Building Urban Climate Change Resilience

An Overview of the ACCCRN Process

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Outline of Presentation

- What is ICLEI?
- ICLEI ACCCRN Process
- Climate Risk and Vulnerability Assessment in the ACCCRN Process (Phases 2 & 3)
- Key points from the Philippine experience

What is ICLEI?

- Was founded in 1990 as the **"International Council for Local Environmental Initiatives."**
- In 2003, the organization became **"ICLEI - Local Governments for Sustainability"**
- An international **association** of local governments and national and regional local government organizations that have made a **commitment to sustainable development**
- The world's leading network of over 1,000 cities, towns and metropolises

What is ICLEI?

ICLEI Local Governments for Sustainability

Connecting leaders

Accelerating action

Gateway to solutions

ICLEI's Agendas

Sustainable City

Resilient City

Biodiverse City

Low-carbon City

Resource-efficient City

Smart Urban Infrastructure

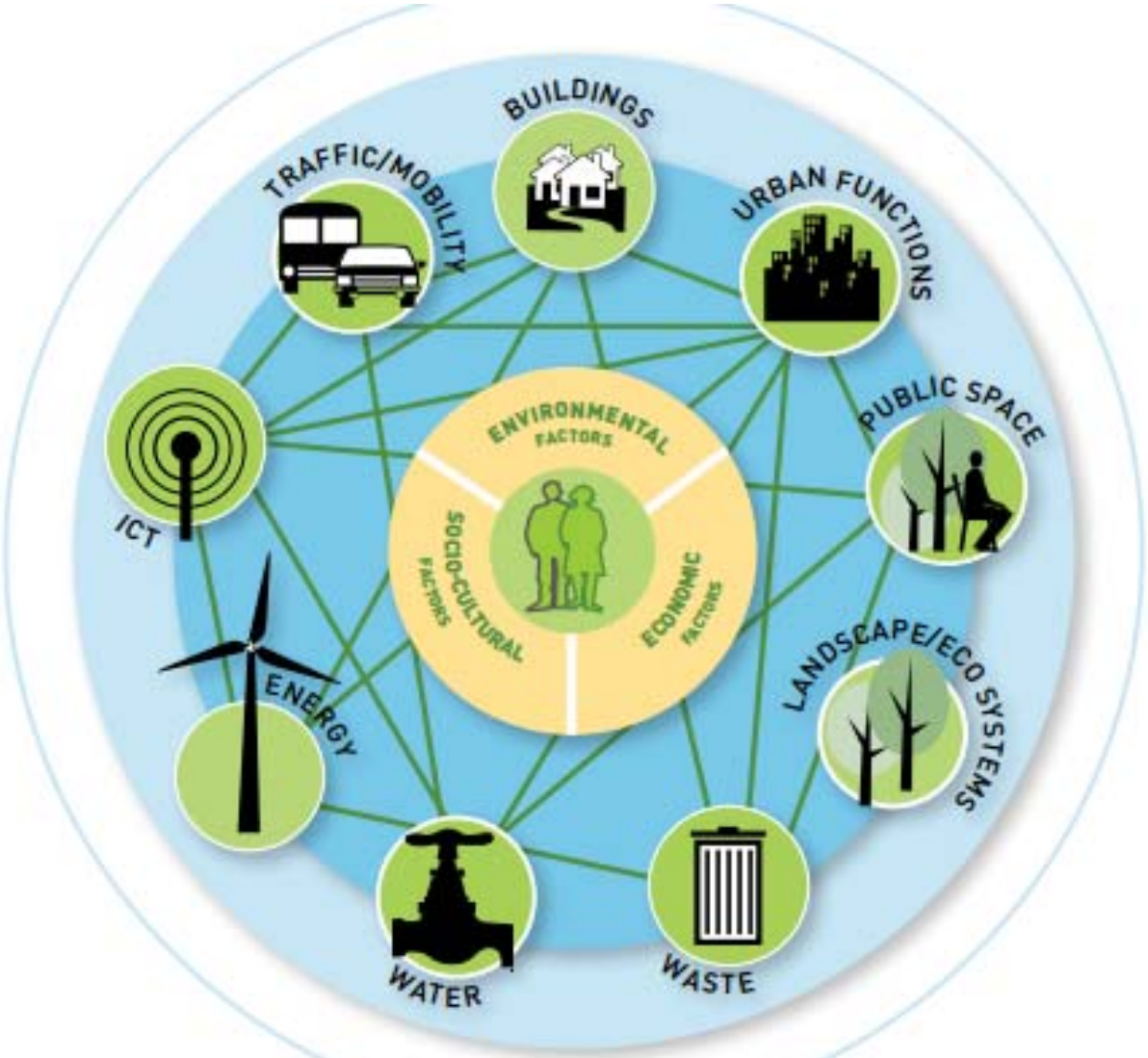
