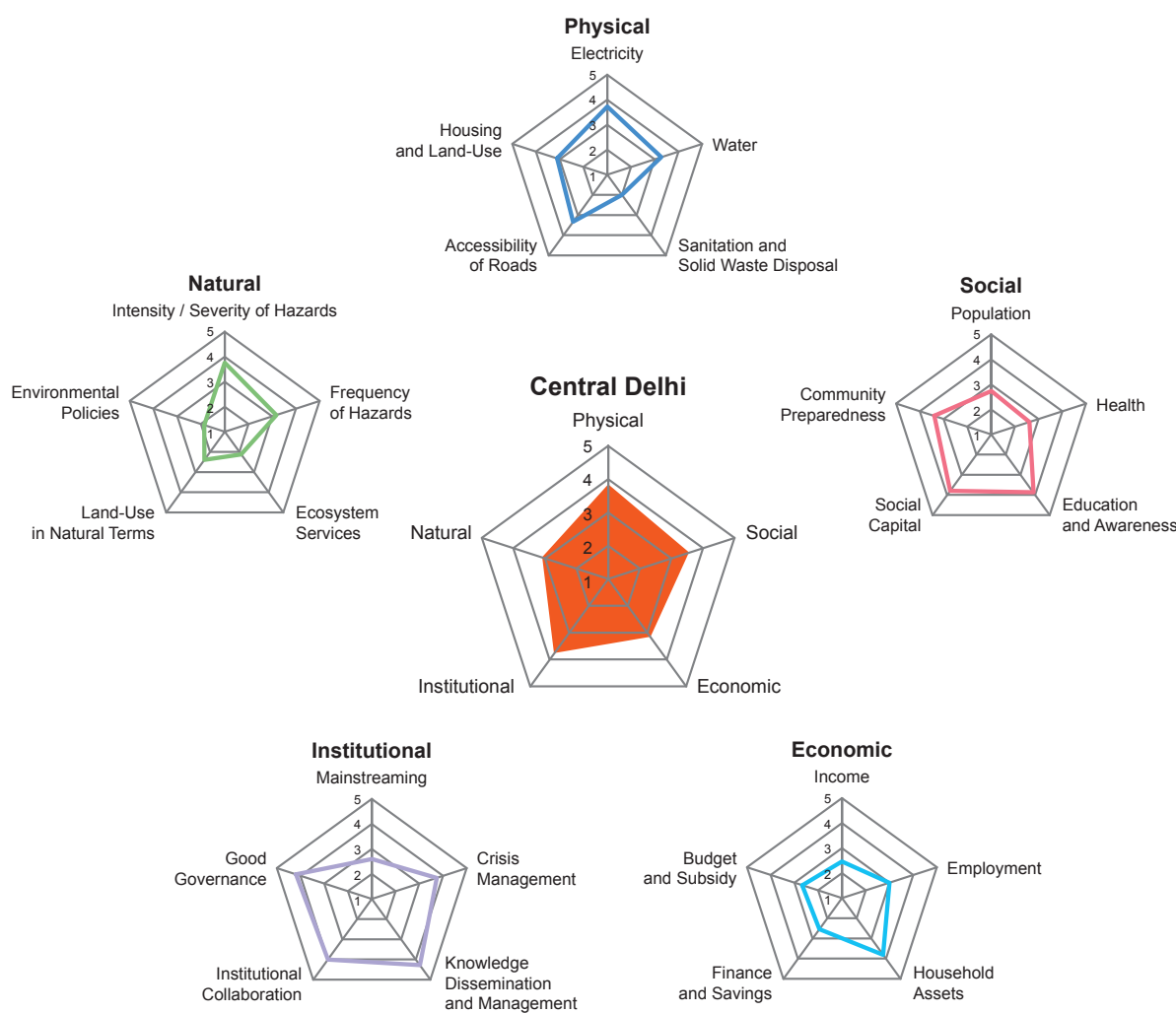




## District Profile and Overall CDRI

Central district has an area of 25 sq.km, which is the smallest among all nine districts. As per 2001 Census, the district population is 0.65 million with second highest density, which is 25,800 persons per sq. km. The district is significant due to some important historical, administrative and strategic buildings. Some of the important places are: Jama Masjid, Delhi Gate, Rajghat and Delhi Secretariat. The district also hosts some important sports venues like Feroz Shah Kotla Ground, IGI stadium and Ambedkar stadium. The overall resilience of the district is low to moderate for economic and natural resilience, moderate to high resilience in physical, social and institutional aspects.

## Analysis Result





## Physical

The physical resilience of central district is moderate for electricity, water, accessibility of road and low for sanitation and solid waste disposal. The prime reason is due to less percentage of solid waste is collected every day and not all have hygiene access to sanitation. Apart from this, few buildings exist with building codes and very few houses are with high plinth level for normal and flood water logging. The district scored 5th highest in physical resilience among all nine districts in Delhi.

## Social

The overall social resilience of Central District is also moderate. The district scored low resilience in population and health aspects. As per 2001 census, more than half of the total population is located in slums and high dense districts. The score for health aspect is low due mainly to many people suffering from water and vector born diseases. The district shows the least social resilience in Delhi.

## Economic

The district's score in the economic aspect is low for income, budget and subsidy, finance and saving, and employment. The is due mainly to the number of people living below poverty line, less number of income sources, unemployment in youth and very small percentage of women working in the formal sector. Also low access to credit facilities to prepare for disasters is the other reason for low economic resilience. Among all nine districts, Central Delhi scored lowest in Delhi.

## Institutional

The overall score of institutional aspect is medium. The district has high resilience due to the crisis management frame work, effectiveness of district body to respond to disasters, institutional collaboration with other stakeholders and organization, and good governance. The district has low resilience in the mainstreaming aspect. The district is 5th highest among all nine districts.

## Natural

The resilience score for natural is low for frequency of hazards, ecosystem services, land use in natural terms, environmental policy and security. The district is vulnerable to heat wave and water scarcity. The quality of urban biodiversity is poor as well as urban soil, air and water quality. Apart from this, more than 80% of the district is built up area. The environmental policy is low due mainly to the poor implementation of environmental conservation policy. The district is 5th highest among all nine districts.

## Policy Implications in Relation to the HFA Priorities for Action

### 1. Making disaster risk reduction a priority

The institutional resilience of central Delhi is between moderate to high (3.73 out of 5). The disaster management authority is already practicing disaster risk reduction in the community. However, the city government needs to create a platform in which they can facilitate partnership in the development sector for the proper implementation of disaster risk reduction.

### 2. Improving risk communication and early warning

There are existing early warning and risk communication systems in the district. It can be further improved by involving community members in identifying their risk. The city government support in building skills and capacity of the community will enhance the participation of the community in risk identification. It can also improve early warning systems for better improvement of risk communication.

### 3. Building a culture of safety and resilience

Information and knowledge on disaster risk reduction is already incorporated in school curricula in Delhi. The city government can help the community in building a culture of disaster resilience at local level through a public awareness strategy.

### 4. Reducing the risks in key sectors

The key sector for improvement is land use. The district built-up area is more than 80 % and it also affects the living environment in the area. The city government needs to put up greater compliance structures and mechanisms.

