Evidence based target setting for disaster risk reduction in urban areas

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This write-up introduces a tool called "Climate and Disaster Resilience Index [CDRI]," which is a participatory, decision making tool for urban managers to: 1) take decisive actions, 2) prioritze emphasis area of risk reduciton, and 3) measure the impacts of risk reduction approaches. The tool was developed, tested and used in 36 cities in Asia Pacific region. The tool has five dimensions: physical, social, economic, institutional and natural, which are again divided into five parameters each [like: Physical: electircity, water, sanitation, road and land use]. Each of these parameters has five variables, counting to 125 variables for a city. Using an average weighted mean of the variables and parameters, the CDRI value is claculated with a minimum of 1 and maximum of 5. The same method can be used in the sub-city level to understand the variaiton in different district or zone or ward within a city, and thereby prirotize the actions. Following are some of the examples of the results.

Figure 1 shows the variaiton of CDRI value and its components across the 17 cities and municiaplities in Metro Manila in the Philippines. The analysis results show that a city with higher physical resilince does not matches with the higher resilience in social or economic dimensions. Therefore, differential aprpaoches will be required for risk reduciton and enhancing resielience based on the nature of the resilience.

The data can also be presented in terms of spatial variation [Figure 2], which shows differntial resilince in different parts of city of Bandung in Indonesia. The darker color means higher resilience. This also shows differential appraoches required for different parts of the city, based on its characteristics [whether it is an old part of the city or a new development area or a comemrical zone or residential areas and so on].

This method can be used on periodic basis to show the progress in resilience actions. The same analysis of eight cities in 2010 and 2013 [Table 1] shows that Hue in central Vietnam has new emerging risk due to lower natural resilience [which is a result of higher frequency, higher severity of hazards and change in naural land use pattern]. Therefore, this method can be used as a yardstick to measure the progress of resilience actions.

These analyses were made in close cooepraiton with the city officials. Based on the nautre of resilience, the city governemnts can decide and prioritze specific actions on short, medium and long term activities, and can measure the progress under a certain period of time. An analysis was also made to understand the relationship of CDRI and HFA [Hyofo Framework for Actions], which also helped the local givernments to prioritze the risk reduction actions. The city can make specific target based on this analysis and can gather resoruces to meet those targets in a scientific way.

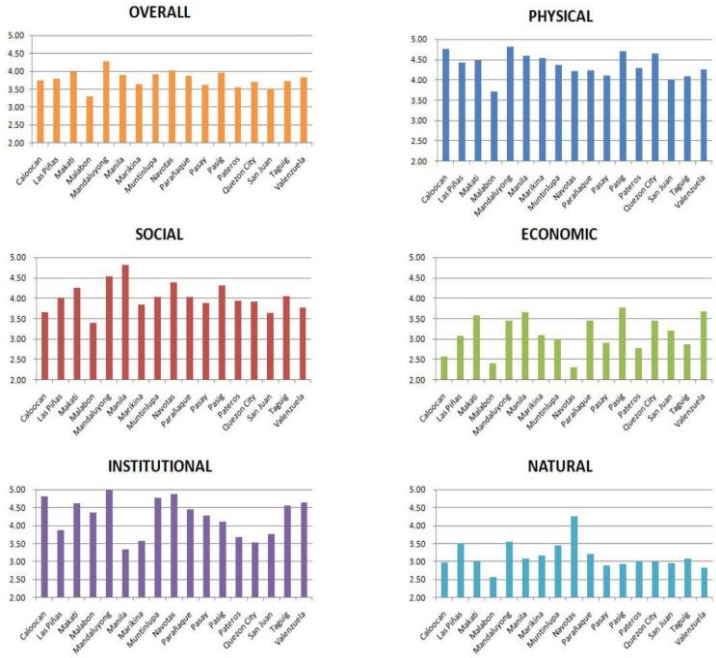

Figure 1. CDRI analysis of 17 cities and municiaplities in Metro Manila, Philippines

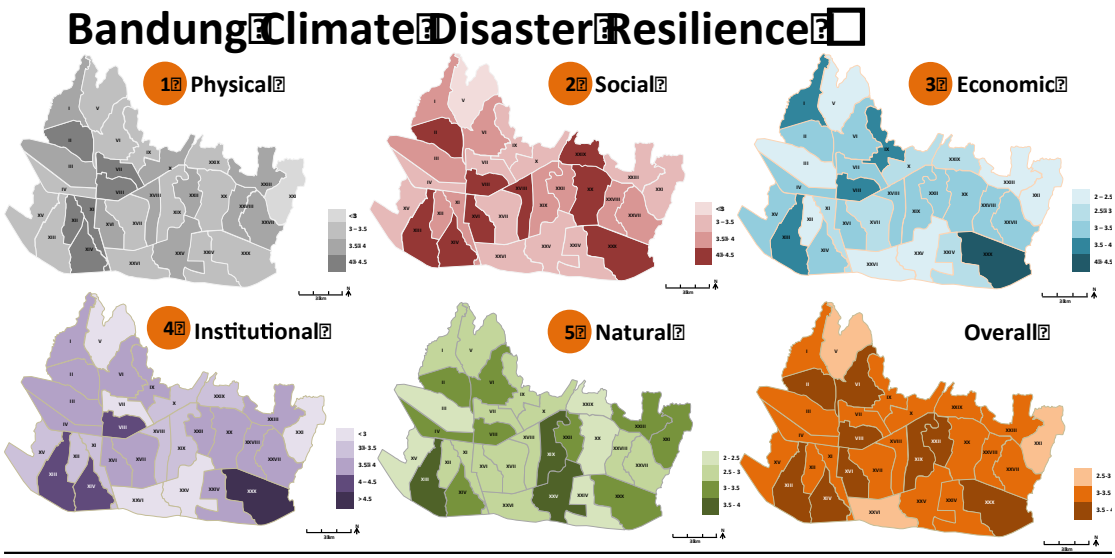

Figure 2. CDRI analysis of 30 sub-district of Bandung, Indonesia

City name	Overall		Physical		Social		Economic		Institutional		Natural	
	2010	2013	2010	2013	2010	2013	2010	2013	2010	2013	2010	2013
Chennai	3.29	3.44	2.92	2.74	4.08	3.11	3.06	3.52	3.56	3.70	2.83	4.15
Colombo	3.14	3.37	3.91	4.02	3.23	3.58	2.77	2.48	2.57	3.29	3.20	3.47
Dhaka	2.35	2.61	2.90	3.53	2.56	2.14	1.64	2.58	2.15	2.65	2.51	2.16
Hue	3.87	3.75	4.35	4.44	4.18	4.01	3.04	3.60	4.31	3.90	3.45	2.81
Kuala Lumpur	3.57	3.81	4.38	4.30	3.60	3.98	3.16	3.65	3.26	3.46	3.44	3.64
Makati	3.98	4.33	4.58	4.84	4.25	4.55	3.38	4.02	4.36	4.71	3.33	3.54
Sukabumi	2.79	3.07	2.51	3.25	2.96	3.11	2.05	2.35	3.46	3.38	2.96	3.26
Suwon	4.01	4.04	4.88	4.88	3.87	4.10	3.50	3.44	4.06	4.04	3.75	3.75

Table 1. CDRI time series analysis of eight cities in Asia Pacific region