Green Urban Economy

Healthy and Happy Community

ICLEI Offices

ICLEI Local Governments for Sustainability

LGs as a complex system of systems



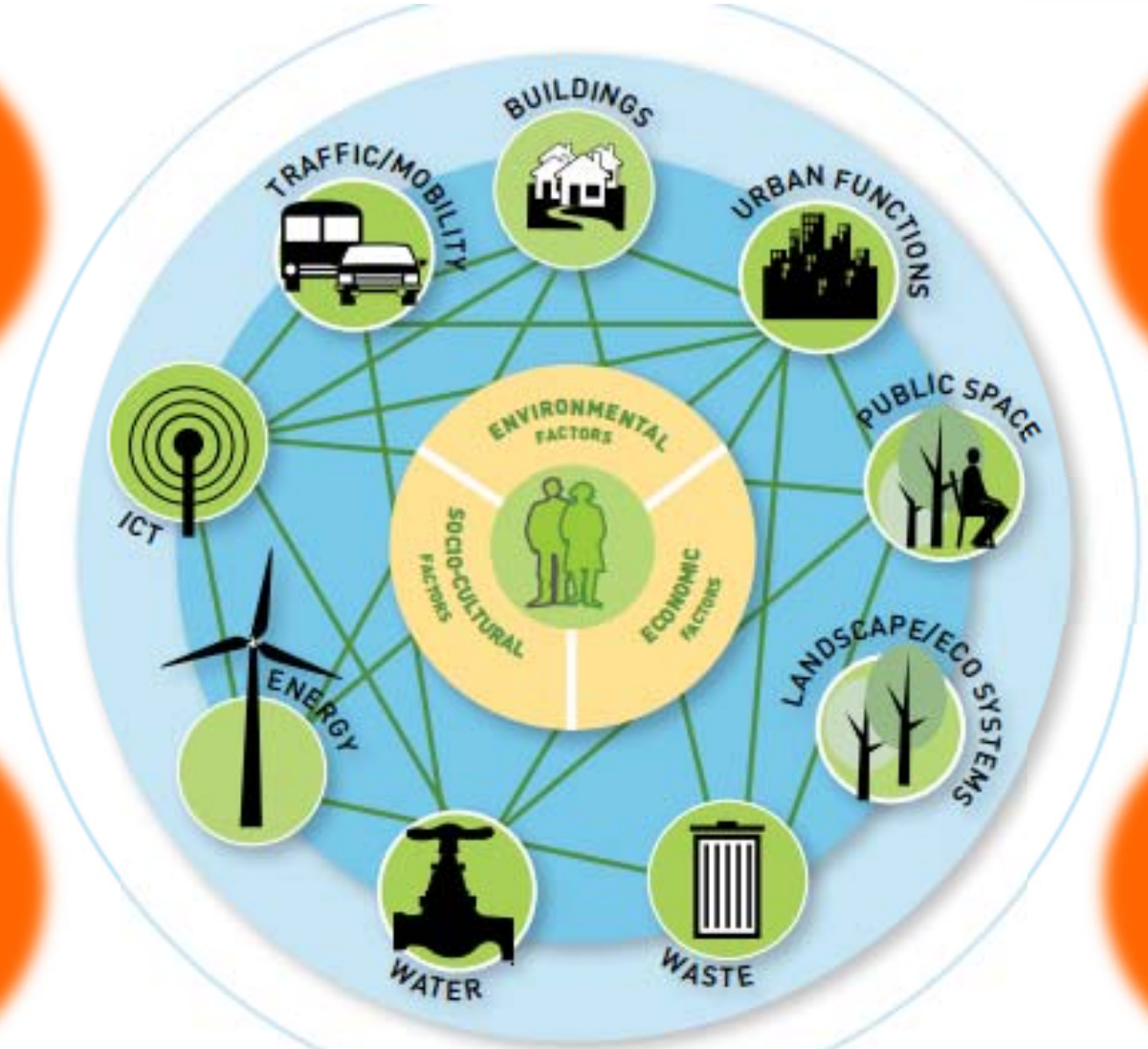
Source: SymbioCity Approach

Moving in a changing environment

ICLEI Local Governments for Sustainability

Population Growth

Changing Global Environ-ment



Rapid Urbaniza-tion

Unsustaina ble use of resources

Source: SymbioCity Approach

Why Cities & CCA?

- Urbanization contributing to drivers of climate change –
  - land use change
  - demand for energy
  - demand for resources
- Opportunity for awareness generation and action on CCA
  - most people
  - most power
  - significant climate risks

ICLEI ACCCRN Process

- ICLEI ACCCRN Process was developed by ICLEI's South Asia and Oceania offices with support from the Rockefeller Foundation under their Asian Cities Climate Change Resilience Network programme (see: www.acccrn.org)

- Consists of a tested Guide and Toolkit to help cities develop local climate change resilience strategies