### 5. Strengthening preparedness for response

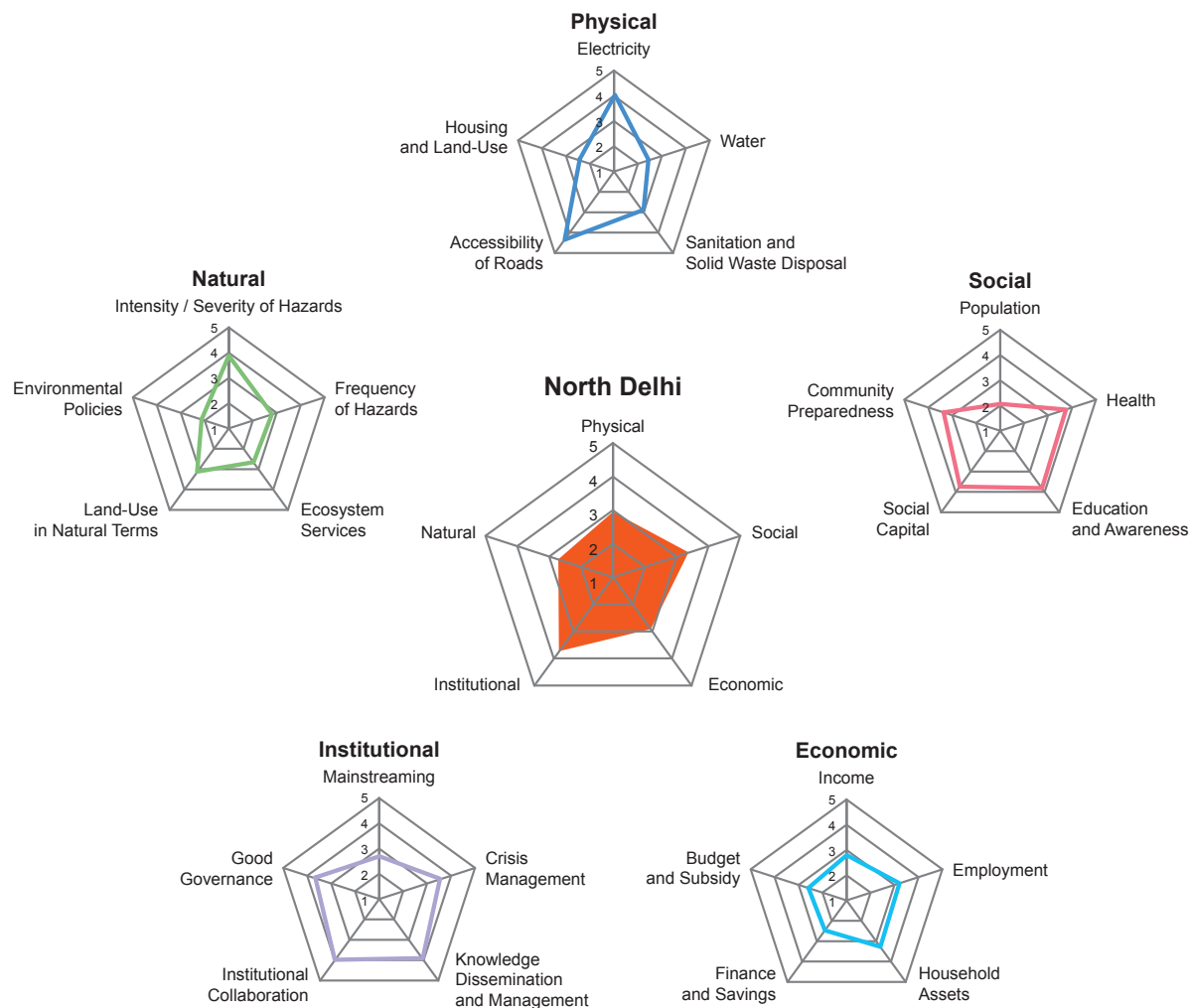
The city government needs to increase the number of disaster awareness or education programs for people who are living in the most vulnerable site. The authority needs to facilitate the development of community action plans for better preparedness and response.



## District Profile and Overall CDRI

The North district is situated on the northern part of Delhi. As per the 2001 census, the total population is about 0.7 million with density of 13,025 persons per sq. km. The density is higher than the city density of 9294 persons per sq. km. The important landmark of the district includes Red Fort, Chandni Chowak, Darya Ganj, Legislative assembly of Delhi, University Campus and Old Delhi railway station. The district also has rural and urban villages. However, the district shows a varied characteristic of metropolitan Delhi. The overall resilience of the district is between moderate to high due to social and institutional aspects. The district has low resilience scores in physical, economic and natural aspects.

## Analysis Result





## Physical

The district physical resilience score is low for water, housing and land use. It has high score for electricity and accessibility of roads. The score is low among all nine districts. Solid waste is not properly collected and very few buildings exist according to building codes. The city structure is old, so not many houses are above normal flooding levels.

## Social

As per 2001 census, the slum population accounts for a high number of the population in the district. The awareness and knowledge of the threat and impact of disasters is not as good as other districts. On the other hand, the population growth rate is minimal. The overall social resilience is medium due to better health facilities, very small number of people suffering from water and vector born diseases, and higher participation of the population in community activities.

## Economic

The district overall resilience score is low due to a high number of people depending on one income source particularly from the informal sector. The other factors for low resilience are less than 20% women employed in the formal sector, very few household has non-motorized vehicle and poor budget and subsidy for disaster risk management.

## Institutional

The overall resilience score is medium. The mainstreaming of disaster risk reduction and climate change adaptation is low due to poor integration into development plans as well as low community participation. The other parameters like effectiveness of crisis management framework, knowledge and dissemination management, institutional collaboration with other organization and stakeholders, and good governance are good due mainly institutionalization of disaster management at the state and district levels.

## Natural

The district is vulnerable to heat wave, water scarcity and flooding. The intensity is medium. The condition of ecosystem services is not good due to poor air quality, urban biodiversity and water quality in lakes and rivers. The environmental policies are also not very effective due to poor implementation at the local level. The overall resilience score is low.

## Policy Implications in Relation to the HFA Priorities for Action

### 1. Making disaster risk reduction a priority

The prioritization of disaster risk reduction should be given more importance in the city development plan. It needs more political commitment and support. The local government has to think of mainstreaming of disaster risk reduction and climate change adaptation. The government needs to facilitate and collaborate with stakeholders to make disaster risk reduction a priority.

### 2. Improving risk communication and early warning

The city has well functional warning systems for flooding and has identified flooding points. What needs to be improved is the identification of risk by the community and involving them in hazard risk assessment. The government can facilitate this through collaboration with local NGOs and stakeholders.

### 3. Building a culture of safety and resilience

The city government has incorporated disaster risk reduction into school curricula very well. The local government can enhance the culture of safety and resilience by organizing more programs for those who are the most vulnerable and lacking in capacity. The experience can be shared about lessons learned from past experiences.

### 4. Reducing the risks in key sectors

The important sectors which need greater attention from city government are solid waste and sanitation, land use, and environment. In addition, city government support of poor people through provision of other sources of income will improve physical conditions. The city government has to focus on poor and vulnerable communities where unemployment is high.

### 5. Strengthening preparedness for response

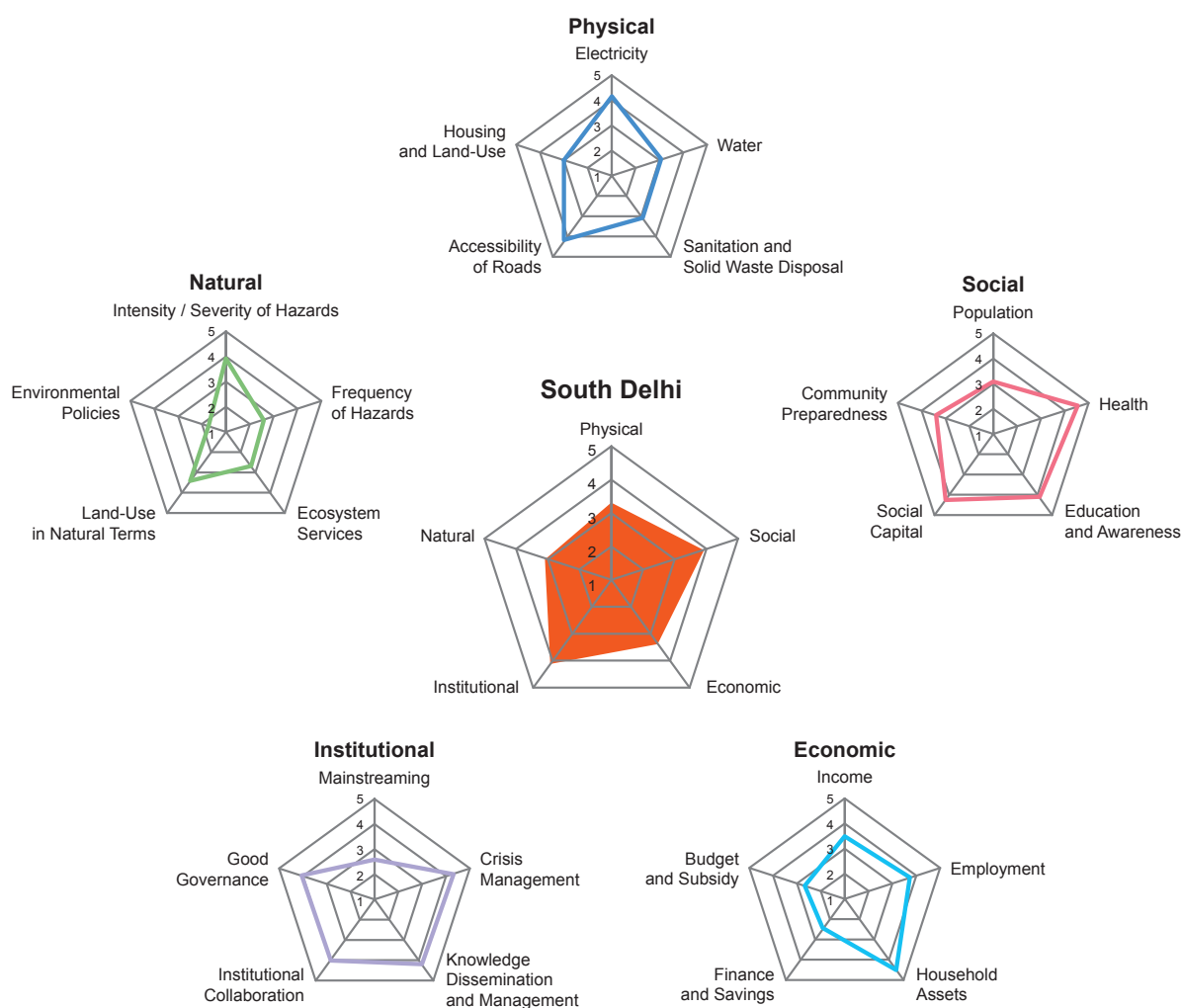
Community knowledge and information on the threat and impact of disasters is low. Although district level authority regularly organizes training programs in the community, the local government can improve on this by creating more programs for the community on information and knowledge building.



