

# Community Based Approaches and Disaster Risk Reduction [DRR]



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# Shirakawa-Go



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# Water Community in Gujo-Hachiman



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# Communities in DRR

- Communities and DRR does not work as per manual [there are plenty of them, though...]
- Understanding nature of community is important
- Analyzing the community dynamics [leader, trust, norm, network] is necessary
- Defining sustainable mechanism



# Shura in Afghanistan



# Mother's Club in Bangladesh



# Ghuti in Nepal



# Muhammadiya in Indonesia

Faith based organization





# *Sangguniang Kabataan (SK, Youth Council)* Philippines



# Farmer Association [Vietnam]



# Jichikai / Jishubo/ Boukomi in Japan

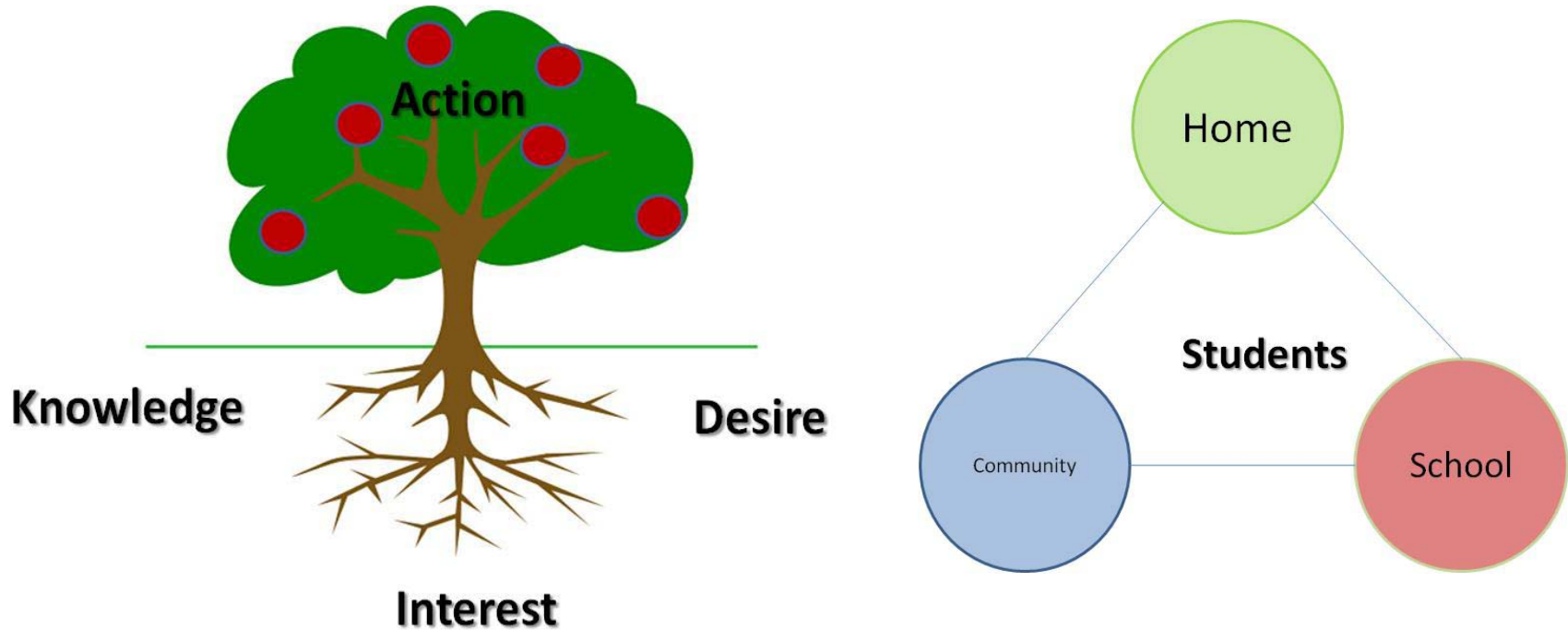


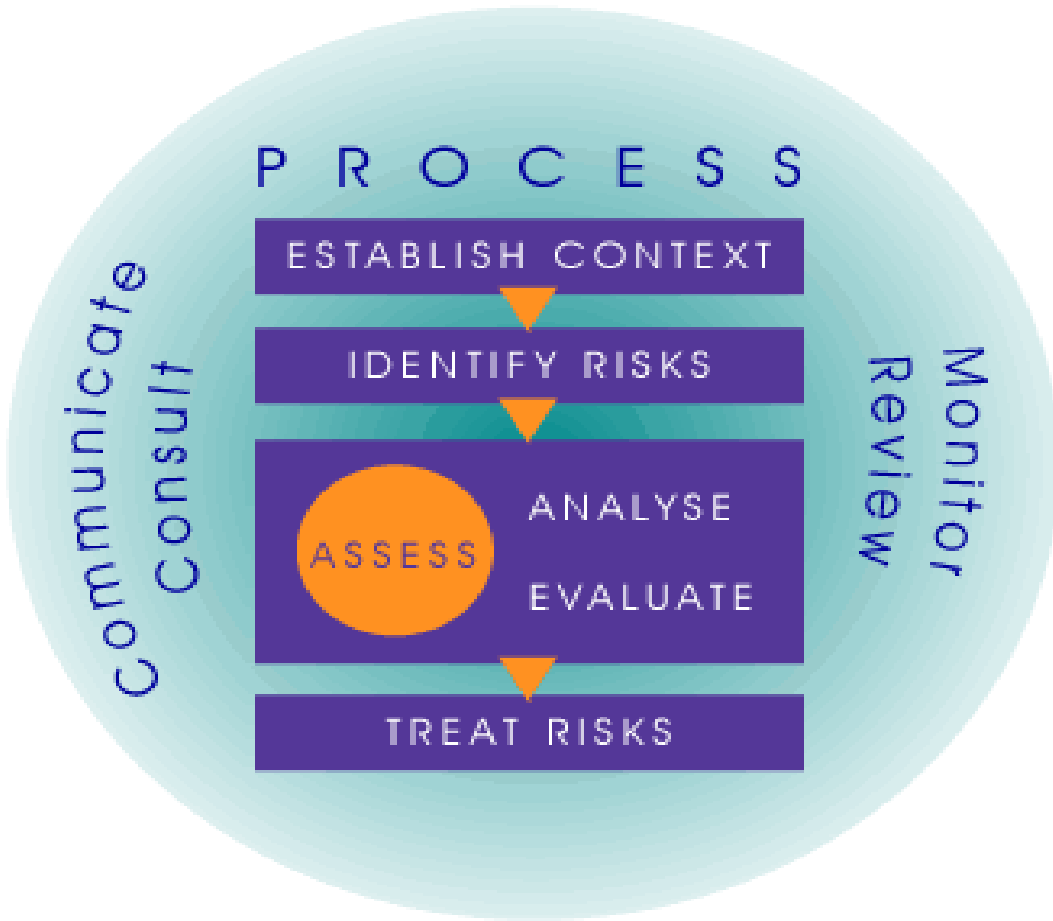
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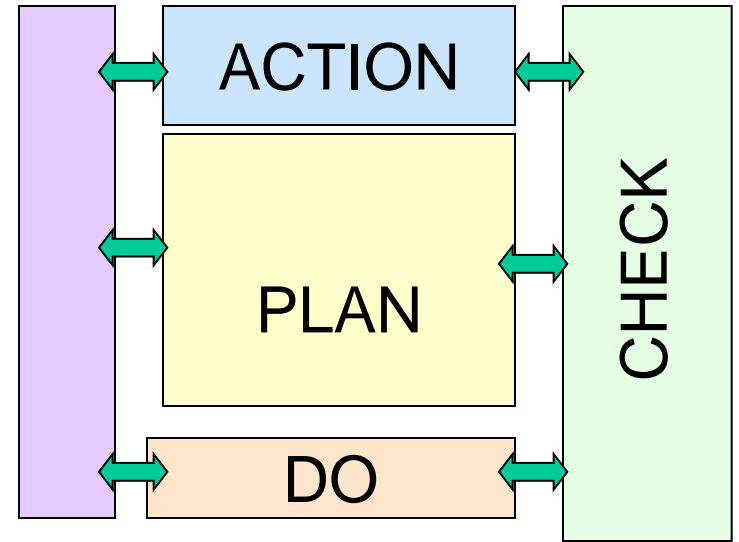