- Draws on past ACCCRN experience

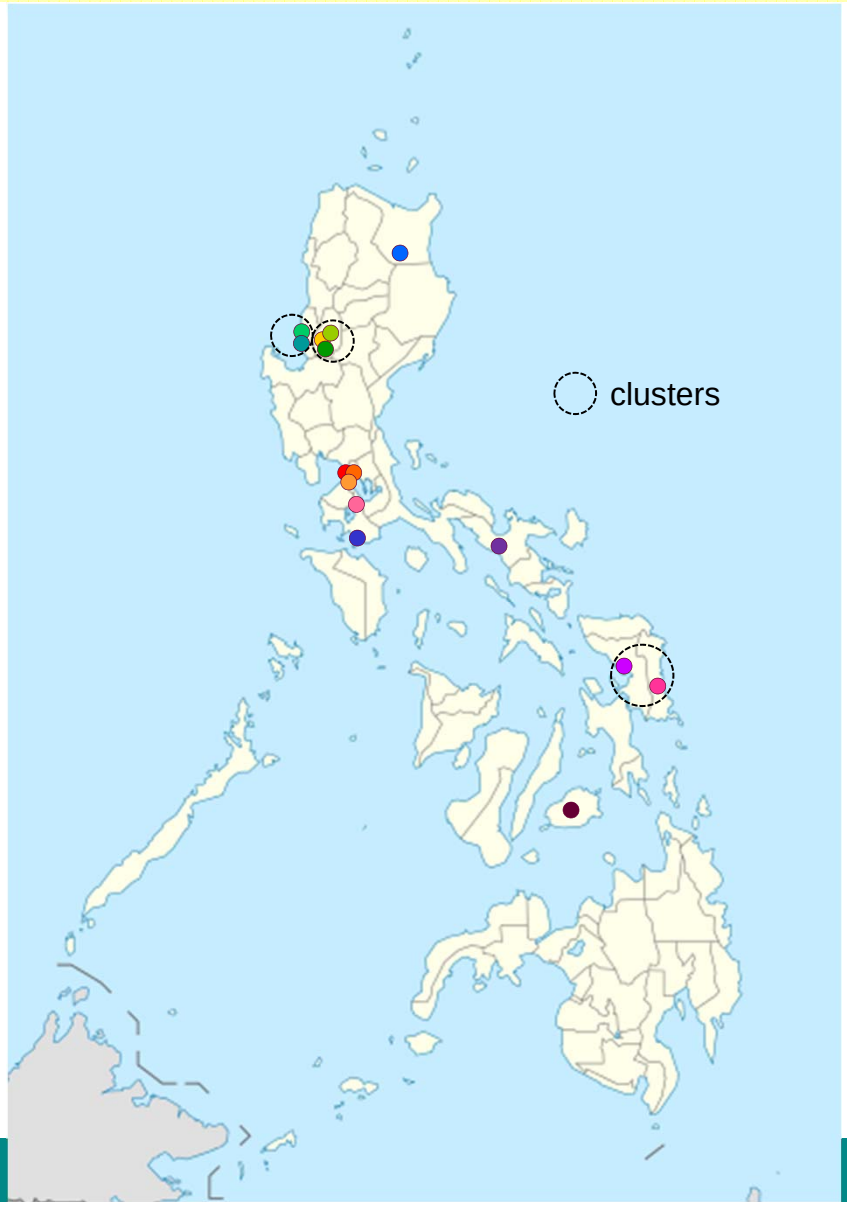
- Targeted at city governments and their role in catalyzing community building

A streamlined and replicable process that cities can implement without the need for much external support

Implementing the UCCR Process in PH

- **Clustering approach** – invite adjacent local governments (LGs) to participate in workshops as observers of the ACCCRN process
- **Coordination with other entities working on resilience** – may include national government agencies, academe, NGOs
  - Assistance from the *Local Government Academy (LGA)* in identification of Philippine ACCCRN cities
  - Partnership with *University of the Philippines – Los Baños* in the conduct of GIS training for ACCCRN cities
- **Integrating existing initiatives and tools in the UCCR**
  - **Climate Budget Tagging** of the CCC, DILG, and DBM, with support from World Bank
  - **Asset management** of TSJ Consulting and
  - **CDIA Prioritization Toolkit**

Participating Local Government Units (LGUs)



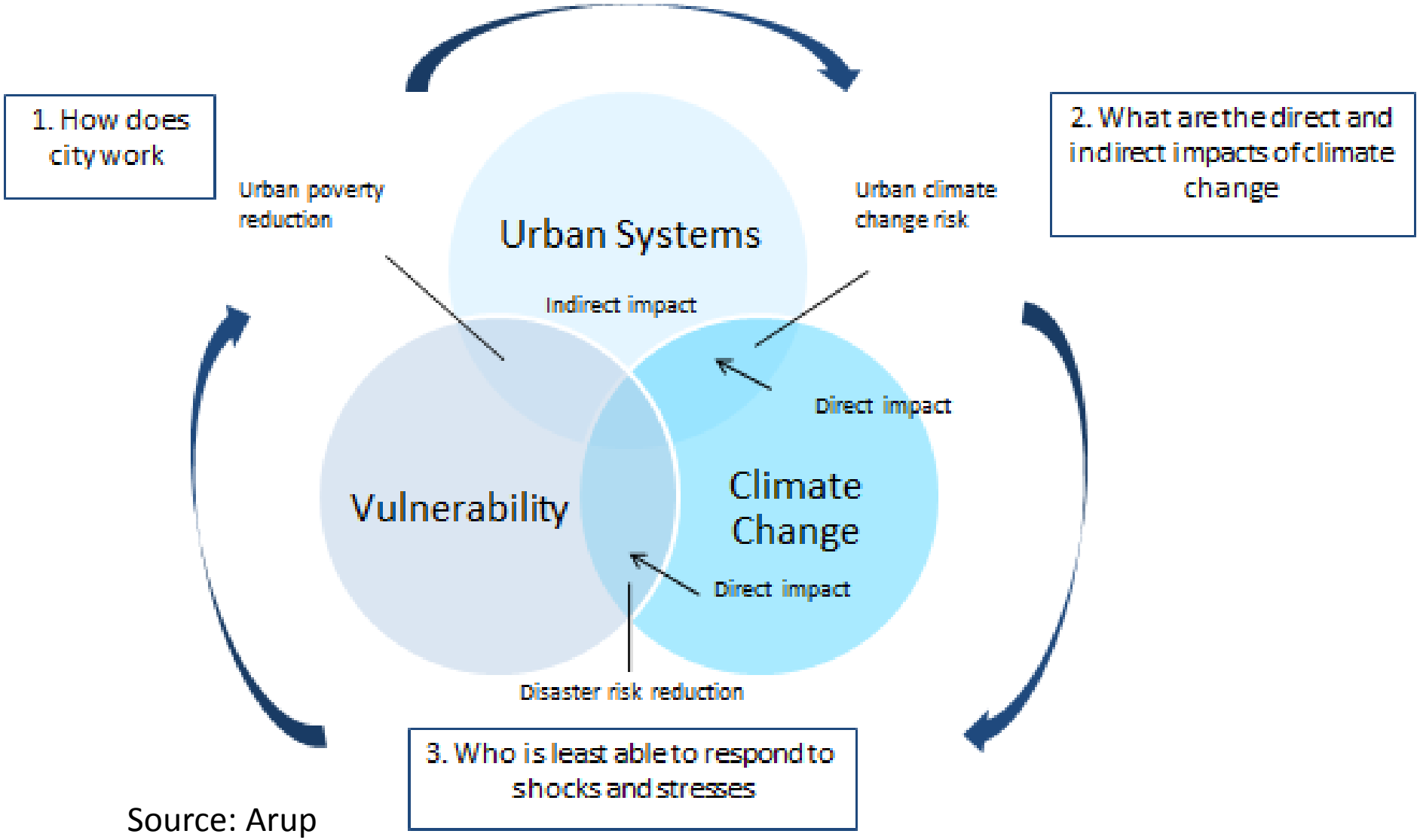
1. Quezon City
2. Marikina City
3. Makati City
4. Baguio City
5. Tublay
6. La Trinidad
7. San Fernando, La Union
8. Bacnotan
9. Tuguegarao City
10. Batangas City
11. Naga City
12. Catbalogan City
13. Borongan City
14. Sta. Rosa City
15. Bohol Province