## District Profile and Overall CDRI

The district area is 249 sq. km, which is third largest district of Delhi. It occupies 16% of the total area of NCT of Delhi. The total population of district as per 2001 census is 2.2 million with density of 9068 persons per sq. km. The district is the second most populated district of NCT in Delhi. The population of the district is mainly urbanized with only 8.11% rural. The important attractions in this district are: industrial areas, government offices, monuments and heritage sites like Bahai temple, Qutab Minar, Hauz Khas Fort, Jamali Kamali, humanyun tomb, Arab ki Sarai, Old Fort Delhi, and Tughlakabad Fort. The district overall resilience is between medium to good due to physical, social, economic, and institutional aspects. It is the second highest resilient district among all nine districts.

## Analysis Result





## Physical

The physical resilience is high for electricity and accessibility of road. The district resilience score is medium for housing and land use, water, and sanitation and disposal. The district has a very good road network with little obstruction during rainy season. The condition of solid waste collection and treatment is not good and a large area of the district is affected by interruptions in water supply. The building codes are followed by only a few buildings. The district is third highest resilient district among all nine districts.

## Social

The district is the second highest in social resilience among all nine districts of Delhi. The district resilience is between medium to good. The district has functional and accessible medical hospitals, the literacy rate is above 80 percent, and participation of the district population in community activity is high. The district scored low in population due mainly to a high annual population growth of 5% as per 2001 census and quite high population density.

## Economic

The economic resilience is medium for income, and employment. Only 11-20% of the district population lives below poverty line. There are two major sources of income. The households in the district own all household assets. On the other hand, only 10% of residential houses have insurance. The budget and subsidy for disaster risk management is low. The district has the second highest resilience among all nine districts of Delhi.

## Institutional

The institutional resilience score is highest among all nine districts of Delhi. The district resilience score is very high for such parameters as effectiveness of district's crisis management framework, knowledge dissemination and management, institutional collaboration with other organizations and stakeholders, and good governance. The resilience value for mainstreaming of disaster risk reduction and climate change adaptation is low.

## Natural

The natural resilience score is very low for environmental policy and security. The district is vulnerable to flooding, heat wave, and water shortage. Similarly, the condition of urban air and water quality and urban biodiversity is between medium to good. The district has more areas covered in green. The implementation of environmental policy is poor. The district is the third highest resilient district among all nine districts of Delhi.

## Policy Implications in Relation to the HFA Priorities for Action

### 1. Making disaster risk reduction a priority

The city government needs to allocate budget for climate change and disaster risk reduction for all nine districts of Delhi. For effective integration of disaster risk reduction and climate change adaptation into development plans, more collaboration and support from the government are required. The initiatives of the government should increase community participation.

### 2. Improving risk communication and early warning

The identification of risk by the community is essential for improving risk information and early warning. The local government should increase the effectiveness of risk information and early warning by incorporating experiences of risk and facilitating the community in preparing action plans to tackle disasters.

### 3. Building a culture of safety and resilience

The resilience score in community preparedness for disaster is high. If the government wants to sustain this culture of safety and resilience, more public awareness programs at regular intervals are required. The government should also facilitate the documentation of multi risk assessment and disaster experience.

### 4. Reducing the risks in key sectors

The city government need to put great attention on environmental policy, allocation of budget for climate change related disaster risk reduction, and housing and land use. The district also has a water scarcity problem. Therefore, systems for alternative emergency water supply need to be explored.

### 5. Strengthening preparedness for response

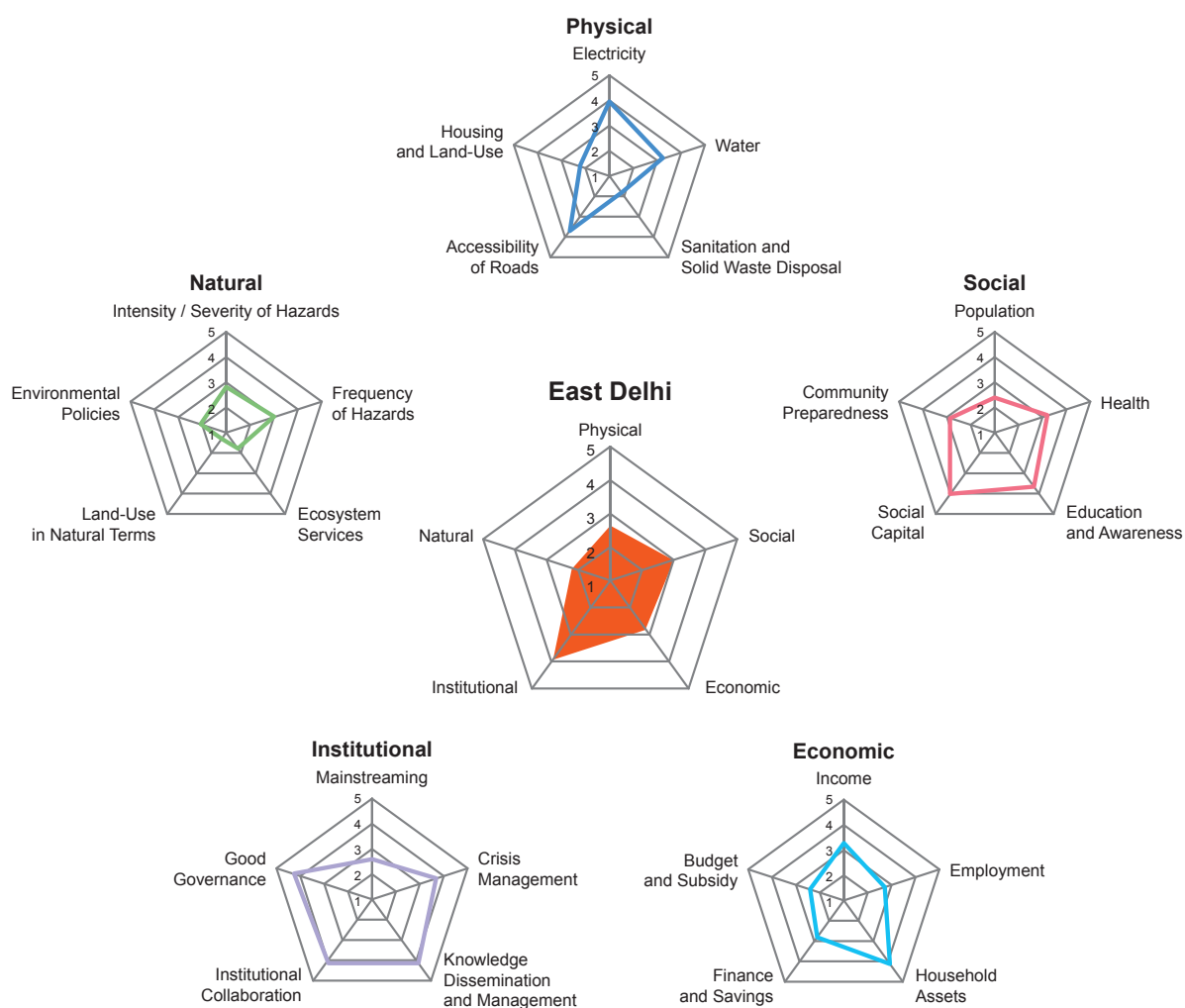
Rapid task force exists at state and local level. The strength of the district in terms of preparedness can be improved by increasing the number of emergency workers, more collaboration with NGOs and public private partnership.



## District Profile and Overall CDRI

The district has an area of 64 sq. km which covers 4.31% of the total area of Delhi. As per 2001 census, the total population is 1.4 million with population density of 22868 persons per sq. km. The district has the third highest population density in Delhi. The literacy rate is 85.10%, which is highest in Delhi. East Delhi forms part of the Yamuna River edge and is more prone to flooding and earthquake than other districts. The district is composed of demarked industrial areas in Patparganj and Jhilmil, local Delhi Development Authority (DDA) shopping centers, residential areas, Jhuggi clusters, sports complex, parks and lakes. East Delhi is the least resilient district among all nine districts. The resilience score is between low to medium due to low physical and natural resilience.