# KIDA Model of Education / Learning





Risk Management Approach



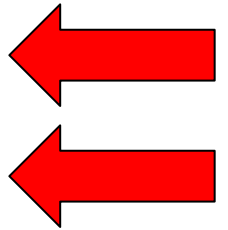
TQM for Disaster Reduction

- Climate and Disaster Resilience Initiative [CDRI] of Cities
- Town Watching as a participatory tool



# Essence of CDRI [Climate and Disaster Resilience Initiative]

- Risk versus Resilience
- Focus on Hydro-meteorological disaster
- Three Step process
  - **Assessment:** Scenario
  - **Planning:** Action plans (prioritizing actions)
  - **Implementation:** Actions



# Five Dimensions Resilience Study

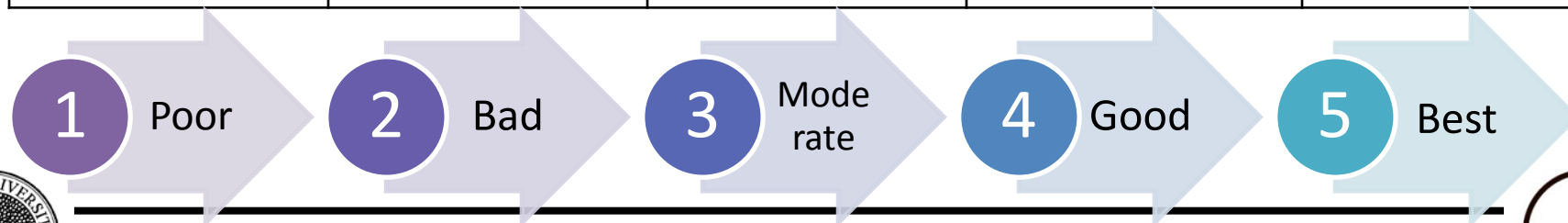
- Five dimensions of resilience:
  - Physical
  - Social
  - Economic
  - Institution
  - Natural





# CDRI 5-5-5 Matrix

Physical	Social	Economic	Institutional	Natural
Electricity	Population	Income	Mainstreaming	Intensity
Water	Health	Employment	Crisis management	Frequency
Sanitation, Solid waste	Education and awareness	Household assets	Institution	Ecosystem
Infrastructure and Roads	Social capital	Finance and savings	Collaboration	Land-use
Housing and land-use	Social cohesion	Budget and subsidy	Good governance	Environmental policies



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2.1.1 Status of interruption

1 (0 hours available)	2 (available max. 8 hours/day)	3 (available 9-16 hours/day)	4 (available 17-20 hours/day)	5 (available 24 hours/day)	Rank
					4

2.1.2 % of city dwellers have legal access to electricity

1 (0%)	2 (1-25%)	3 (26-50%)	4 (51-75%)	5 (76-100%)	Rank
					2

2.1.3 City's electric supply authority capable to produce electricity

1 (Not capable)	2 (1-25% of its demand)	3 (26-50% of its demand)	4 (51-75% of its demand)	5 (76-100% of its demand)	Rank
					1

2.1.4 City's electric supply dependent on external provision (e.g. from other cities/areas) during a regular disaster

1 (Fully dependent)	2 (Heavily dependent)	3 (Not so dependent)	4 (Slightly dependent)	5 (Independent)	Rank
					1

2.1.5 Extent of capacity of alternative emergency electric supply system to keep emergency services functioning (e.g. hospital, evacuation centers, etc.)

1 (No capacity)	2 (1-25% of its demand)	3 (26-50% of its demand)	4 (51-75% of its demand)	5 (76-100% of its demand)	Rank
					5

Weight factor Please rank the variables between 1 and 5

2.1.1	2.1.2	2.1.3	2.1.4	2.1.5
1	4	3	5	5

A

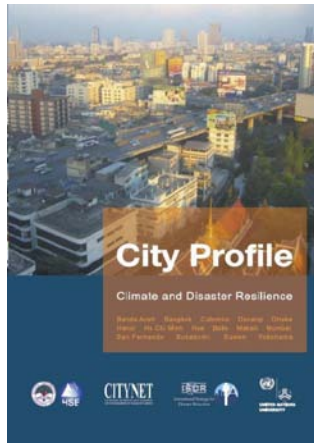
B

- 5 dimensions
- 25 variables
- 125 parameters

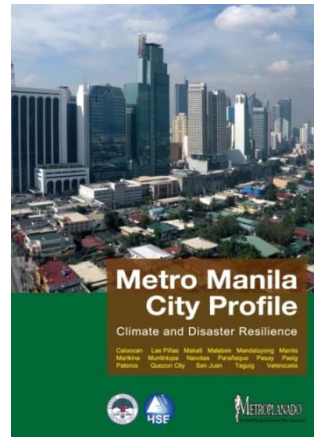


# CDRI Studies

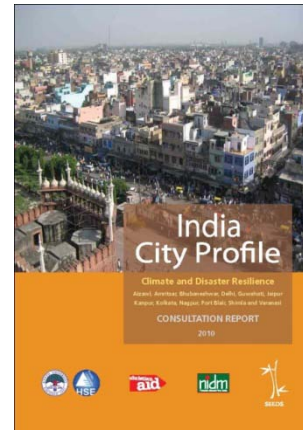
15 cities



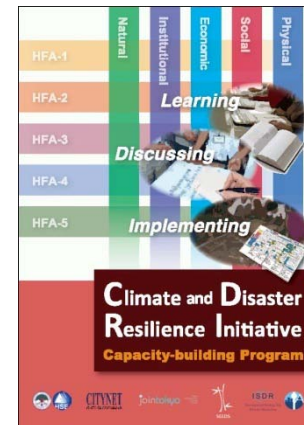
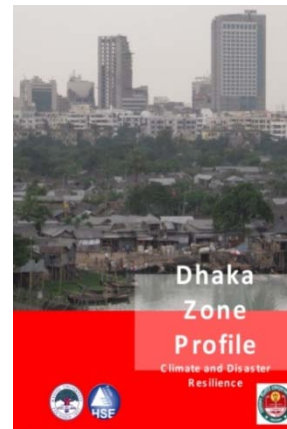
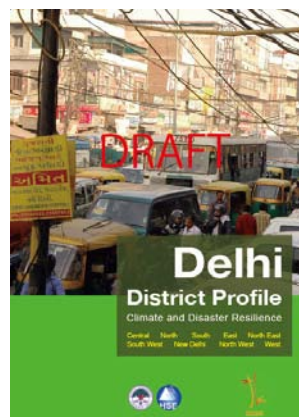
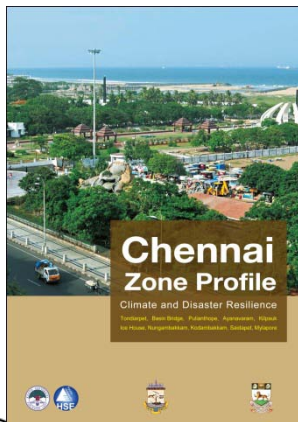
17 cities