ICLEI ACCCRN Process: Benefits to Cities

ICLEI Local Governments for Sustainability

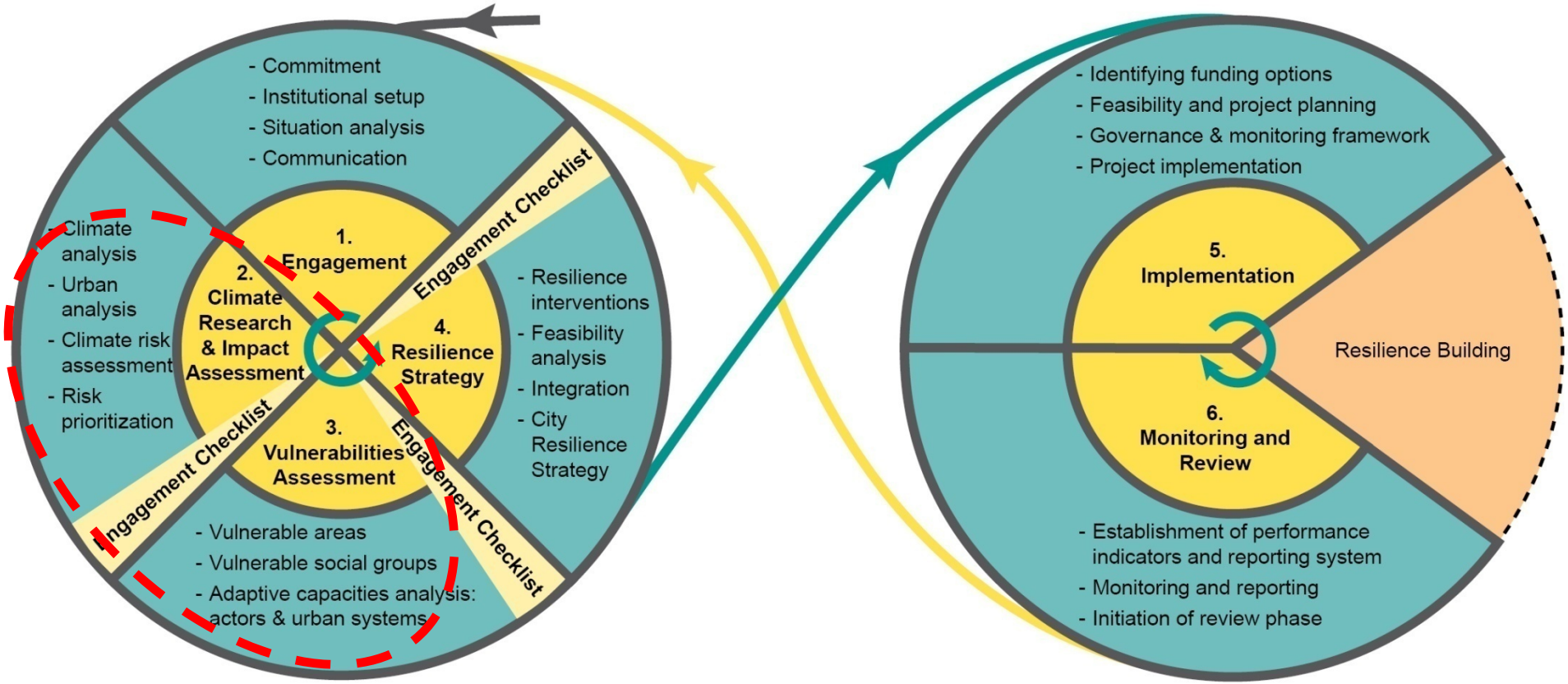
- Know potential risks and city's vulnerabili-ties
- Better manage climate change impacts
- Knowledge exchange with other cities and technical partners
- Develop Climate Resilience Strategy
- Integrate CRS into urban planning & implemen-tation processes