## Analysis Result





## Physical

The physical resilience of the district is low for water, sanitation and solid waste disposal, and housing and land use. The score is high for electricity and accessibility of roads. The condition of solid waste collection, recycling and treatment is very poor. Only a few houses in the district are with ownership. The plinth level of the houses is about 20 to 30% and very few buildings are constructed with building codes. It is the lowest resilience district in terms of physical aspect in Delhi.

## Social

The social resilience of this district is between low to medium. The score for social capital is high. The population growth and density makes this district less resilient. The higher the population, the greater is the pressure on civic services and infrastructure. On the other hand, the district also has the highest literacy rate. The health facilities are well in place. The community preparedness at household level for disaster is poor. The district is the least resilient district in Delhi.

## Economic

The resilience score for economic aspect is between low to medium. The accessibility of credit facility for disaster prevention is low; only less than 10 percent of the houses are insured. The budget and subsidy for is low like in other districts. Less than 10 percent of all women are employed in formal sector and about 19 to 25% youth are unemployed in the formal sector. There is only one major source of income. Households possess assets. Overall, this district is the third least resilient among all nine districts in the economic aspect.

## Institutional

The overall resilience level is between medium to high due to high scores in effectiveness of crisis management framework, knowledge dissemination and management, institutional collaboration with other organizations and stakeholders, and good governance. The district scored low in mainstreaming of disaster risk reduction and climate change adaptation. The community participation in development plan is low. The overall ranking is third among high resilience districts in Delhi.

## Natural

The district overall resilience score is between very low to medium. The score for land use in natural terms, ecosystem services, and environmental policies and security is very low. It is the least natural resilient district among all nine districts in Delhi. The district is more prone to flooding due to its physical location. The condition of urban biodiversity, air quality and water quality of rivers is very poor. Similarly, the district has very few or no green spaces existing.

East

## Policy Implications in Relation to the HFA Priorities for Action

### 1. Making disaster risk reduction a priority

The mainstreaming of DRR and CCA is very low. The city government needs to allocate funds for climate change related disaster risk reduction. Efforts are also required for more collaboration with different stakeholders in incorporating disaster risk reduction into development plans. Engaging the local community is also important in making disaster risk reduction a priority.

### 2. Improving risk communication and early warning

The district is more vulnerable to flooding and many informal settlements live along the river. The city government needs to identify risk groups and encourage them to make action plans for quick response during flood. The skill and capacity development of the most vulnerable group will enhance risk communication and early warning.

### 3. Building a culture of safety and resilience

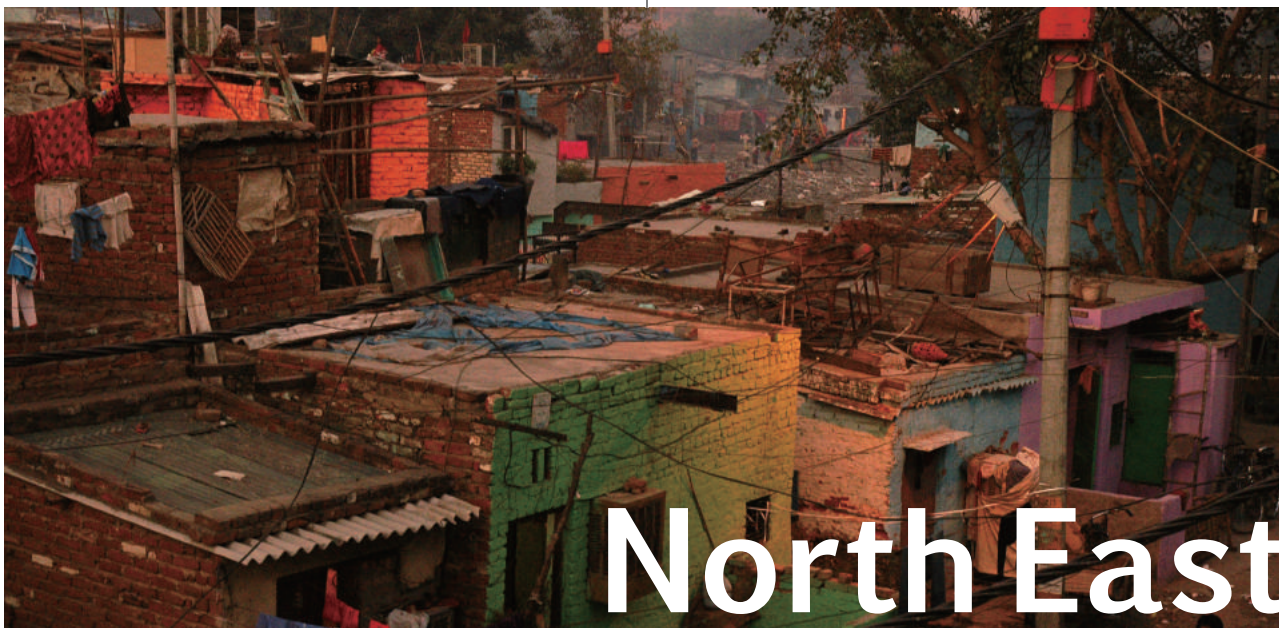
The culture of safety and resilience can be build by incorporation of DRR and CCA in the school. Similarly, community preparedness can be enhanced through community awareness programs. This will enable the community to share sound practices.

### 4. Reducing the risks in key sectors

In East Delhi, the settlements along the Yamuna River are the most vulnerable when hazard strikes. More attention to relocation in other areas where it is safer to live is necessary. Relocating to another place will also help in the physical restoration of the river.

### 5. Strengthening preparedness for response

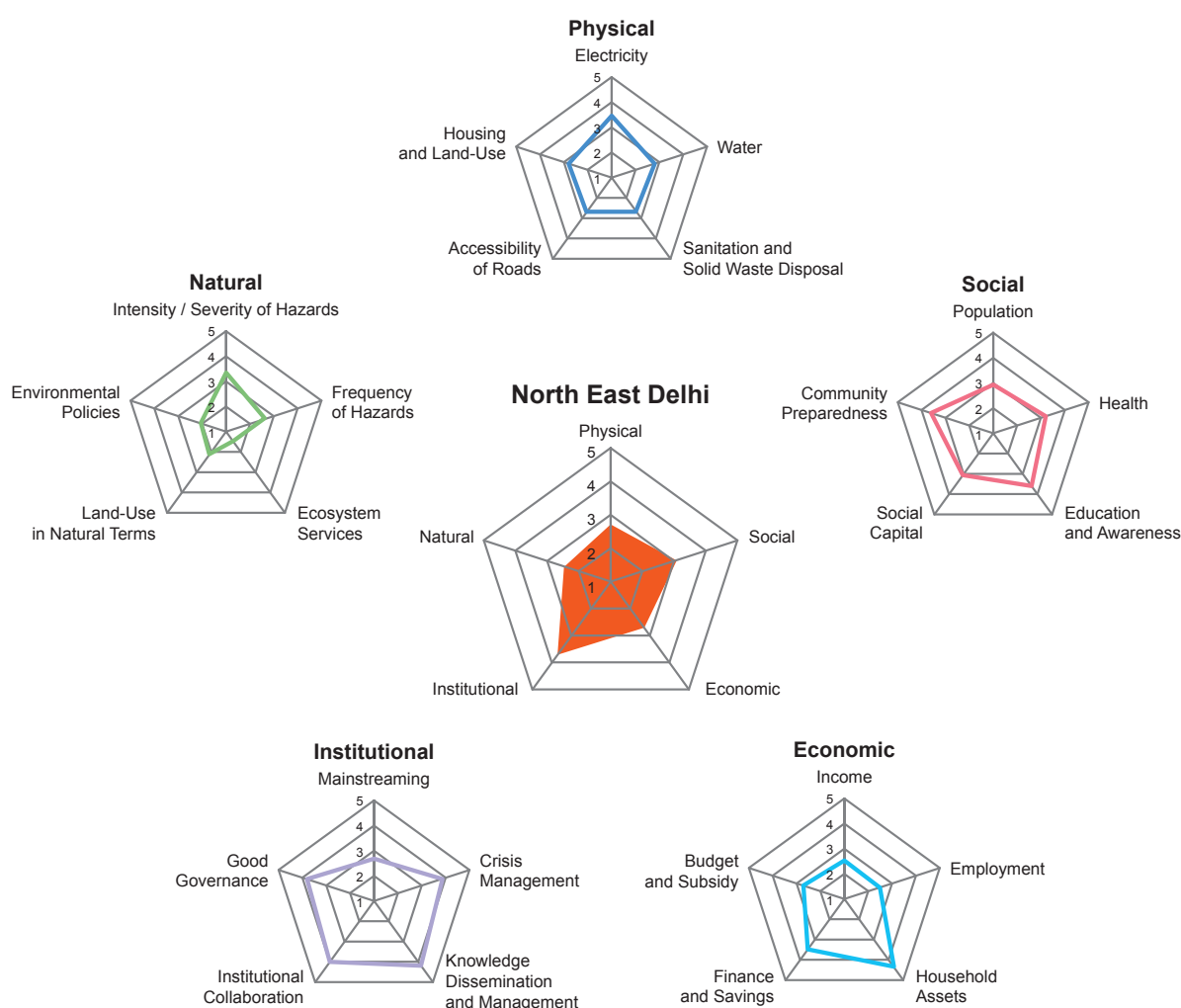
Every year, settlements along the Yamuna River frequently gets affected by heavy rainfall. The city needs to help this community in terms of logistics, materials, and management. Effective disaster preparedness requires community participation. Therefore, involving them in disaster management planning will improve the level of disaster preparedness.