12 cities



**FY 2009**



**FY 2010**



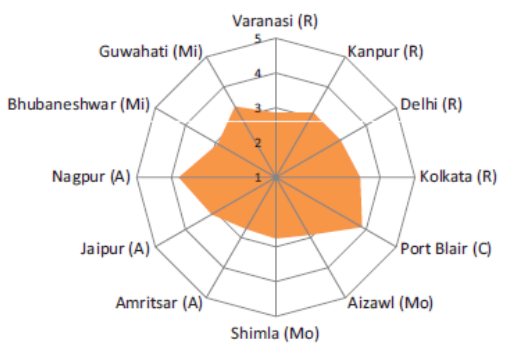
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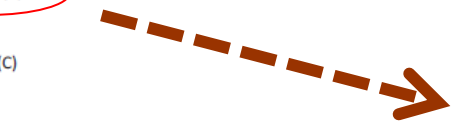
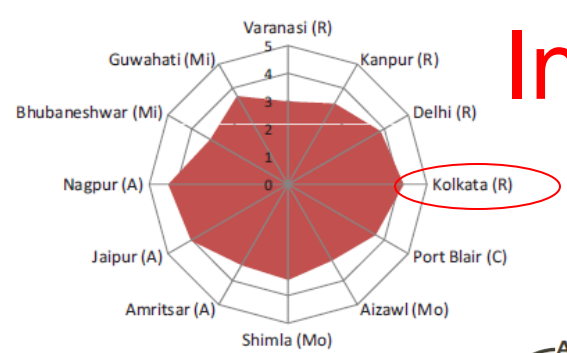