Urban Systems & Climate Change



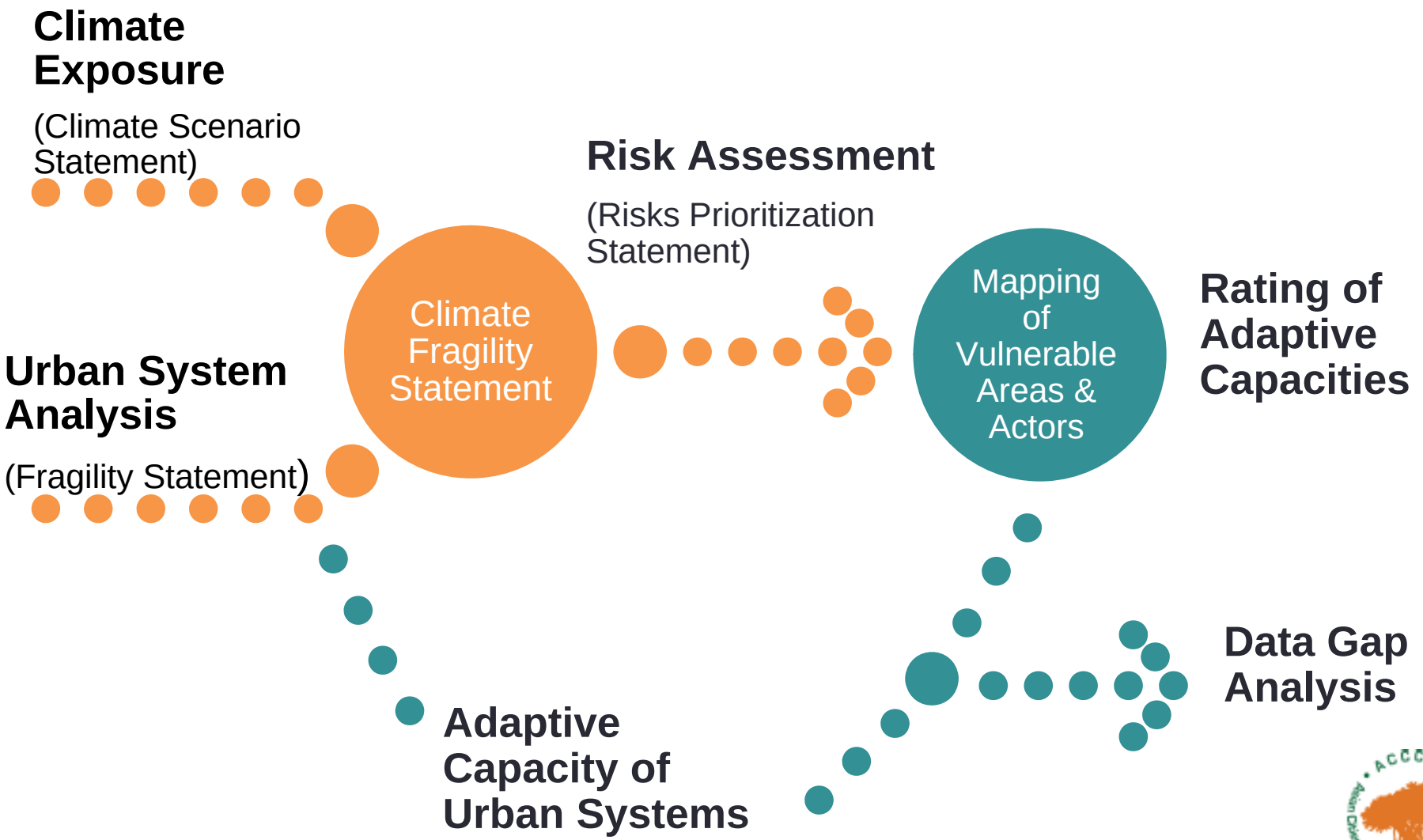
Source: Arup

ICLEI ACCCRN Process: New Avatar

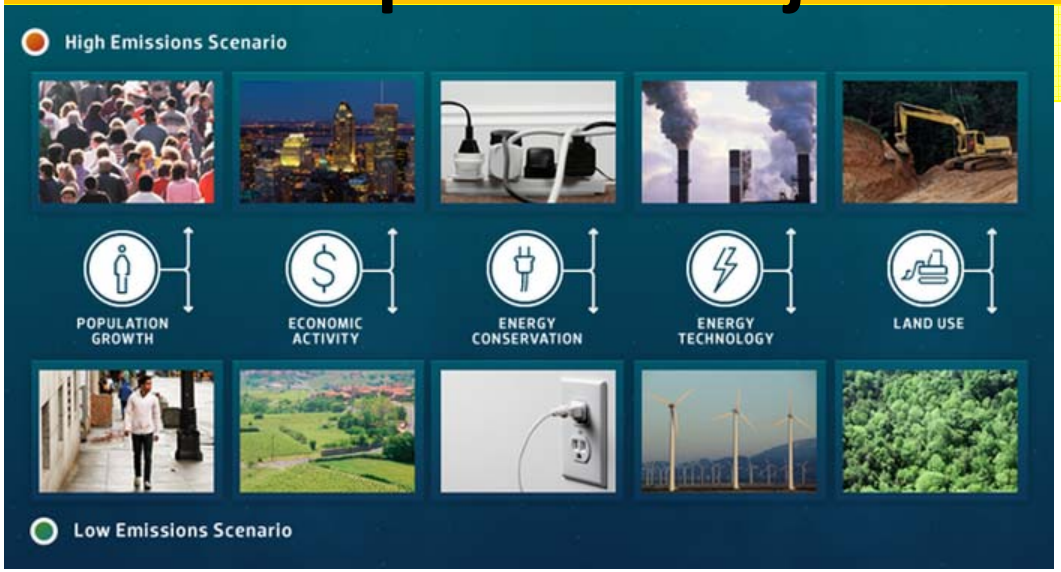


Set of 16 tools, refined through trial as well as internal and external review

ACCCRN's Climate Risk & Vulnerability Assessment



Climate Exposure: Projections and Scenarios



ICLEI Local Governments for Sustainability

Human choices can affect the climate.