## District Profile and Overall CDRI

The total population of the district is 1.7 million in 2001. The urban population is about 0.1 million and the rest is rural population. The population is the 4th highest in Delhi. As per 2001 census, the population density is 29,468 persons per sq. km. The district has the highest population density in Delhi. It also has the highest population growth rate in Delhi, which is about 6.25 percent annually. The district does not show good infrastructure facilities unlike a metro city. The district is situated on the edge of river and more prone to flooding and earthquake than other districts. The majority of the population in the district are migrants from neighboring states like Uttar Pradesh, Haryana, Punjab, and Bihar. The overall resilience of the district is between poor to medium. The district resilience is low for physical, economic and natural aspect. It is the second least resilient district in Delhi .

## Analysis Result





## Physical

In physical resilience, the district is the second least resilient in Delhi. The reasons are poor services in terms of water, sanitation and solid waste disposal, accessibility to road, housing and land use. Due to high population density, demand for services is more than the district can fulfill.

## Social

The social resilience of the district is between poor to medium. The district is highly dense and populated. The literacy rate of the district is above 75 percent, which makes this district a bit more resilient. In the social aspect, the district is the second least resilient district in Delhi.

## Economic

The economic resilience of the district is also between poor to medium. The reason for this is due to the large number of population that migrated to the district to work in the informal sector and provide unskilled labor services. The district is the third least economic resilient district among all nine districts of Delhi.

## Institutional

The institutional resilience of the district is low for mainstreaming for CCA and DRR. For the other parameters, the score is high. The reason is due to the institutionalization of disaster management at district level. The participation of the community in the development plan is minimal. Overall, the North East is the third most resilient district in Delhi.

## Natural

In the natural aspect, the district is the second least resilient in Delhi. The reason for this is due to the proximity of the district to the Yamuna River. Also, the condition of the environment has deteriorated in the past decade due to high density. The population pressure has created stress on civic services which consequently led to environment degradation.

## Policy Implications in Relation to the HFA Priorities for Action

### 1. Making disaster risk reduction a priority

Adequate resources are required to integrate disaster risk reduction into development plans. Financial resources are needed to create budget for climate change related disaster risk reduction. Human resources and collaboration among different stakeholders are also necessary. Finally, the involvement of the community in development planning is important in making disaster risk reduction a priority.

### 2. Improving risk information and early warning

Like the East District, the North East district is similarly located along the Yamuna River. Through effective risk information and early warning the risk of the most vulnerable group who are living along the Yamuna river can be reduced. The city government can support the community in hazard risk assessment.

### 3. Building a culture of safety and resilience

The resilience score for education and awareness and community preparedness during a disaster is high. This resilience level can be further raised if more awareness programs are organized at the district level. This will help in reaching the most vulnerable community and sharing of knowledge for disaster awareness.

### 4. Reducing the risk in key sectors

The district has low scores in housing, land use, solid waste and sanitation and environment condition. The incorporation of DRR in environment policy is one mechanism to improve environment conditions. Land use planning can be improved through establishing measures to incorporate disaster risk reduction in urban and land use planning.

### 5. Strengthening preparedness for response

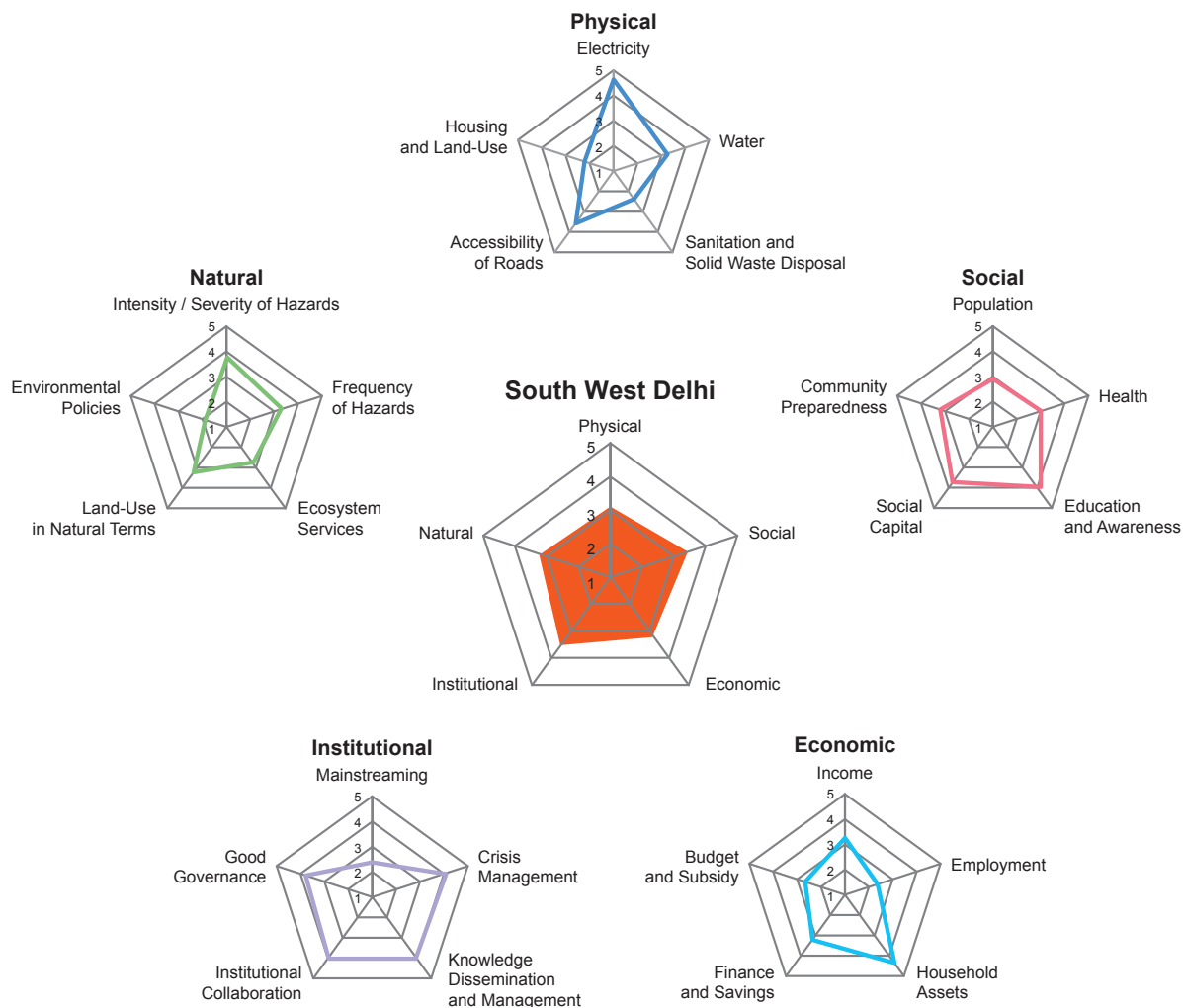
The district has a well institutionalized preparedness plan for response. This should be maintained by regular review of disaster awareness capacities and mechanism at institution and community levels.



## District Profile and Overall CDRI

The south west district occupies an area of about 420 sq. km. As per the 2001 Census, the total population of the district is about 1.7 million with population density of 4,179 persons per sq. km. It is the least densely populated district in Delhi. The district has 88 villages. The important landmarks in east Delhi are: Domestic and International Airport, Delhi Cantonment area, Jawaharlal University, Indian Institute of Technology, and Qutab institutional area. The overall resilience of East Delhi is medium due to physical, social, economic, institutional and natural aspects. The district is the fourth most resilient district in Delhi.