# Indian City Analysis

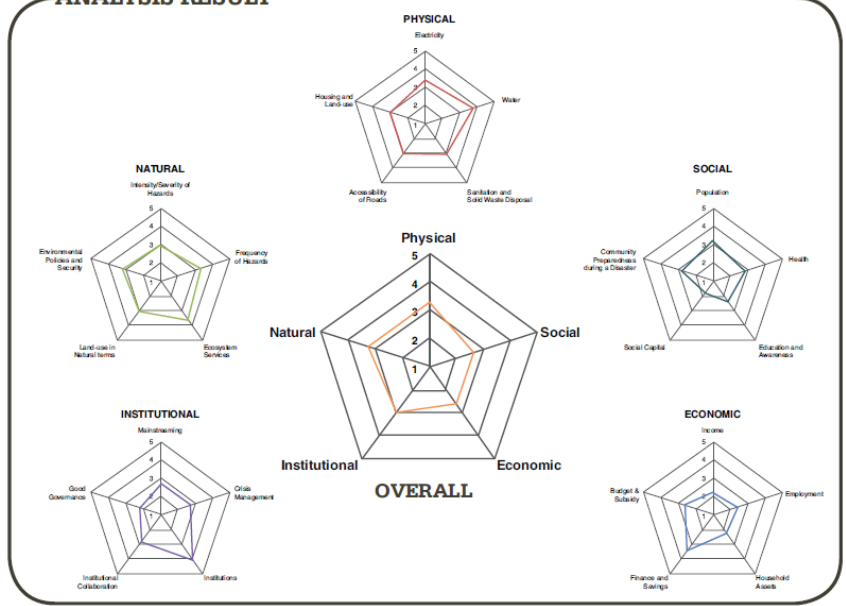
**Climate Disaster Resilience Index**



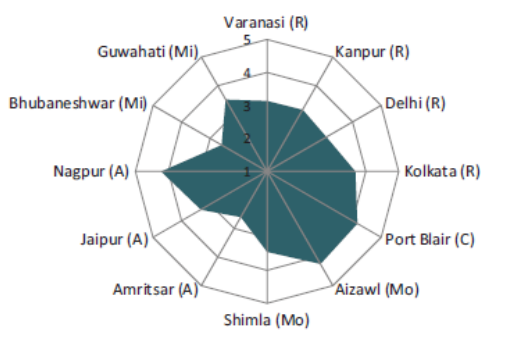
**Physical**



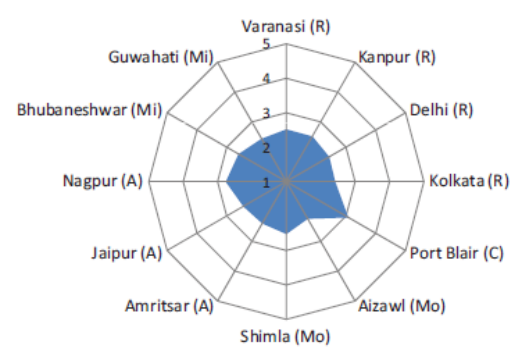
**ANALYSIS RESULT**



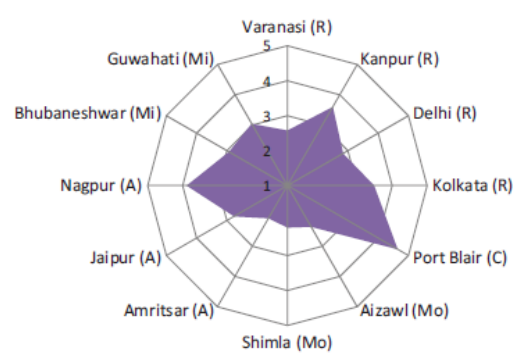
**Social**



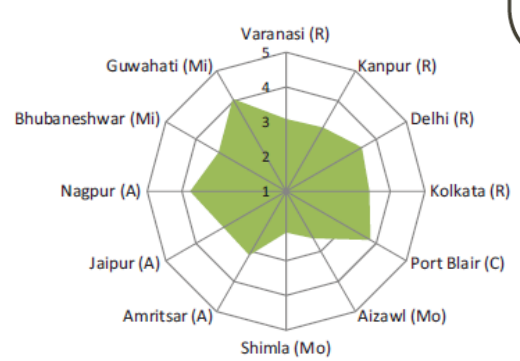
**Economic**



**Institutional**

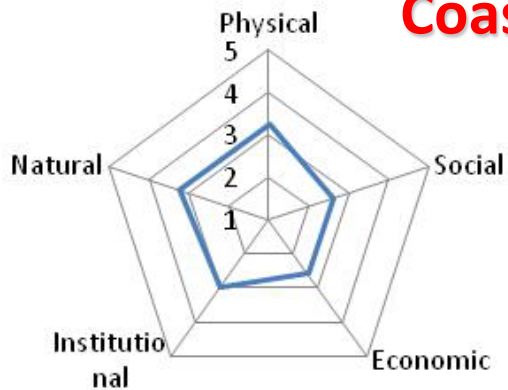


**Natural**



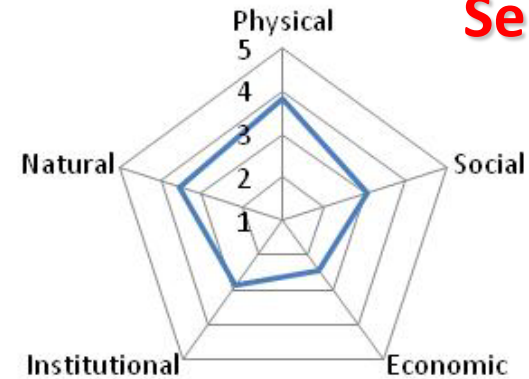
## Bhubaneshwar

**Coastal/ Mixed**



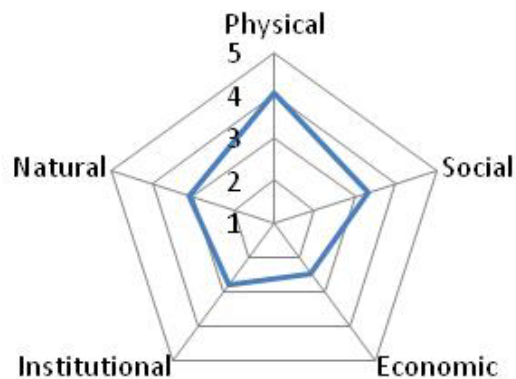
## Delhi

**River/  
Semi-arid**



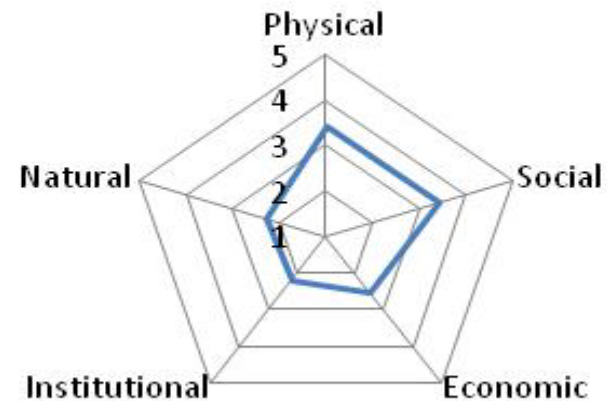
## Jaipur

**Arid**



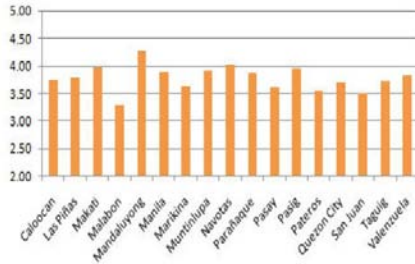
## Shimla

**Mountain**

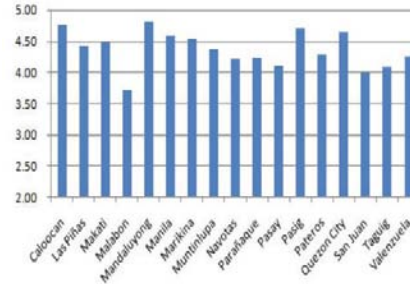


# CDRI: City Cluster Level

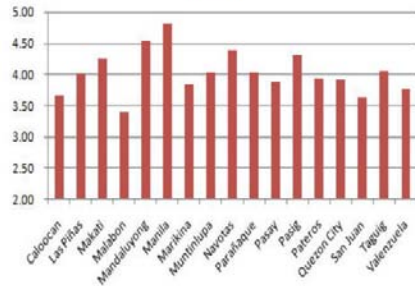
OVERALL



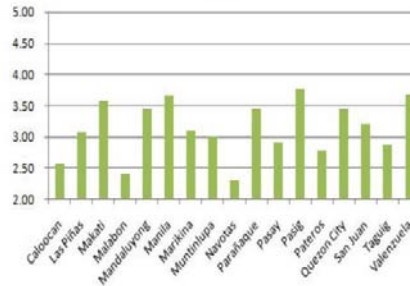
PHYSICAL



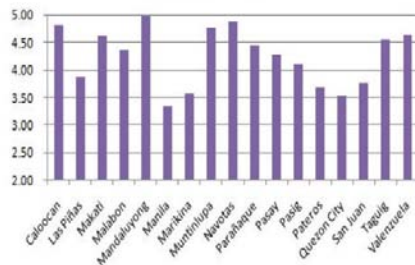
SOCIAL



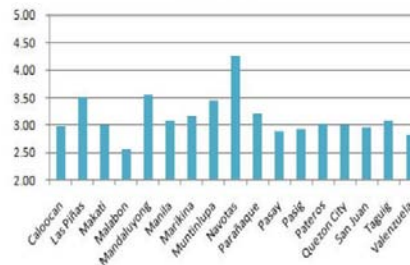
ECONOMIC



INSTITUTIONAL



NATURAL



## Metro Manila City Profile

Climate and Disaster Resilience

Caloocan Las Piñas Makati Malabon Mandaluyong Manila  
Marikina Muntinlupa Navotas Parañaque Pasay Pasig  
Pateros Quezon City San Juan Taguig Valenzuela