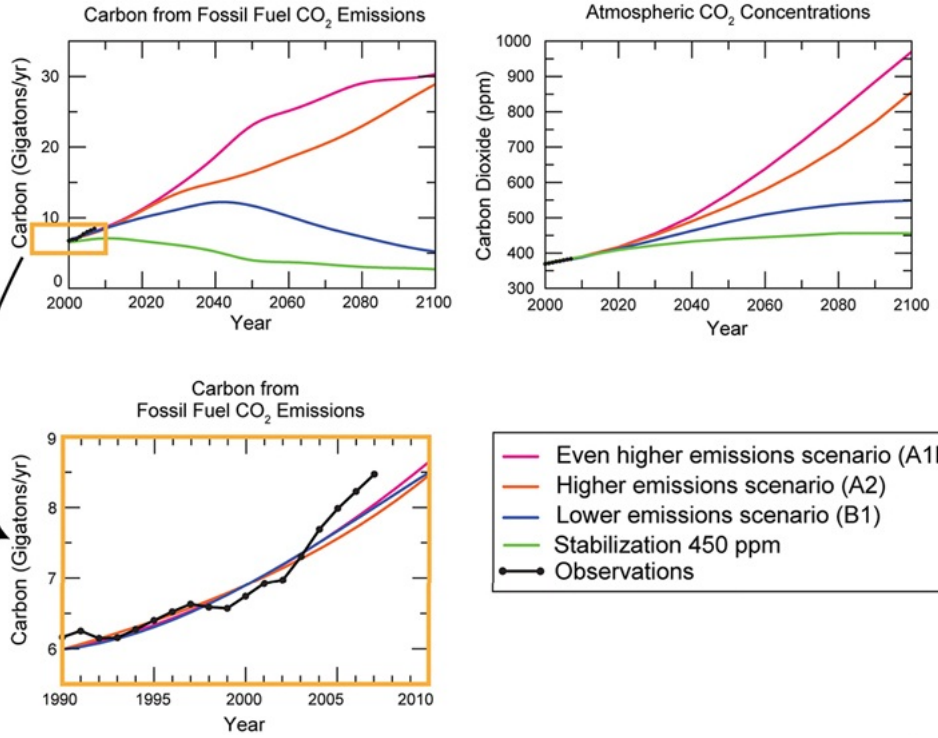
Possible human choices (scenarios)

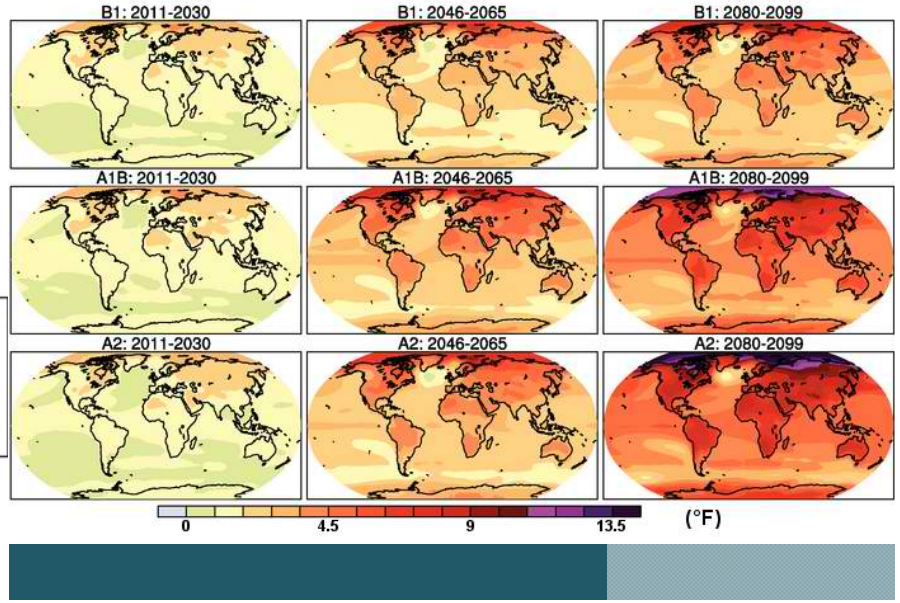
↓

Estimates of future GHG concentrations

↓

Future climate change projections





Climate Exposure: Sources of Local Climate Data

- City's records
- Universities or research institutes
- NGOs or other bodies
- National Weather Bureau
- Regional assessments

Validate trends via consultation with members of the Stakeholder Group.

Climate Exposure: Data Collation

- Name of changing climate condition
- Amount of expected change
- Geographical area
- GHG emissions scenario
- Extent of variability
- Level of confidence
- Source of information

Climate Exposure: Climate Data Summary

change is net increase rai
is expected to be maximu
ug) and mini

ed	Geographical Area	GHG Emissions Scenario	Extent of Variability	Level of Confidence	Source
	Metro Manila	A1B scenario, IPCC	Overall increase in rainfall. June, July, Aug., Sept - 12mm Jan, Feb - 5mm	High	

Table a: Seasonal temperature increases (in °C) in 2020 and 2050 under medium-range emission scenario in provinces in NCR

	OBSERVED BASELINE (1971-2000)				CHANGE in 2020 (2006-2035)				CHANGE in 2050 (2036-2065)			
	DJF	MAM	JJA	SON	DJF	MAM	JJA	SON	DJF	MAM	JJA	SON
NCR												
METRO MANILA	26.1	28.8	28.0	27.4	1.0	1.1	0.9	1.0	2.0	2.1	1.8	1.9

Table b: Seasonal rainfall change (in %) in 2020 and 2050 under medium-range emission scenario in provinces in NCR