## Analysis Result





## Physical

The physical resilience is between medium to high due to good infrastructural facilities and services like electricity and accessibility of roads. However, the condition of water, sanitation and solid waste disposal, and housing and land use is not as good. It is the fourth most resilient district in Delhi.

## Social

The social resilience of the district is between medium to good due to better health infrastructure, high literacy rate, community preparedness, and social capital. However, the high annual population growth makes this district less resilient. Overall, the district is the fifth resilient district in social aspect among all nine districts of Delhi.

## Economic

The economic resilience of the district is between medium to good. The reason is due to the share of working population, which is not very low, household assets, finance, and saving and income. The district is the third resilient district in Delhi.

## Institutional

The institutional resilience is between medium to good. The reason is due to the institutionalization of disaster management at the district level. The district has its own rapid task force and disaster management plan. However, the mainstreaming of disaster risk reduction and climate change adaptation is poor. The participation of the community in development planning is also minimal.

## Natural

The district natural resilience is between poor to medium. This is due to poor ecosystem services and environmental policy. The district is also prone to heat wave, water scarcity and flooding. The green area in the district makes this district more resilient than other districts. Overall, the district is the second highest resilient district among all nine districts in Delhi.

## Policy Implications in Relation to the HFA Priorities for Action

### 1. Making disaster risk reduction a priority

Like other districts, the main streaming of disaster risk reduction and climate change adaptation is very low. Financial resources are essential for making disaster risk reduction a priority. There is a need to create funding for climate related disaster and risk reduction. Along with financial resources, the collaboration with different stakeholders from key sectors like environment, health, housing, education, and social welfare is necessary.

### 2. Improving risk information and early warning

At the district level, authorities can improve risk information and early warning by enabling the community to engage in hazard risk assessment and building local warning systems.

### 3. Building a culture of safety and resilience

The schools in the district have incorporated disaster risk reduction. At the district level, training programs are also conducted to raise people's awareness. There is a need to enhance compilation, dissemination and use of disaster risk reduction information. This will enable information to reach remote areas of the district.

### 4. Reducing the risks in key sectors

There is a need to incorporate disaster risk reduction in environment management. Local actions until now have not been able to prevent unsustainable land use and resources practices that increase disaster risk. There is a need to incorporate disaster risk reduction in urban and land use planning because urban development plans do not incorporate appropriate disaster risk reduction.

### 5. Strengthening preparedness for response

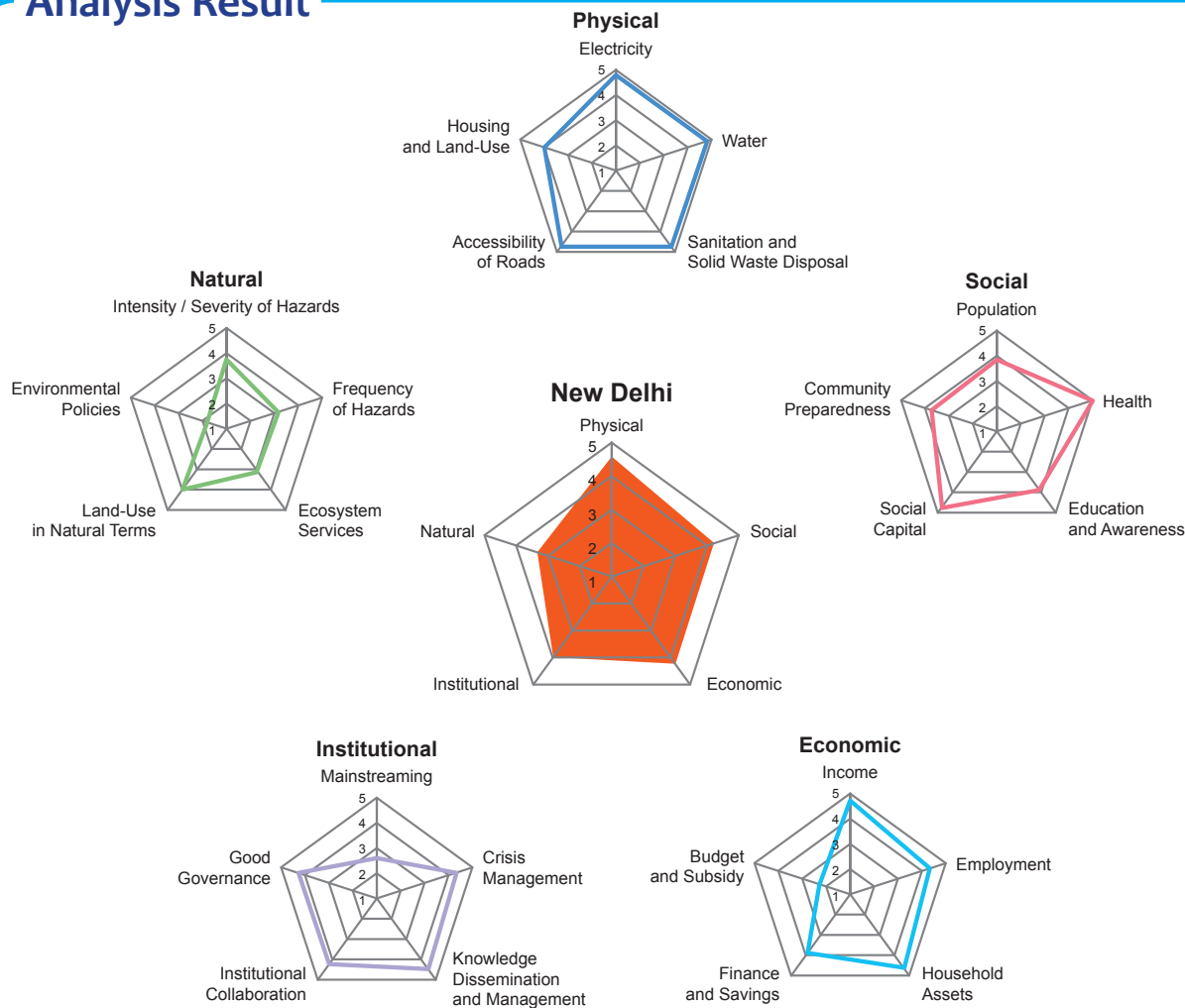
The district has its own well functioning disaster management authority. Preparedness can be further strengthened by developing increased networks for preparedness with different stakeholders at local level.



## District Profile and Overall CDRI

The district is the capital city of India. As per 2001 census, the total population of the district is 0.1 million with density of 4909 persons per sq. km. The district is the second lowest densely populated district in Delhi. In terms of population, the district ranks lowest in Delhi. The district covers 2.36 percent of the total area of Delhi, which is 35 sq. km. The district is mainly composed of residential areas like large bungalows, foreign missions/state guest houses, government and private colonies; institutional areas like government offices, cultural building and embassy area; and city center – Connaught place. The important landmarks in this district are: Rashtrapati Bhawan, National Museum, and India Gate. The overall resilience of New Delhi is highest in Delhi. This is due to the physical, social, economic, institutional and natural aspects. The district has its own Municipal Body which maintains proper well functioning civic services. The demographic profile of the district is one of the crucial factors for high social resilience. The economic resilience is high due mainly the type of people live in this district. The natural resilience of the district is also high. However, the district is vulnerable to heat waves and water scarcity.

## Analysis Result





## Physical

The overall resilience of physical aspect is high due mainly to better electricity, water, sanitation and solid waste disposal, accessibility of roads, and housing and land use. The district has a separate well functioning Municipal Corporation which looks after civic amenities in the district. The infrastructure facility in the district is well developed and maintained. The physical resilience of this district is highest in Delhi.

## Social

The social resilience of the district is highest in Delhi. The main reason is demographics. The district population is lowest among all nine districts. Other than demographic factors, health facilities are also easily accessed by the community. Social capital is high due to high social cohesion among the community.

## Economic

The district resilience level is high due mainly to income, employment, and household factors. The district population is well educated and mainly engaged in formal sectors. The high score under household assets shows that people are well equipped with household items. Budget and subsidy are low similar to the nine districts. The district authority receives equal budget from state government ever year.

## Institutional

Institutional resilience is high due to the institutionalization of disaster management in the district, similar to the other districts. The institutionalization of disaster management leads to separate establishment of Emergency Operation Center in all nine districts. The mainstreaming of disaster risk reduction and climate change adaptation is not well implemented and weak. This is similar to the other nine districts of Delhi.

## Natural

The natural resilience of the district is medium. The district is vulnerable to heat waves and water scarcity. Environmental policy is less resilient due to the little consideration of district level hazard maps in development activities. The extent of conservation of environment is not properly reflected in development plans. The overall natural resilience of this district is high in Delhi.