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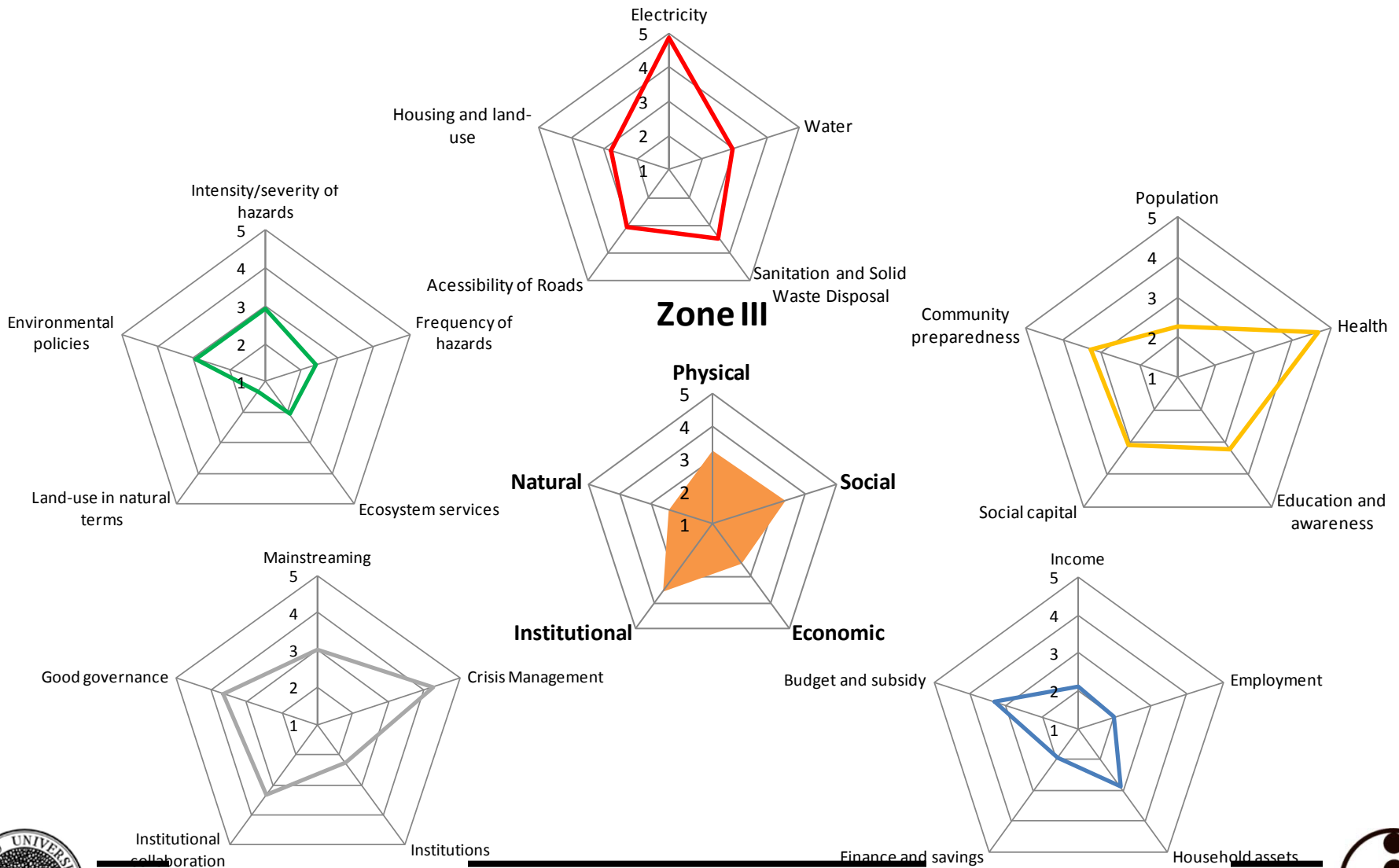


# CDRI: Ward/ district / zone level

- Chennai: 10 districts
  - 180 sq km, 5.5 MI
- Delhi: 9 districts
  - 1500 sq km, 12 MI
- Dhaka: 10 zones
  - 360 sq km, 11 MI



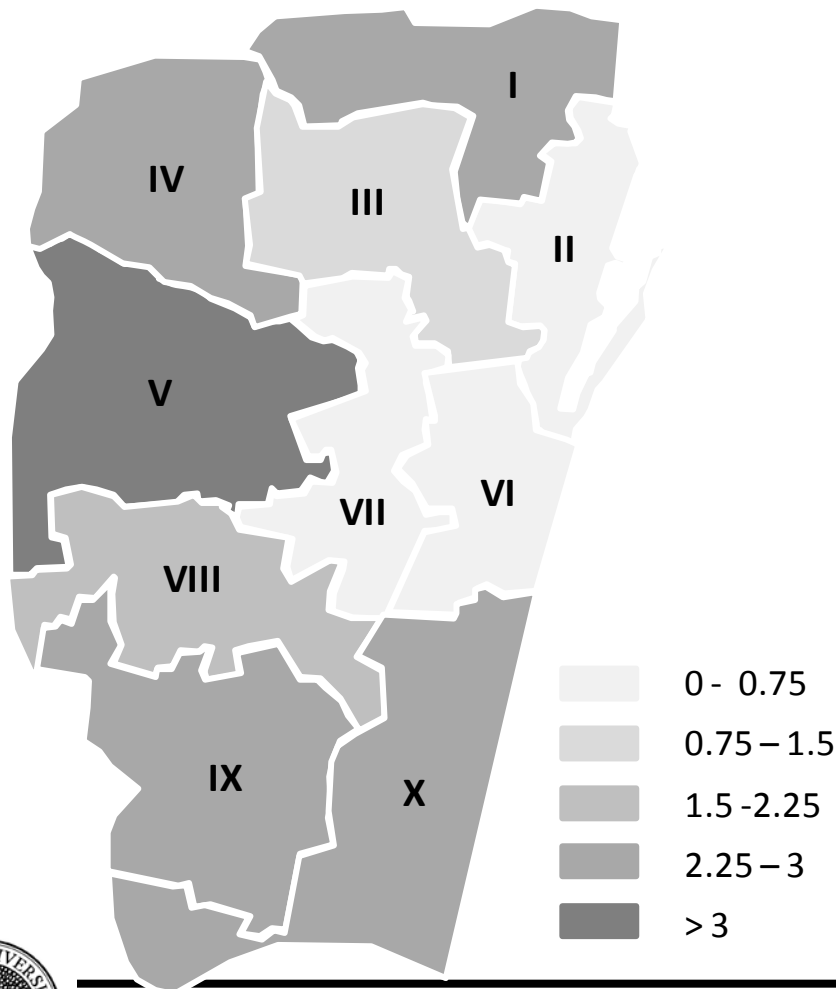
# CDRI at micro-level: Chennai



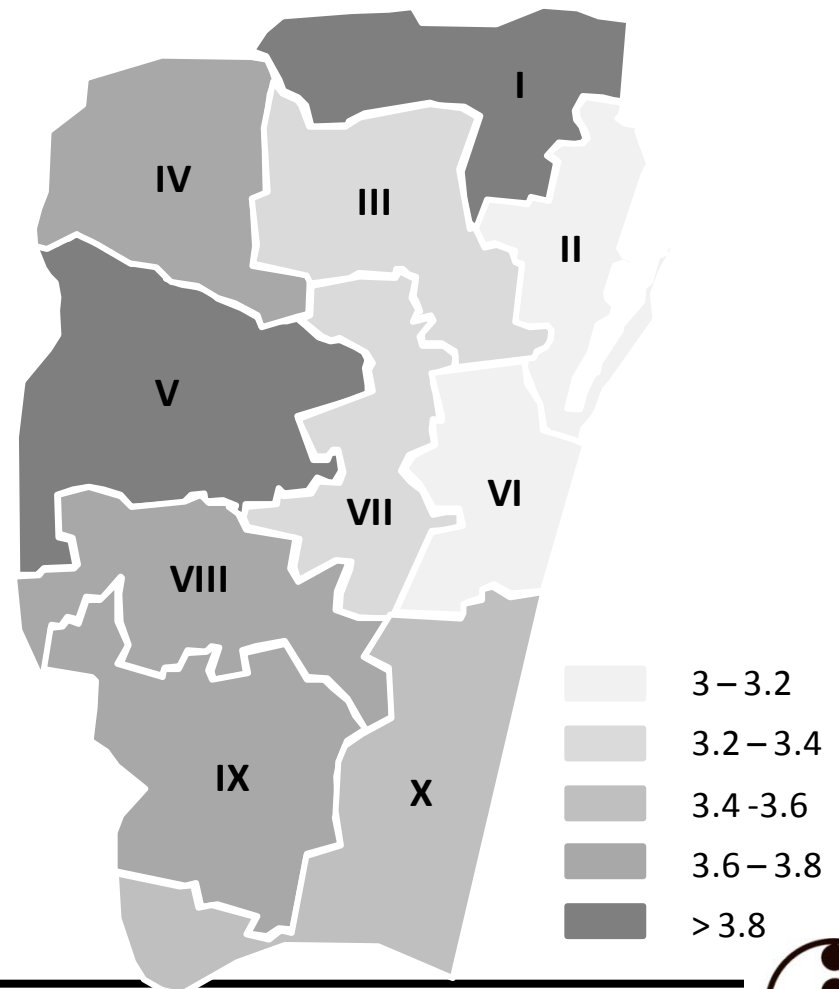


# CDRI at micro-level: Chennai

% Population Growth Per Year, 1971-2001



Physical CDRI



# Six Step Action Planning

- Resilience Mapping (district/ zone level)
  - Chennai, Dhaka and Delhi
- Setting Priorities
- Creating Action Plan
- Implementing Action Plan
- Evaluating Results
- Updating Action Plan