	OBSERVED BASELINE (1971-2000) mm				CHANGE in 2020 (2006-2035)				CHANGE in 2050 (2036-2065)			
	DJF	MAM	JJA	SON	DJF	MAM	JJA	SON	DJF	MAM	JJA	SON
NCR												
METRO MANILA	107.5	198.5	1170.2	758.7	-12.8	-33.3	8.5	0.0	-17.3	-38.5	21.3	3.7

Table c: Frequency of extreme events in 2020 and 2050 under medium-range emission scenario in provinces in NCR

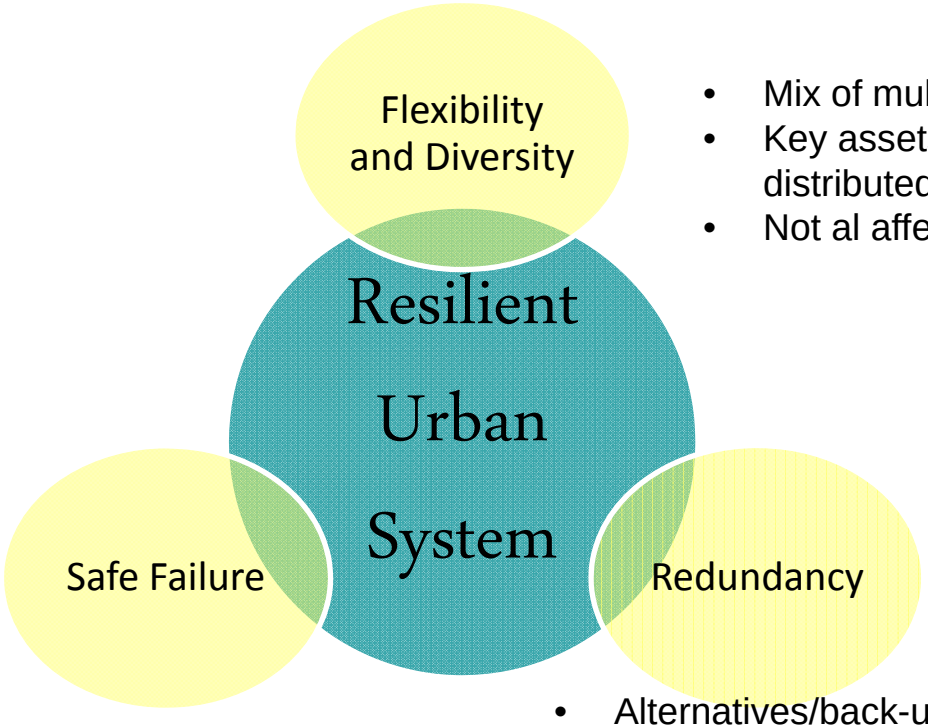
Provinces	Stations	No. of Days w/ Tmax >35 °C			No. of Dry Days			No. of Days w/ Rainfall >200mm		
		OBS (1971-2000)	2020	2050	OBS	2020	2050	OBS	2020	2050
METRO MANILA	Port Area	299	1176	2118	7380	6445	6382	12	12	13
	Science Garden	1095	1984	3126	7476	6302	6220	9	13	17

Note:

- For Kalookan North, Quezon City, Marikina, Pasig, Taguig, San Juan Mandaluyong, use values of Science Garden.
- For Navotas, Kalookan South, Malabon and Valenzuela, use values of Port Area.

Urban Systems Analysis: Fragility

Resilience: the ability of a social/ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity to adapt to stress and change (IPCC 2007)



- Mix of multiple options
- Key assets and functions are distributed or decentralised
- Not al affected by a single event

- Ability to absorb sudden shocks or slow onset stress so as to avoid catastrophic failure

- Alternatives/back-up systems/contingency plans
- Capacity for contingency situations
- Multiple pathways and options for service delivery in case one or several options fail

Urban System Analysis: Energy

WHY IS IT CRITICAL OR FRAGILE	EXISTING AND ANTICIPATED PROBLEMS	PART OF CITY FUNCTION	FRAGILITY STATEMENT
Flexibility and Diversity * City is largely dependent on utility provider, i.e. MERALCO * The sole provider of electrical power is MERALCO * City-owned buildings and streetlights use LED lights. * Most of the core public services are power-dependent, e.g. communication system, health	* Power outage (due to physical damage to electrical posts and wires caused by natural hazards) * Disrupted public services and business operations * Illegal connections may cause further disturbance (e.g. fire hazard) and may exacerbate normal balance of climatic pattern (uncontrolled/mismanaged / excessive use of power)	Not a function of the city; provided and managed by MERALCO	***The power supply system is dependent on the utility provider and city alternative/back-up is still at the infancy stage; with its current capacity, the city government can only provide minimal intervention in restoring services when major power disruption occurs.***
Redundancy * MERALCO's business continuity plan is in place (e.g. use of solar energy as back up source) * City-owned buildings and business establishments have generator sets * Pilot barangay uses solar panels for streetlights * City has plans to establish back up communication system (e.g. mobile command center, satellite EOC, use of satellite phones)			
Safe Failure * Individual households have to use traditional lighting source, i.e. candles, lamps			