## Policy Implications in Relation to the HFA Priorities for Action

### 1. Making disaster risk reduction a priority

The mainstreaming of disaster risk reduction and climate change adaptation is very low. The effective way to prioritize disaster risk reduction in development plans is by engaging multi stakeholders in a dialogue to establish a common strategy for disaster risk reduction. There is need to allocate budget for climate change related disaster risk reduction. A legal and regulatory system will enable DRR to be integrated at the city level. Involvement of the local community is also important in making disaster risk reduction a priority.

### 2. Improving risk information and early warning

The district has its own risk information mechanism, which is effective. It can be further improved by reviewing the available risk related information and the capacity for data collection and use. This will help in collecting and sharing local knowledge and support in the decision making process.

### 3. Building a culture of safety and resilience

The district has its own disaster management authority. The culture of safety and resilience can be further built by enhancing the compilation, dissemination and use of disaster risk reduction information. This will help the authority in systematically documenting local events, coping mechanisms and expertise on DRR.

### 4. Reducing the risk in key sectors

The key sector in this district is environment which needs to incorporate disaster risk reduction in environmental management. This can be done through policy and planning. The rate of urban green space in the capital city of India need also to be monitored.

### 5. Strengthening preparedness for response

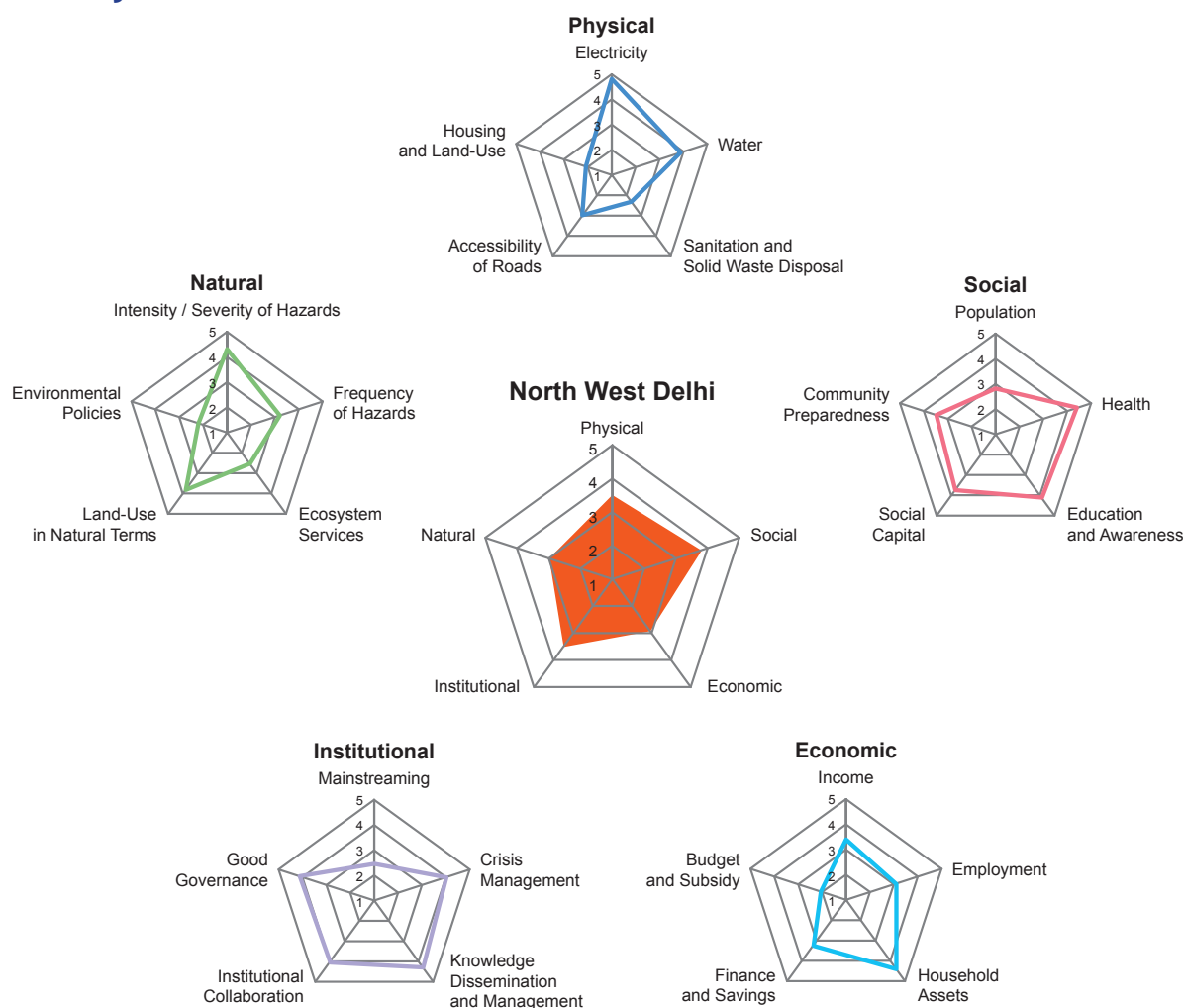
The preparedness mechanism for response can be strengthened by reviewing disaster preparedness capacity and mechanisms which can increase the preparedness level in the district.



## District Profile and Overall CDRI

District North-West is the largest district in Delhi. It covers 29.67 percent (440 sq. km.) of the total area of Delhi. The total population of the district as per 2001 census is 2.8 million, which is highest in Delhi. However, population density is 6471 persons per sq. km, which is lower than Delhi. The district is composed of urban as well as sub urban areas. The overall resilience of the district is medium to good due to medium resilience score in physical, social, institutional and natural aspects. The district is the third highly resilience among all nine districts of Delhi.

## Analysis Result





## Physical

The overall physical resilience score is between medium to high. In terms of water, district infrastructure is equipped with water treatment plans, rainy wells, ground reservoirs and overhead tankers. Housing structure is not very strong due to the semi urban environment. The district in terms of overall physical score is the second highly resilient district in Delhi.

## Social

The social resilience of the district is also between medium to high due mainly to health, education, social capital and community preparedness during disasters. The district is equipped with well functional schools, hospitals, and Residential and Welfare Associations and Market Traders Associations (MTAs). The district is the fourth highly socially resilient in Delhi.

## Economic

The economic resilience is not high in comparison to other dimensions. The total number of working population is 0.9 million, which is 32% of the total population and lower than national average. This shows the number of household having more dependent population. The budget and subsidy resilience is low, which is similar to the other eight districts in Delhi.

## Institutional

The institutional resilience of the district is between medium to high due mainly to the effectiveness of district's crisis management framework, knowledge dissemination and management, institutional collaboration with other organizations and stakeholders, and good governance. The district has its own team and emergency operation center for disaster management. The overall resilience for the institutional dimension is similar to the other district due to the institutionalization of disaster management. However, the mainstreaming of disaster risk reduction is low similar to the other eight revenue districts.

## Natural

Natural resilience is medium. The district is vulnerable to flood, heat waves, and water scarcity. The condition of ecosystem is low due mainly to poor urban air, and water quality in lakes. The resilience level in environmental policy is low similar to the other eight districts. Environmental policy is common to all nine districts.

## Policy Implications in Relation to the HFA Priorities for Action

### 1. Making disaster risk reduction a priority

The district resilience level is low for mainstreaming of disaster risk reduction and climate change adaptation. To improve mainstreaming, there is a need to prioritize disaster risk reduction in all development sectors. The district has no specific budget for climate change related disaster risk reduction. Allocating resources for prioritizing disaster risk reduction and encouraging community participation in disaster risk reduction are necessary.

### 2. Improving risk information and early warning

The district is composed of both rural and semi urban areas. Risk information sometimes does not reach the vulnerable community due to their location in hazard prone area. Vulnerability and capacity assessment at the local level will increase hazard information dissemination in the community.

### 3. Building a culture of safety and resilience

Information on disaster risk reduction is not very well known at village level. The local people generally use their local knowledge to deal with disasters. Through proper disaster awareness program, their awareness and skill can be developed.

### 4. Reducing the risk in key sectors

Disaster risk reduction can be focused on the key sector of environment. The resilience score is very low for environmental policy. The incorporation of disaster risk reduction into environmental policy through environment mitigation measures will support environment risk reduction.