		CDRI Parameters													
		Physical					Social								
		P-1	P-2	P-3	P-4	P-5	S-1	S-2	S-3	S-4	S-5				
HFA Tasks	HFA 1	Task 1													
		Task 2													
		Task 3													
		Task 4													
	HFA 2	Task 5													
		Task 6													
		Task 7													
		Task 8													
	HFA 3	Task 9													
		Task 10													
		Task 11													
		Task 12													
	HFA 4	Task 13													
		Task 14													
		Task 15													
		Task 16													
		Task 17													
		Task 18													
	HFA 5	Task 19													
		Task 20													
※ For HFA tasks, please refer to page 15		P-1 Electricity P-2 Water P-3 Sanitation and solid waste disposal P-4 Accessibility of roads P-5 Housing and land-use					S-1 Population S-2 Health S-3 Education and awareness S-4 Social Capital S-5 Community preparedness								



# Challenges in Methodology

- Subjective judgments, need to be supplemented by data
- Needs proper guidelines for the city managers to fill the questionnaires
- Limited data availability at city level
- Contrast of official and unofficial data
- One data for the whole city/ zone/ district, and therefore needs approximation



# Positive Issues of Methodology

- CDRI is a tool to **initiate** DRR activities and planning
- Can be used for different scales, even for neighborhoods
- Engaging city managers in the process of climate and disaster resilience initiative
- Provide training initiatives
- Prioritization of actions for future initiatives
- Larger and diverse stakeholders



# Framework of Regional Watching



## Mountain Watching

- Understanding about region and environment, land slide and role of forest.
- Build up network in Community



## Town Watching

- Understanding about region and environment, Flood disaster and Earthquake disaster.
- Build up network in Community

## Coastal Watching

- Understanding about region and environment, Tsunami, storm surge and role of forest.
- Build up network in Community



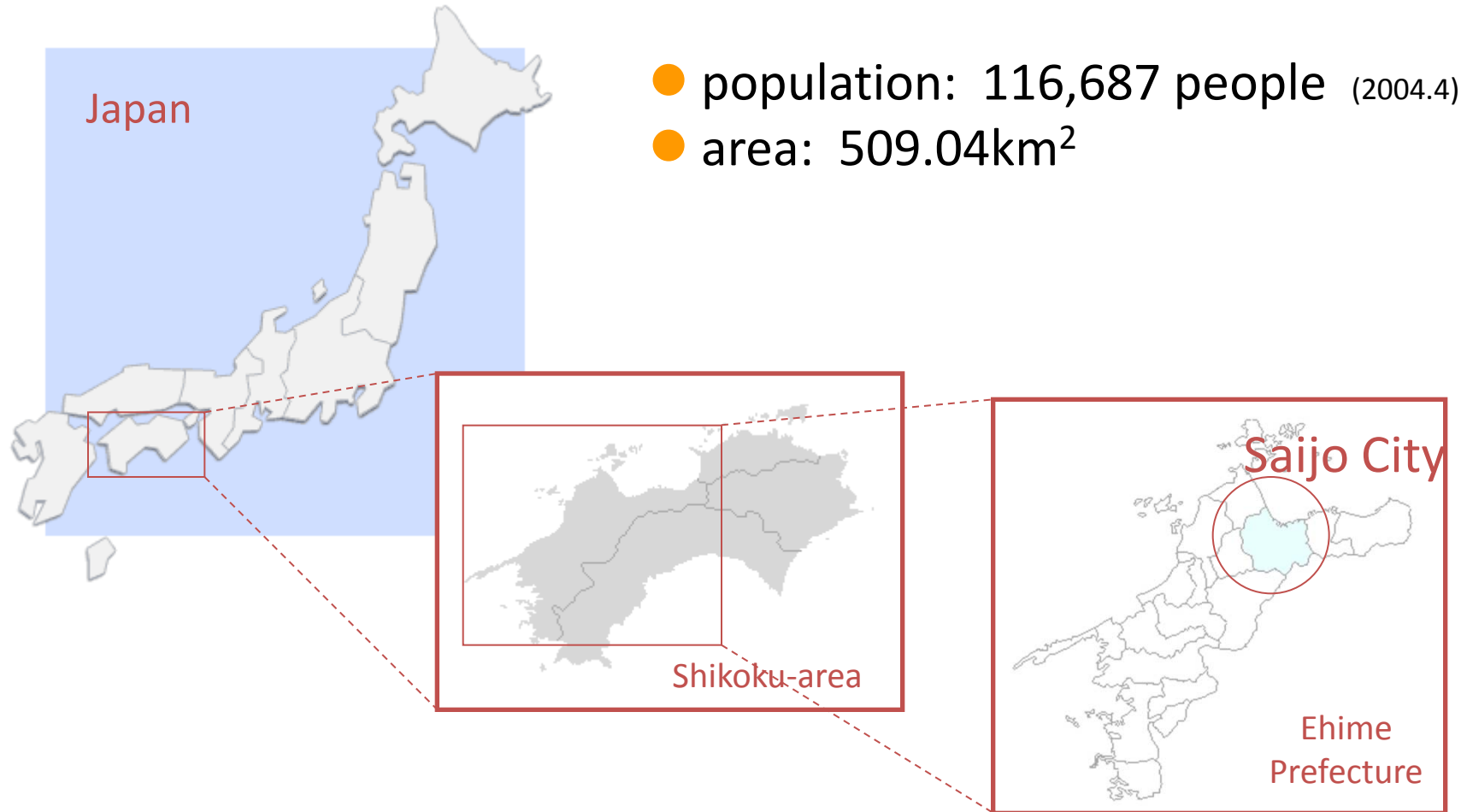
Study through	Study through	Study through
Lecture	Experience	Presentation
<b>Purpose:</b> Understand about general knowledge (Mechanism of disaster, disaster history, past disaster etc.)	<b>Purpose:</b> Understand local issue, history and environment.	<b>Purpose:</b> Understand my issue. Make action plan
<b>Tool:</b> Text book, Video, some document.	<b>Tool:</b> Town Watching Interview Visit to Museum Disaster drill	<b>Tool:</b> Some WS tool
<b>Implementer:</b> School teacher Instructor etc...	<b>Implementer:</b> Specialist Have experience person	<b>Implementer:</b> Student individual

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# Town Watching in Saijo City