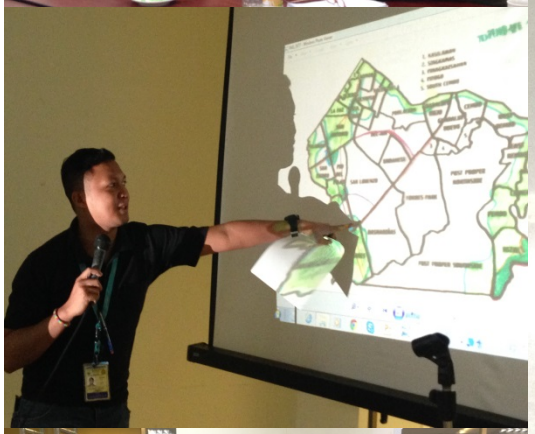
Climate Fragility Statement: Energy

Fragility Statement	Climate Fragility Statement		
	Climate Risk 1: Increased Extreme Weather Events (e.g. Amount of Rainfall > 300mm)	**Climate Risk 2: Increased Temperature (35deg above)**	**Climate Risk 3: Increased Precipitation**
The power supply system is dependent on the utility provider and city alternative/back-up is still at the infancy stage; with its current capacity, the city government can only provide minimal intervention in restoring services when major power disruption occurs.	Increased extreme weather events may cause physical damage to electrical posts, electrical wires, and other power facilities that may lead to power interruption.	Increased temperature will lead to higher energy demand which will further contribute to GHG emission. Increased temperature will lead to higher energy demand which will result to higher energy rates.	Increased precipitation will cause flooding that will require automatic power shutdown

Risk Assessment: Energy

Climate Risk	Likelihood	Conse-quence	Risk Score	Risk Status
Increased extreme weather events may cause physical damage to electrical posts, electrical wires, and other power facilities that may lead to power interruption.	4	3	12	**High**
Increased temperature will lead to higher energy demand which will further contribute to GHG emission.	5	2	10	**Medium**
Increased temperature will lead to higher energy demand which will result to higher energy rates.	5	2	10	**Medium**
Increased precipitation will cause flooding that will require automatic power shutdown	4	3	12	**High**

Vulnerable Places



Vulnerable People

CLIMATE FRAGILITY STATEMENTS	AREA/ WARD	ACTORS	CAPACITY TO ORGANIZE & RESPONDER	RESOURCES	ACCESS TO INFORMATION	ADAPTIVE CAPACITY SCORE	LEVEL OF ADAPTIVE CAPACITY
Increased extreme weather events may cause physical damage to electrical posts, electrical wires, and other power facilities that may lead to power interruption.	Cluster 2 -6	MCG	2	3	3	18	High
		Meralco	3	3	3	27	High
		Residents	1	1	1	1	low
		Barangays	2	2	2	8	Medium
		NGOs	2	2	2	8	Medium
		POs	2	2	2	8	Medium
		NGAs	2	3	2	12	High
		Embassy	1	1	1	1	low
		International Organizations	1	1	1	1	low
		Commercial Establishments	1	2	1	2	low
Increased temperature will lead to higher energy demand which will further contribute to GHG emission.	Cluster 1- 6	MCG	3	3	3	27	High
		Meralco	1	2	3	6	Medium
		Residents	1	1	1	1	low
		Barangays	1	1	2	2	low
		NGOs	2	2	2	8	Medium
		POs	1	1	1	1	low
		NGAs	2	2	3	12	High
		Embassy	1	1	1	1	low
		International Organizations	2	2	2	8	Medium
		Commercial Establishments	2	2	3	12	High

Adaptive Capacity of an Urban System (Energy)

Economic	Technology/ Infrastructure	Governance	Social	Ecosystem
Medium (Funds for projects promoting energy efficiency are available, but have yet to be optimized)	**Medium** (The city has an adequate technological knowledge but resources are market-dependent. Infrastructure is at the initial phase in coping with CC stresses, primarily due to the available climate science data and information.)	**Medium** (The city government has policies, plans, partnership arrangements, and special bodies to address CC issues pertaining to the energy sector)	**Medium** (There are city-initiated IEC campaigns but the community is passive)	**Medium** (The city government has interventions in mitigating CC impacts in the energy sector but it has minimal management control)

Data Gap Analysis

Climate Fragility Statements	Data Available	Data Gaps
Increased extreme weather events may cause physical damage to electrical posts, electrical wires, and other power facilities that may lead to power interruption.	main source of supply	Area coverage of the power substations
	average number of hours of electricity supply	Map of electrical posts (may be available from MERALCO)
	physical map of electric facilities	
	MERALCO Power substations (location, number of power transformer, capacity megavolts ampere)	
	exposure map of electric facilities to flood	
Increased temperature will lead to higher energy demand which will further contribute to GHG emission.	Total annual supply in metric unit	Percentage loss due to illegal connections
	Total annual energy demand	Percentage of energy supply per renewable source
	Sector wise energy usage	
	Average number of hours of electricity supply	
	Power consumption in KWH (residential and commercial per barangay)	
Increased temperature will lead to higher energy demand which will result to higher energy rates.	Total annual supply in metric unit	Percentage loss due to illegal connections
	Total annual energy demand	Percentage of energy supply per renewable source
	Sector wise energy usage	
	average number of hours of electricity supply	
	Power consumption in KWH (residential and commercial per barangay)	
Increased precipitation will cause flooding that will require automatic power shutdown	Main source of supply	Area coverage of the power substations
	MERALCO Power substations (location, number of power transformer, capacity megavolts ampere)	
	physical map of electric facilities	
	exposure map of electric facilities to flood	

Key Points from Philippine Experience

- **Data access and availability** – absence of relevant, up-to-date, and quality data; fragmented sources of data
- **High awareness of LGs on resilience but skewed toward DRR** – communities readily see the impacts of DRR initiatives; enabling framework to mobilize resources for DRR already existing
- **Vertical and horizontal integration** – simultaneous work at the national and sub-national level; issues on fragmented resiliency initiatives
- **LGUs are willing to co-fund and allocate resources for resiliency initiatives.**
- **Some LGUs tend to protect their image**, affecting their risk assessment.

Thank you for listening.

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