### 5. Strengthening preparedness for response

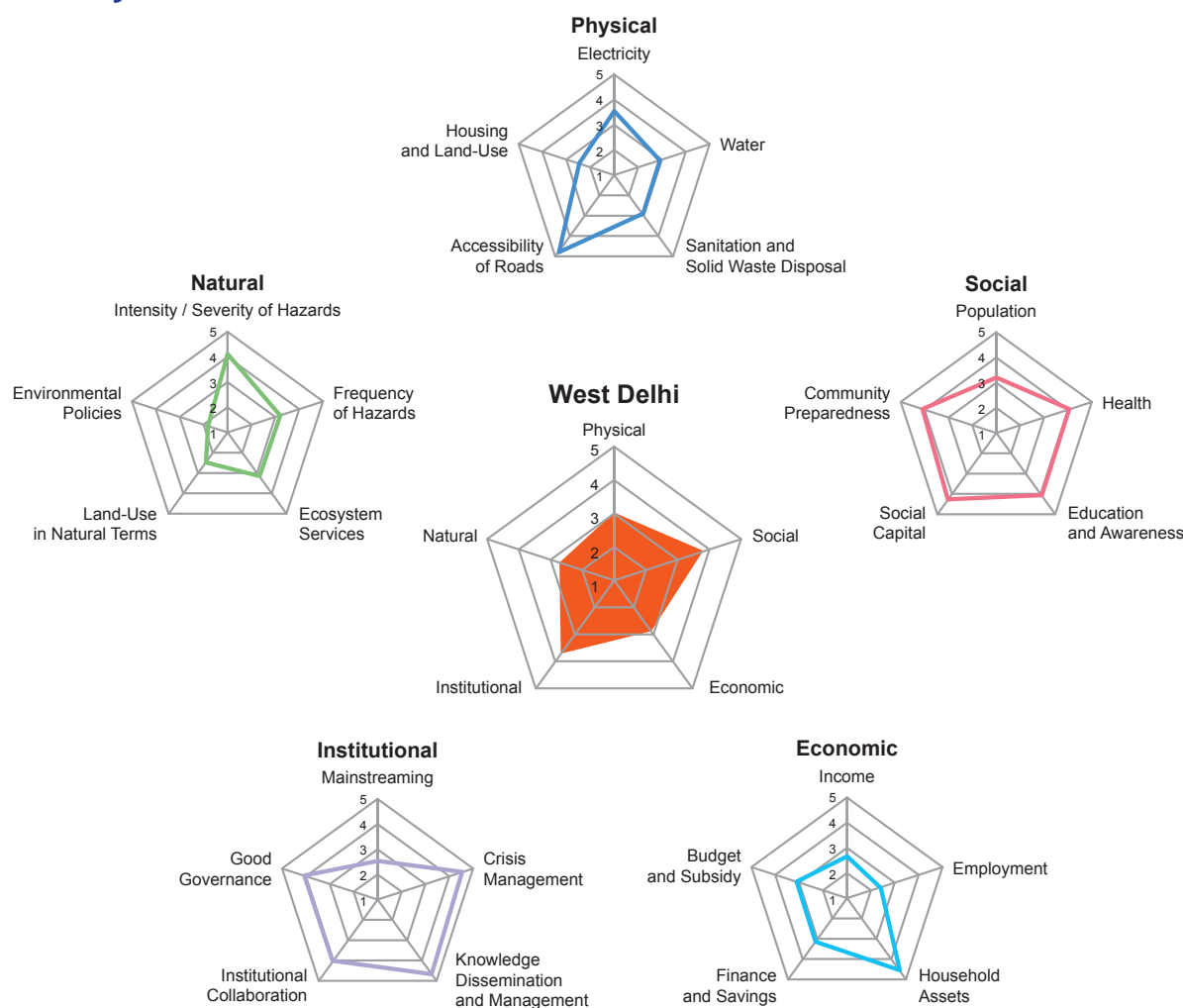
The preparedness level of informal settlements is very low due to poor accessibility of resources and vulnerable location. The district should support the communities in making community disaster management plans which will provide effective and timely emergency response during disaster.



## District Profile and Overall CDRI

The district is the fourth largest in Delhi. It covers 8.77 percent of the total area of Delhi. The district is highly populated with a density of 16431 persons per sq. km. The total population of the district as per 2001 census is 2.1 million, which is third highest in Delhi. The population is mostly urbanized and only 4 percent of the total population is rural. The district has a very high literacy rate, around 83 percent. The work population is 33 percent of the total population with a dependency ratio of 1.95. Around half of the working population is engaged in household industry. The overall resilience of the district is between low to medium. The aspects with low resilience scores are: economic and natural, whereas, physical, social, and institutional are medium.

### Analysis Result





## Physical

The physical resilience of the district is medium. This is due mainly to better access to electricity and road. The condition of water and sanitation is not good because of high density which creates more pressure on basic amenities. The district is the third least resilient district in physical aspect.

## Social

Except population, the district has high resilience in population, health, education, social capital and community preparedness during disasters. The reason is due mainly to the demographic condition which shows high population with higher density. High literacy rate, better medical infrastructure, and community preparedness make this district high in social resilience. The district is the third resilient in Delhi.

## Economic

The economic resilience of the district is low to medium due to the income and employment situation. The dependency ratio of the district is higher than the national level. Around 50 percent of the workers are engaged in household industries. The district is the third least resilient district in Delhi.

## Institutional

The mainstreaming of disaster risk reduction and climate change adaptation is low like the other eight districts. The community participation in the development plan is very little. On the other hand, the district has its own well functioning disaster management cell, decision making authority; collaboration with NGOs and other government bodies makes the institutional resilience high.

## Natural

The district is vulnerable to heat waves and water scarcity. The condition of land use and environmental policy is poor. The built up area has increased after 1991. Overall, the natural resilience of the district is low to medium. The district is the third least resilient district in Delhi.

## Policy Implications in Relation to the HFA Priorities for Action

### 1. Making disaster risk reduction a priority

The resilience level from the study shows that mainstreaming of disaster risk reduction and climate adaptation is very low. The district should prioritize integrating disaster risk reduction into development planning. The community should be encouraged to participate in disaster risk reduction. The district should create a budget provision for disaster risk reduction. The development plan should incorporate DRR in environment, health, housing, and poverty alleviation.

### 2. Improving risk information and Early Warning

The district body has its own disaster management authority. They are involved in risk information and early warning. The resilience level can be further improved by developing communication and dissemination mechanisms for disaster risk information and early warning.

### 3. Building culture of safety and resilience

The district authority should continue to organize drills and awareness campaigns at local level. The district can develop this culture of safety by reaching the most vulnerable community. Awareness building on disaster risk reduction can be further improved by focusing on the needs of the community.

### 4. Reducing the risk in key sectors

Due to high population growth, the environment condition has deteriorated. The resilience score is very low for environment. The environment policy should integrate disaster risk reduction through environment mitigation measures.

### 5. Strengthening preparedness for response

The district disaster management authority has well developed plans for quick response. To enhance response, the district can review their capacity and mechanism and expand network for preparedness.

# Way Forward

## Community Action Planning

This study seeks to build the capacity of the community with regard to disaster risk in Delhi. It utilizes community action planning approach. Community action planning aims at community development through problem solving. It consider problem which are actual and perceived. To solve the problem, the approach helps community to rank their problem or prioritize their task as per the priority based upon available resources. The key elements of community action plan are: rapid, intense, field based workshop which is carried over 1-3 days. The results of the workshop are the list of community prioritized action tasks that are short term, medium term and long term in nature. These action tasks intend to build community resilience. The stakeholders involve in this approach are local community and external stakeholders (like Non Government Organizations (NGOs), Community Based Organizations (CBOs), and various department of local government).

Based on the result from Climate Disaster Resilience Index (CDRI), the study further focuses on East Delhi for community action planning. The study seeks to develop community action planning in middle and low income groups. For low income group, the study utilizes sanjha prayas as possible entry point. For middle income group, the study sees Bhagidari programme as possible entry point into Residential and Welfare Associations (RWAs). The study sees the support of the Residential and Welfare Associations (RWAs) and the Sanjha prayas under the Delhi Government as essential for the questionnaire survey to be conducted. The result of the survey will be shared with the community and with the other organizations. The outcome of the questionnaire survey will be a series of community identified tasks which will facilitate in community action planning. It will help in understanding the priority tasks of the community in terms of disaster risk reduction. A workshop on community action planning involving various stakeholders may be undertaken after the research findings are established.

## Bhagidari Program

Bhagidari program is a government citizen partnership program launch in 1998. The main aim of this program is to facilitate people's participation in governance. It was initiated by the Delhi government to create greater transparency and accountability in administration in order to improve the quality, efficiency and delivery of public services. The actors involved in this joint partnership are: Citizen Groups – Residential and Welfare Associations (RWAs), Non Government Organizations (NGOs), and Delhi Government.

## Sanjha Prayas

Sanjha Prayas is a program under Bhagidari. It is a partnership of the chief minister and slum dwellers in Delhi. This program was launched in 2007. Through Sanjha Prayas, the effort is to mobilize the community in taking initiatives like cleaning of slum area in partnership with Municipal Corporation of Delhi (MCD), and Delhi Jal Board (DJB); maintenance and repair of water supply infrastructure to improve the water supply of all area with DJB; Power camps; and access to livelihood programmes.