# Physical situation of Saijo City



Sea

Plain

Mountain

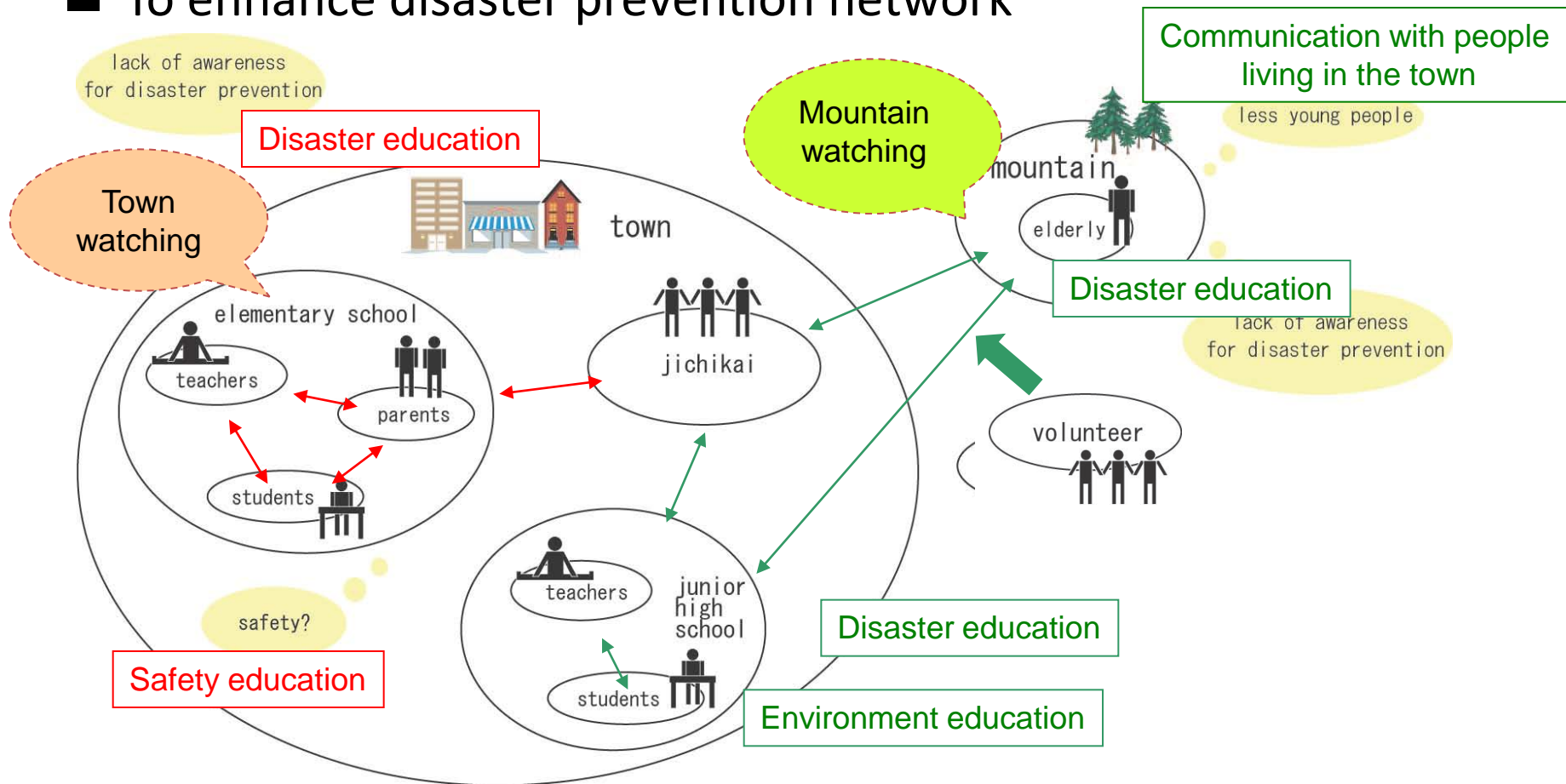
# Typhoon Disaster in 2004





# Disaster education program: Saijo

## ■ To enhance disaster prevention network



# Flow of Town Watching

## ① Explanation



## ② Field Work



## ③ Making a Map



## ④ Presentation

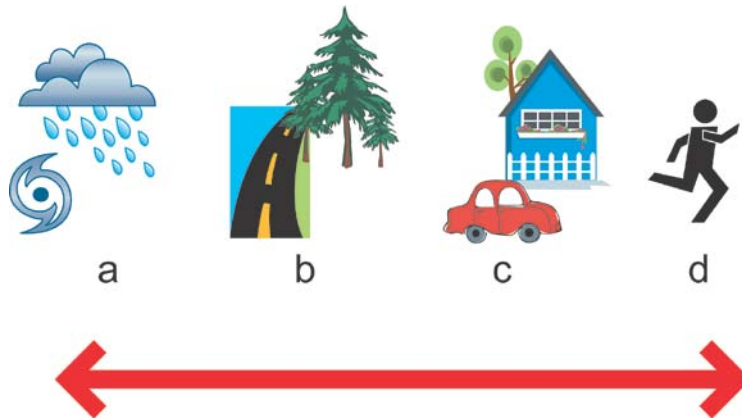


# Effect of Regional Watching

## Knowledge about the typhoon in 2004

- What do you know about the typhoon in 2004?

The answers are categorized to 4 groups.

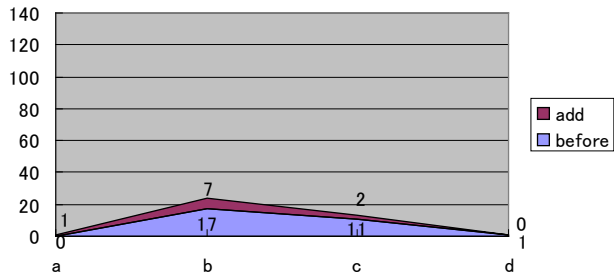


- a) impact on typhoon itself
- b) impact on land and infrastructure
- c) impact on houses and properties
- d) impact on human

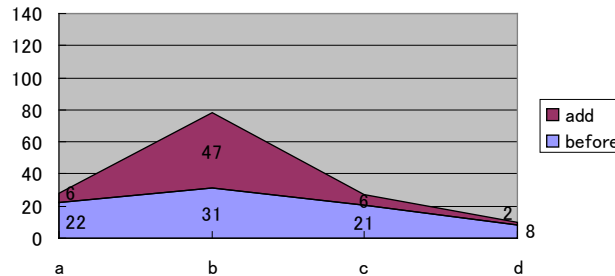
### Examples

- a) It rained heavily. / It caused great damage, etc.
- b) The river was overflowed. / There were lots of mudslide in mountains, etc.
- c) The houses were flooded over the floor level. / Rice fields were flooded, etc.
- d) People evacuated to the school gym. / There were a few dead, etc.

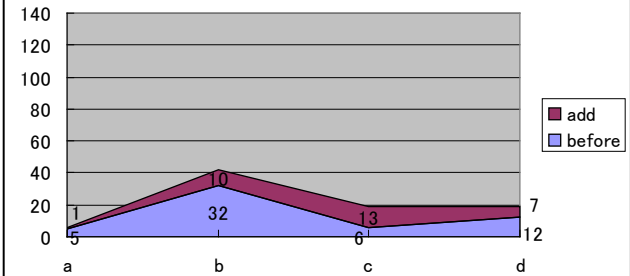
Miyoshi Elementary School (N=22)



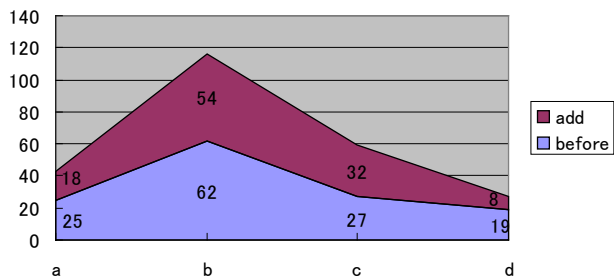
Tanbara Elementary School (N=67)



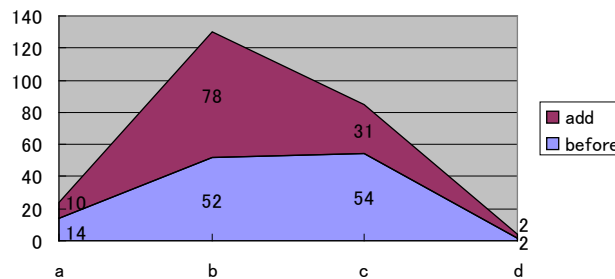
Iwane Elementary School (N=20)



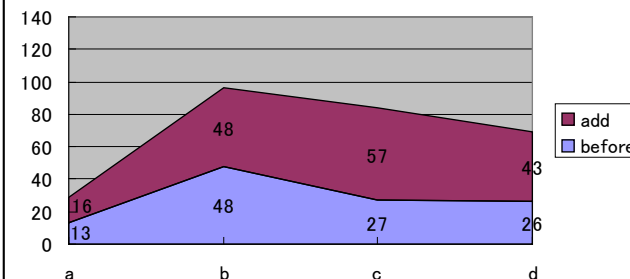
Iioka Elementary School (N=67)



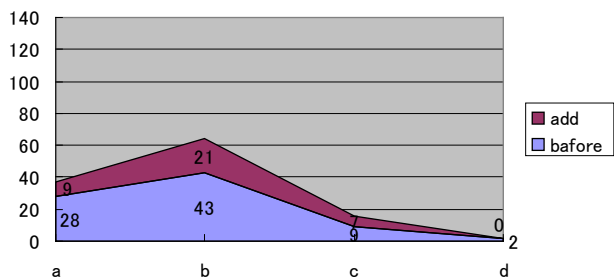
Ohmachi Elementary School (N=100)



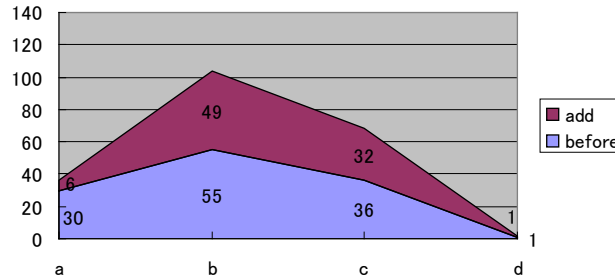
East Junior High School (N=60)



South Junior High School (N=32)



West Junior High School (N=68)



# Developing the Manual of Town Watching for Teacher



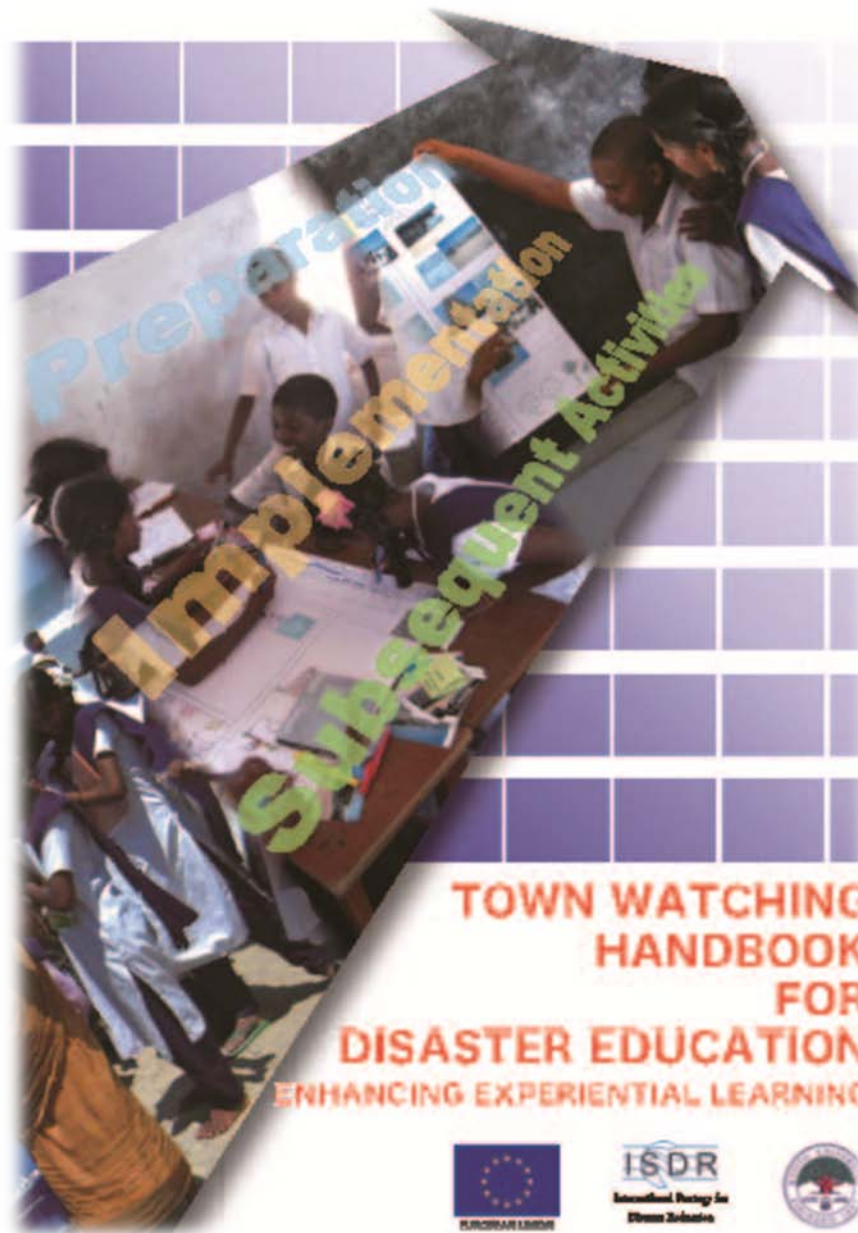
防災タウンウォッチング実施手引き



西条市  
西条市教育委員会  
タウンウォッチング実施手引き作成委員会  
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# References

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  - **Urban Risk Reduction:** Rajib Shaw, Hari Srinivas, Anshu Sharma
  - **Water Communities:** Rajib Shaw and Danai Thaitakoo
  - **Climate and Disaster Resilience of Cities:** Rajib Shaw, Anshu Sharma
- Report [Available from [www.iedm.kyoto-u.ac.jp](http://www.iedm.kyoto-u.ac.jp)]
  - 1-2-3 of Disaster Education
  - Town Watching Manual
  - Chennai City Profile

